

Monitor

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Inventory

This chapter contains the following topics:

Viewing Inventory Information for Switches

To view the inventory information for switches from the Cisco DCNM Web UI, perform the following steps:

Choose Mo	nitor > Inventory > Switches.						
The Switch	es window with a list of all the switches for a selected Scope is displayed.						
You can als	o view the following information.						
• Group column displays the switch group to which the switch belongs.							
• In the Device Name column, select a switch to display the Switch Dashboard.							
• IP Ad	dress column displays the IP address of the switch.						
• WWN	/Chassis ID displays the Worldwide Name (WWN) if available or chassis ID.						
• Health	displays the health situation of the switch.						
Note	To refresh and recalculate the latest health data for all the switches on Cisco DCNM, cl Recalculate Health button above the switches table.						

- Status column displays the status of the switch.
- # Ports column displays the number of ports.
- Model column displays the model name of the switch.
- Serial No. column displays the serial number of the switch.
- Release column displays the switch version.
- Up Time column displays the time period for which the switch is active.

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∩ N	Monitor / Inventory / Switches												
Switches Teat 14 🧭 🖓													
¢ F	© Recalculate Health Show								Quick Filter	•			
	Group	Device Name	IP Address	WWN/Chassis Id	Health	Mode	Status	# Ports	Model	Serial No.	Release	Up Time	
1	epl-ex-site	epi-leaf1	192.168.126	FDO22471NHP	68%	Normal	🗹 ok	54	N9K-C93180	FDO22471N	9.2(1)	38 days, 22:10:42	
2	epl-ex-site	epl-leaf2	192.168.126	FDO22470E60	68%	Normal	🗹 ok	54	N9K-C93180	FDO22470E60	9.2(1)	37 days, 22:19:27	
3	ext1	epl-spine1	192.168.126	FDO22461K4U	98%	Normal	🗹 ok	54	N9K-C93180	FDO22461K4U	9.3(3)	83 days, 21:39:22	
4	ext2	epl-spine2	192.168.126	FDO22471B4U	96%	Normal	🗹 ok	54	N9K-C93180	FDO22471B4U	9.3(2)	128 days, 02:20:51	
5	shyam-fx2	ipv6-bg	192.168.126	FDO231003B3	97%	Normal	🗹 ok	60	N9K-C93240	FDO231003B3	9.3(2)	130 days, 03:05:10	
6	shyam-fx2	ipv6-leaf1	192.168.126	FDO23070AC0	68%	Normal	🗹 ok	60	N9K-C93240	FDO23070AC0	9.3(2)	6 days, 19:40:16	
7	shyam-fx2	ipv6-leaf2	192.168.126	FDO22502KUA	68%	Normal	🗹 ok	60	N9K-C93240	FDO22502K	9.3(2)	6 days, 19:41:05	
8	shyam-fx2	ipv6-leaf3	192.168.126	FDO2310037V	98%	Normal	🗹 ok	60	N9K-C93240	FDO2310037V	9.3(2)	8 days, 19:34:54	
9	shyam-fx2	ipv6-spine	192.168.126	FDO231003AG	97%	Normal	🗹 ok	60	N9K-C93240	FDO231003AG	9.3(2)	130 days, 03:09:21	
10	terry-fx2	terry-bg	192.168.126	FDO230711SA	98%	Normal	🗹 ok	60	N9K-C93240	FDO230711SA	9.3(3)	83 days, 23:51:45	
11	terry-fx2	terry-leaf1	192.168.126	FDO231003D3	67%	Normal	🗹 ok	60	N9K-C93240	FDO231003D3	9.3(3)	161 days, 03:18:16	
12	terry-fx2	terry-leaf2	192.168.126	FDO231003F3	68%	Normal	🗹 ok	60	N9K-C93240	FDO231003F3	9.3(3)	161 days, 03:30:47	
13	terry-fx2	terry-leaf3	192.168.126	FDO231003F7	97%	Normal	🗹 ok	60	N9K-C93240	FDO231003F7	9.3(3)	84 days, 00:01:53	
14	terry-fx2	terry-spine	192.168.126	FDO22361UC4	98%	Normal	🔽 ok	60	N9K-C93240	FDO22361UC4	9.3(3)	161 days, 03:29:33	

Step 3 Click Health to access the Health score window for a device. The Health score window includes health score calculation and health trend. The Overview tab displays the overall health score. All the modules, switch ports and alarms are taken into consideration while calculating the health score. Hover over the graph under Health Trend for detailed information on specific dates. Hover over the info icon next to Alarms to display the number of Critical, Major, Minor, and Warning alarms that have been generated.



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Click the **Modules** tab to display information about the various modules in the device. This tab displays information such as Name, Model name, Serial number, Status, Type, Slot, Hardware revision and Software revision.

Overview	odules Switch F	Ports Alarms					
Name	Model Name	Serial Number	Status	Туре	Slot	H/W R	S/W Revision
N9K-C9316D-GX	N9K-C9316D-GX	FDO231212UL	n/a	chassis		V00	
Module-1 16x40	N9K-C9316D-GX	FDO231212UL	ok	module	1	V00	9.3(3)IDI9(0.5
Fan Module-1	NXA-FAN-35CF		ok	fan		V01	
Fan Module-2	NXA-FAN-35CF		ok	fan		V01	
Fan Module-3	NXA-FAN-35CF		ok	fan		V01	
Fan Module-4	NXA-FAN-35CF		ok	fan		V01	
Fan Module-5	NXA-FAN-35CF		ok	fan		V01	
Fan Module-6	NXA-FAN-35CF		ok	fan		V01	
PowerSupply-1	NXA-PAC-1100	ART2244FBT5	offEnvPower	powerSupply		V01	
PowerSupply-2	NXA-PAC-1100	ART2244FBSZ	ok	powerSupply		V01	

Click the **Switch Ports** tab to display information about the device ports. This tab displays information such as Name, Description, Status, Speed, and the device to which a port is connected .

N9k-C93	16d-gx
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N9k-C9316d-gx

Overview Modules Switch Ports Alarms								
	Name	Description	Status	Speed	Connected To			
1	mgmt0		ok	1Gb				
2	Ethernet1/1		ok	40Gb	N9k_tucher (Ethernet1/99)			
3	Ethernet1/2		ok	40Gb	N9k_3408s_179 (Ethernet1/1)			
4	Ethernet1/3		ok	40Gb	N9k_c9316d-gx_10 (Ethernet1/3)			
5	Ethernet1/4		XCVR not inserted	400Gb				
6	Ethernet1/5		XCVR not inserted	400Gb				
7	Ethernet1/6		XCVR not inserted	400Gb				
8	Ethernet1/7		XCVR not inserted	400Gb				
9	Ethernet1/8		XCVR not inserted	400Gb				
10	Ethernet1/9		XCVR not inserted	400Gb				

Click the **Alarms** tab to display information about the alarms that have been generated. This tab displays information such as alarm Severity, Message, Category, and the Policy that has been activated due to which the alarm is generated.

N9k-C931	6d-gx				* ×
Overview	Modules	Switch Ports	Alarms		
Severity	Message		Category	Policy	
CRITICAL	10.106.228.9	00(N9k-C931	CRITICAL	Config-Compliance: G1: Device Level Status Alarm	

In the **Health** column, the switch health is calculated by the capacity manager based on the following parameters:

- Total number of modules
- · Total number of modules impacted by the warning
- Total number of switch ports
- Total number of switch ports impacted by the warning
- · Total number of critical severity alarms
- · Total number of warning severity alarms
- · Total number of major severity alarms
- · Total number of minor severity alarms
- **Step 4** The value in the **Health** column is calculated based on the following:
 - Percentage of modules impacted by warnings (Contributes 20% of the total health).
 - Percentage of ports impacted by warnings (Contributes 20% of the total health).
 - Percentage of alarms (Contributes 60% of the total health). The critical alarms contribute the highest value to this percentage followed by major alarms, minor alarms and warning alarms.

You may also have your own health calculation formula by implementing the common interface class: com.cisco.dcbu.sm.common.rif.HealthCalculatorRif.

The default Java class is defined as: health.calculator=com.cisco.dcbu.sm.common.util.HealthCalculatorAlarms.

- Capacity Manager calculates health only for the license switches. If the health column does not display a value, the switch either does not have a license or it has missed the capacity manager daily cycle.
- If the switch is unlicensed, click Unlicensed in the DCNM License column. The Administration > License window appears which allows you to assign a license to the user.

• The capacity manager runs two hours after the DCNM server starts. So, if you discover a device after two hours of the DCNM start time, the health will be calculated 24 hours after this DCNM start time

Starting from Cisco DCNM 11.3(1) Release, you can view information about switch health along with the switch summary by clicking on a switch in the **Topology** window or by choosing **Control>Fabrics>Fabric Builder**, selecting a fabric and clicking on a switch in the **Fabric Builder** window.



Viewing System Information

The switch dashboard displays the details of the selected switch.

Procedure

Step 1 From the Cisco DCNM home page, choose **Monitor > Inventory > Switches**.

An inventory of all the switches that are discovered by Cisco DCNM Web UI is displayed.

Step 2 Click a switch in the Device Name column.

The **Switch** dashboard that corresponds to that switch is displayed along with the following information:

- Step 3 Click the System Information tab. This tab displays detailed system information such as group name, health, module, time when system is up, serial number, the version number, contact, location, DCNM license, status, system log sending status, CPU and memory utilization, and VTEP IP address are displayed. Click Health to access the Health score screen, which includes health score calculation and health trend. The popup contains Overview, Modules, Switch Ports, and Events tabs.
 - (Optional) Click SSH to access the switch through Secure Shell (SSH).

- (Optional) Click **Show Commands** to display the device show commands. The Device Show Commands page helps you to view commands and execute them.
- (Optional) Click **Copy Running Config to Startup Config** to copy the running configuration to the startup configuration.
- **Note** This option grays out if the fabric is in freeze mode, that is, if you have disabled deployments on the fabric.

Hosts

You can view host details of switch.

To view the **Hosts** tab, choose **Monitor** > **Inventory** > **Switches**, click a switch name in the **Device Name** column, and navigate to the **Hosts** tab.

The following table describes the fields that are displayed:

Table 1: The Hosts Tab

Field	Description
VRF	Displays VRF details of switch.
Host IP	Displays host IP address of switch.
Host MAC Address	Displays host MAC address of switch.
VLAN	Displays configured VLAN on switch.
Port	
L2 VNI	Displays layer 2 VXLAN network identifier (L2 VNI) configured on switch.
L3 VNI	Displays layer 3 VXLAN network identifier (L3 VNI) configured on switch.

Capacity

You can view the physical capacity of switch.

Capacity tab shows information about the physical ports that are present on the switch.

To view the **Capacity** tab, choose **Monitor** > **Inventory** > **Switches**, click a switch name in the **Device Name** column, and navigate to the **Capacity** tab.

The following table describes the fields that are displayed:

Table 2: The Capacity Tab

Field	Description
Tier	Displays physical ports available on the switch.

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Field	Description
Used Ports	Displays number of used ports on switch.
Total Ports	Displays total number of ports on switch.
Days Left	Displays total days left.

Features

You can view features enabled on the switch.

To view the **Features** tab, choose **Monitor** > **Inventory** > **Switches**, click a switch name in the **Device Name** column, and navigate to the **Features** tab.

VXLAN

You can view VXLANs and their details under the VXLAN tab.

To view VXLANs, choose **Monitor > Inventory > View > Switches**, and then click a switch name in the **Device Name** column.

The following table describes the fields that are displayed:

Table 3: The VXLAN Tab

Field	Description
VNI	Displays the Layer 2 (network) or Layer 3 (VRF) VXLAN VNI that is configured on a switch.
Multicast address	Displays the multicast address that is associated with the Layer 2 VNI, if applicable.
VNI Status	Displays the status of the VNI.
Mode	Displays the VNI modes: Control Plane or Data Plane.
Туре	Displays whether the VXLAN VNI is associated with a network (Layer 2) or a VRF (Layer 3).
VRF	Displays the VRF name that is associated with the VXLAN VNI if it is a Layer 3 VNI.
Mapped VLAN	Displays the VLAN or Bridge domain that is mapped to VNI.

VLAN

You can view VLANs and their details under the VLAN tab.

To view VLANs, choose **Monitor > Inventory > View > Switches**, and then click a switch name in the **Device Name** column.

The following table describes the fields that are displayed:

Table 4: The VLAN Tab

Field	Description
VLAN	Displays the VLAN configured on the switch.
Name	Displays the name of VLAN.
Туре	Displays whether the VLAN is associated with a network.
Policy	Displays the name of associated policy. If a policy is not associated, by default it is Undefined.
Mode	Displays the VLAN modes.
Status	Displays the status of VLAN.
Ports	Specifies the port number to which the VLAN is physically connected to the Switch.

Switch Modules

You can view the switch modules and their details under the Modules tab.

To view the **Modules** tab, choose **Monitor** > **Inventory** > **Switches**, click a switch name in the **Device Name** column, and navigate to the **Modules** tab.

The following table describes the fields that are displayed:

Table 5: The Modules Tab

Field	Description
Name	Specifies the name of the module.
ModelName	Specifies the model name of the module.
SerialNum	Specifies the serial number of the module.
Туре	Specifies the module type. Valid values are chassis , module , fan , and powerSupply .
OperStatus	Specifies the operational status of the module.
Slot	Specifies the slot number of the module.
H/W Revision	Specifies the NX-OS hardware version.
S/W Revision	Specifies the NX-OS software version.
AssetID	Specifies the asset ID of the module.
IO FPGA	Specifies the IO field programmable gate arrays (FPGA) version.
MI FPGA	Specifies the MI field programmable gate arrays (FPGA) version.

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FEX

The Fabric Extender feature allows you to manage a Cisco Nexus 2000 Series Fabric Extender and its association with the Cisco NX-OS switch that it is attached to. A Fabric Extender is connected to the switch through physical Ethernet interfaces or a Port Channel. By default, the switch does not allow the attached Fabric Extender to connect until it has been assigned a chassis ID and is associated with the connected interface. You can configure a Fabric Extender host interface port as a routed or Layer 3 port. However, no routing protocols can be tied to this routed interface.

lote	FEX feature is available on LAN devices only. Therefore, you will see FEX on Cisco DCNM Inventory Switches . FEX is also not supported on Cisco Nexus 1000V devices.
lote	4x10G breakout for FEX connectivity is not supported on Cisco Nexus 9500 Switches.
lote	The Fabric Extender may connect to the switch through several separate physical Ethernet interfaces or at most one port channel interface.
Thi	s section describes how to manage Fabric Extender (FEX) on Cisco Nexus Switches through Cisco DCNM.
You	a can create and manage FEX from Cisco DCNM Inventory > Switches .
lote	FEX tab is visible only if you choose a LAN device.
The	following table describes the fields that appear on this page.

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Table 6: FEX Operations

Field	Description
Show	Allows you to view various configuration details for the selected FEX ID. You can select the following from the drop-down list.
	show_diagnostic
	• show_fex
	• show_fex_detail
	• show_fex_fabric
	• show_fex_inventory
	• show_fex_module
	The variables for respective show commands are displayed in the Variables area. Review the Variables and click Execute . The output appears in the Output area.
	You can create a show template for FEX. Select template type as SHOW and sub type as FEX.

Table 7: FEX Field and Description

Field	Description	
Fex Id	Uniquely identifies a Fabric Extender that is connected to a Cisco NX-OS device.	
Fex Description	Description that is configured for the Fabric Extender.	
Fex Version	Specifies the version of the FEX that is associated with the switch.	
Pinning	An integer value that denotes the maximum pinning uplinks of the Fabric Extender that is active at a time.	
State	Specifies the status of the FEX as associated with the Cisco Nexus Switch.	
Model	Specifies the model of the FEX.	
Serial No.	Specifies the configured serial number.	
	Note If this configured serial number and the serial number of the Fabric Extender are not the same, the Fabric Extender will not be active.	
Port Channel	Specifies the port channel number to which the FEX is physically connected to the Switch.	
Ethernet	Refers to the physical interfaces to which the FEX is connected.	
vPC ID	Specifies the vPC ID configured for FEX.	

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VDCs

This section describes how to manage Virtual Device Contexts (VDCs) on Cisco Nexus 7000 Switches through Cisco DCNM.

Users with the network administrator (network-admin) role can create Virtual Device Contexts (VDCs). VDC resource templates limit the amount of physical device resources available to the VDC. The Cisco NX-OS software provides a default resource template, or you can create resource templates.

You can create and manage VDCs from Cisco DCNM **Inventory** > **Switches** > **VDCs**. As Cisco DCNM supports DCNM on Cisco Nexus 7000 Series only, click an active Cisco Nexus 7000 Switch. After you create a VDC, you can change the interface allocation, VDC resource limits, and the high availability (HA) policies.

The following table describes the fields that appear on this page.

Field	Description
Add	Click to add a new VDC.
Edit	Select any active VDC radio button and click Edit to edit the VDC configuration.
Delete	Allows you to delete the VDC. Select any active VDC radio button and click Delete to remove the VDC associated with the device.
Resume	Allows you to resume a suspended VDC.
Suspend	Allows you to suspend an active non-default VDC.
	Save the VDC running configuration to the startup configuration before suspending the VDC. Otherwise, you will lose the changes to the running configuration.
	Note You cannot suspend the default VDC.
	Caution Suspending a VDC disrupts all traffic on the VDC.
Rediscover	Allows you to resume a non-default VDC from the suspended state. The VDC resumes with the configuration that is saved in the startup configuration.
Show	Allows you to view the Interfaces and Resources that are allocated to the selected VDC.
	In the Interface tab, you can view the mode, admin-status, and operational status for each interface associated with the VDC.
	In the Resource tab, you can view the allocation of resources and current usage of these resources.

Table 8: VDC Operations

Table 9: Vdc Table Field and Description

Field	Description
Name	Displays the unique name for the VDC
Туре	Species the type of VDC. The two types of VDCs are: • Ethernet • Storage
Status	Specifies the status of the VDC.
Resource Limit-Module Type	Displays the allocated resource limit and module type.
HA-Policy • Single Supervisor • Dual Supervisor	Specifies the action that the Cisco NX-OS software takes when an unrecoverable VDC fault occurs. You can specify the HA policies for single supervisor module and dual supervisor module configurations when you create the VDC. The HA policy options are as follows:
	Single supervisor module configuration:
	• Bringdown—Puts the VDC in the failed state. To recover from the failed state, you must reload the physical device.
	• Reload—Reloads the supervisor module.
	• Restart—Takes down the VDC processes and interfaces and restarts it using the startup configuration.
	Dual supervisor module configuration:
	• Bringdown—Puts the VDC in the failed state. To recover from the failed state, you must reload the physical device.
	• Restart—Takes down the VDC processes and interfaces and restarts it using the startup configuration.
	• Switchover—Initiates a supervisor module switchover.
	The default HA policies for a non-default VDC that you create is restart for a single supervisor module configuration and switchover for a dual supervisor module configuration. The default HA policy for the default VDC is reload for a single supervisor module configuration and switchover for a dual supervisor module configuration.

Field	Description
Mac Address	Specifies the default VDC management MAC address.
Management Interface IP Address Prefix Status 	Species the IP Address of the VDC Management interface. The status shows if the interface if up or down.
SSH	Specifies the SSH status

Note If you change the VDC hostname of a neighbor device after initial configuration, the link to the old VDC hostname is not replaced with the new hostname automatically. As a workaround, we recommend manually deleting the link to the old VDC hostname.

This chapter includes the following sections:

Add VDCs

To add VDC from the Cisco DCNM Web UI, perform the following steps:

Before you begin

Ensure that you have discovered the physical device using a username that has the network-admin role.

Obtain an IPv4 or IPv6 address for the management interface (mgmt 0) if you want to use out-of-band management for the VDC.

Create a storage VDC to run FCoE. The storage VDC cannot be the default VDC and you can have one storage VDC on the device.

Procedure

Step 1	Choose Inventory > Switches > VDC .
	The VDC window is displayed.
Step 2 Step 3	Click the Add VDC icon.
otep o	You can configure the VDC in two modes.
	Configuring Ethernet VDCs
	Configuring Storage VDCs
	The default VDC type is Ethernet.
Step 4	Click OK.

Configuring Ethernet VDCs

To configure VDC in Ethernet mode from the Cisco DCNM Web UI, perform the following steps:

Procedure

- Step 1In the General Parameter tab, specify the VDC Name, Single supervisor HA-policy, Dual supervisor
HA-policy, and Resource Limit Module Type.
- **Step 2** In the Allocate Interface tab, select the network interfaces (dedicated interfaces membership) to be allocated to the VDC.

Click Next.

Step 3 In the Allocate Resource tab, specify the resource limits for the VDC.

Select the radio button and choose **Select a Template from existing Templates** or **Create a New Resource Template**. VDC resource templates describe the minimum and maximum resources that the VDC can use. If you do not specify a VDC resource template when you create a VDC, the Cisco NX-OS software uses the default template, vdc-default.

• If you choose Select a Template from existing Templates, from the **Template Name** drop-down list, you can select **None**, **global-default**, or **vdc-default**.

The template resource limits are detailed in the following below:

Resource	Minimum	Maximum
Global Default VDC Template Resource Limits		
Anycast Bundled		
IPv6 multicast route memory	8	8
		Route memory is in megabytes.
IPv4 multicast route memory	48	48
IPv6 unicast route memory	32	32
IPv4 unicast route memory		
VDC Default Template Resource Limits		
Monitor session extended		
Monitor session mx exception		
Monitor SRC INBAND		
Port Channels		
Monitor DST ERSPAN		
SPAN Sessions		

Table 10: Template Resource Limits

Resource	Minimum	Maximum
VLAN		
Anycast Bundled		
IPv6 multicast route memory		
IPv4 multicast route memory		
IPv6 unicast route memory		
IPv4 unicast route memory		
VRF		

• If you choose Create New Resource Template, enter a unique **Template Name**. In the Resource Limits area, enter the minimum and maximum limits, as required for the resources.

You can edit individual resource limits for a single VDC through the Cisco DCNM **Web Client > Inventory** > **Switches > VDC**.

Click Next.

Step 4 In the Authenticate tab, you can allow the Admin to configure the password and also authenticate users using AAA Server Groups.

In the Admin User Area:

- Check the Enable Password Strength Check checkbox, if necessary.
- In the Password field, enter the admin user password.
- In the Confirm Password field, reenter the admin user password.
- In the **Expiry Date** field, click the down arrow and choose an expiry date for the admin user from the Expiry Date dialog box. You can also select **Never** radio button not to expire the password.

In the AAA Server Groups area:

- In the Group Name field, enter an AAA server group name.
- In the Servers field, enter one or more host server IPv4 or IPv6 addresses or names, which are separated by commas.
- In the Type field, choose the type of server group from the drop-down list.

Click Next.

Step 5 In the Management Ip tab, enter IPv4 or IPv6 Address information.

Click Next.

Step 6 In the Summary tab, review the VDC configuration.

Click **Previous** to edit any parameters.

Click **Deploy** to configure VDC on the device.

Step 7 In the Deploy tab, the status of the VDC deployment is displayed.

A confirmation message appears. Click **Know More** to view the commands that are executed to deploy the VDC.

Click **Finish** to close the VDC configuration wizard and revert to view the list of VDCs configured on the device.

Configuring Storage VDCs

To configure VDCs in storage mode from the Cisco DCNM Web UI, perform the following steps:

Before you begin

Create a separate storage VDC when you run FCoE on the device. Only one of the VDCs can be a storage VDC, and the default VDC cannot be configured as a storage VDC.

You can configure shared interfaces that carry both Ethernet and Fibre Channel traffic. In this specific case, the same interface belongs to more than one VDC. The shared interface is allocated to both an Ethernet and a storage VDC.

Procedure

- Step 1In the General Parameter tab, specify the VDC Name, Single supervisor HA-policy, Dual supervisor
HA-policy, and Resource Limit Module Type.
- **Step 2** In the Allocate FCoE Vlan tab, select the available **Ethernet Vdc** from the drop-down list.

The existing Ethernet VLANs range is displayed. Select **None** not to choose any available Ethernet VDCs.

You can allocate specified FCoE VLANs to the storage VDC and specified interfaces.

Click Next.

- **Step 3** In the Allocate Interface tab, add the dedicated and shared interfaces to the FCoE VDC.
 - **Note** The dedicated interface carries only FCoE traffic and the shared interface carries both the Ethernet and the FCoE traffic.

You can configure shared interfaces that carry both Ethernet and Fibre Channel traffic. In this specific case, the same interface belongs to more than one VDC. FCoE VLAN and shared interface can be allocated from same Ethernet VDC.

Click Next.

Step 4 In the Authenticate tab, you can allow the Admin to configure the password and also authenticate users using AAA Server Groups.

In the Admin User Area:

- Check the Enable Password Strength Check checkbox, if necessary.
- In the Password field, enter the admin user password.
- In the Confirm Password field, reenter the admin user password.

• In the **Expiry Date** field, click the down arrow and choose an expiry date for the admin user from the Expiry Date dialog box. You can also select **Never** radio button not to expire the password.

In the AAA Server Groups area:

- In the Group Name field, enter an AAA server group name.
- In the **Servers** field, enter one or more host server IPv4 or IPv6 addresses or names, which are separated by commas.
- In the **Type** field, choose the type of server group from the drop-down list.

Click Next.

Step 5 In the Management Ip tab, enter IPv4 or IPv6 Address information.

Click Next.

Step 6 In the Summary tab, review the VDC configuration.

Click Previous to edit any parameters.

Click **Deploy** to configure VDC on the device.

Step 7 In the Deploy tab, the status of the VDC deployment is displayed.

A confirmation message appears. Click **Know More** to view the commands that are executed to deploy the VDC.

Click **Finish** to close the VDC configuration wizard and revert to view the list of VDCs configured on the device.

Edit VDC

To edit VDC from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1	Choose Inventory > Switches > VDC .
	The VDC window is displayed.
Step 2	Select the VDC radio button that you must edit. Click the Edit VDC icon.
Step 3	Modify the parameters as required.
Step 4	After you review the configuration summary on the Summary tab, click Deploy the VDC with the new configuration.

Viewing Inventory Information for Modules

To view the inventory information for modules from the Cisco DCNM Web UI, perform the following steps:

Procedure

p 1	Choose Inventory > View > Modules .
	The Modules window is displayed with a list of all the switches and its details for a selected Scope.
o 2	You can view the following information.
	• Group column displays the group name of the module.
	• Switch column displays the switch name on which the module is discovered.
	• Name displays the module name.
	ModelName displays the model name.
	SerialNum column displays the serial number.
	• 2nd SerialNum column displays the second serial number.
	• Type column displays the type of the module.
	• Slot column displays the slot number.
	• Hardware Revision column displays the hardware version of the module.
	• Software Revision column displays the software version of the module.
	• Asset ID column displays the asset id of the module.
	• OperStatus column displays the operation status of the module.
	• IO FPGA column displays the IO field programmable gate arrays (FPGA) version.
	• MI FPGA column displays the MI field programmable gate arrays (FPGA) version

Viewing Inventory Information for Licenses

To view the inventory information for licenses from the Cisco DCNM Web UI, perform the following steps:

Procedure

Choose Inventory > View > Licenses .
The Licenses window is displayed based on the selected Scope.
You can view the following information.
• Group column displays the group name of switches.
• Switch column displays the switch name on which the feature is enabled.
• Feature displays the installed feature.

- Status displays the usage status of the license.
- Type column displays the type of the license.
- Warnings column displays the warning message.

Monitoring Switch

The Switch menu includes the following submenus:

Viewing Switch CPU Information

To view the switch CPU information from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1 Choose Monitor > Switch > CPU .	
	The CPU window is displayed. This window displays the CPU information for the switches in that scope.
Step 2	You can use the drop-down to filter the view by Last 10 Minutes, Last Hour, Last Day, Last Week, Last Month, and Last Year.
Step 3	In the Switch column, click the switch name to view the Switch Dashboard.
Step 4	Click the chart icon in the Switch column to view the CPU utilization.
	You can also change the chart timeline to Last 10 Minutes, Last Hour, Last Day, Last Week, Last Month, and Last Year. You can choose the chart type and chart options to show as well.

Viewing Switch Memory Information

To view the switch memory information from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1	Choose Monitor > Switch > Memory .	
	The memory panel is displayed. This panel displays the memory information for the switches in that scope.	
Step 2	Use the drop-down to filter the view by Last 10 Minutes, Last Hour, Last Day, Last Week, Last Month, and Last Year.	
Step 3	Click the chart icon in the Switch column to see a graph of the memory usage of the switch.	
Step 4	In the Switch column, click the switch name to view the Switch Dashboard.	

Step 5 You can use the drop-down to view the chart in different time lines. Use the chart icons to view the memory utilization chart in varied views.

Viewing Switch Traffic and Errors Information

To view the switch traffic and errors information from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1	Choose Monitor > Switch > Traffic .	
	The Switch Traffic panel is displayed. This panel displays the traffic on that device for the past 24 hours.	
Step 2	Use the drop-down to filter the view by 24 hours, Week, Month, and Year.	
Step 3	Click the Export icon in the upper-right corner to export the data into a spreadsheet.	
Step 4	Click Save.	
Step 5	Click the switch name to view the Switch Dashboard section.	

Viewing Switch Temperature

Cisco DCNM includes the module temperature sensor monitoring feature, using which you can view the sensor temperature of a switch. You can choose an interval by which to filter the sensor list. The default interval is **Last Day**. Only sensors that have historical temperature data is shown in the list. You can choose between Last ten Minutes, Last Hour, Last Day, Last Week, and Last Month.



Note

It is not necessary to configure the LAN credentials under the **Configure > Credentials Management > LAN Credentials** screen to fetch the temperature monitoring data from the switches.

To view the switch temperature information from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1 Choose **Monitor** > **Switch** > **Temperature**.

The Switch Temperature window is displayed with the following columns.

- Scope: The sensor belongs to a switch, which is part of a fabric. The fabric that it belongs to is shown as its scope. When the scope selector at the top of Cisco DCNM is used, the sensor list is filtered by that scope.
- Switch: Name of the switch the sensor belongs to.
- IP Address: IP Address of the switch.
- Temperature Module: The name of the sensor module.

- Avg/Range: The first number is the average temperature over the interval that is specified at the top of the table. The second set of numbers is the range of the temperature over that interval.
- Peak: The maximum temperature over the interval

Step 2 From this list, each row has a chart icon, which you can click.A chart is displayed, which shows historical data for the sensor. The interval for this chart can be changed as well, between 24 hours, 1 week, and 1 month.

Enabling Temperature Monitoring

You can enable the temperature monitoring feature for LAN switches from the LAN Collections screen, and for the SAN switches by setting a few properties under Administration > DCNM Server > Server Properties screens.

Enabling Temperature Monitoring for LAN Switches

- 1. From the menu bar, choose Administration > Performance Setup > LAN Collections.
- 2. Select the **Temperature Sensor** check box.
- 3. Select the type of LAN switches for which you want to collect performance data.
- 4. Click Apply to save the configuration.

Viewing Accounting Information

To view the accounting information from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1	Choose Monitor > Switch > Accounting .	
	The fabric name or the group name along with the accounting information is displayed.	
Step 2	Select Advanced Filter beside the filter icon to search the accounting information by Source, Username, Time, and Description. Or select Quick Filter to search under each column.	
Step 3	You can also select a row and click the Delete icon to delete accounting information from the list.	
Step 4	You can use the Print icon to print the accounting details and use the Export icon to export the data to a Microsoft Excel spreadsheet.	

Viewing Events Information

To view the events and syslog from the Cisco DCNM Web UI, perform the following steps:

Procedure

Choose Monitor > Switch > Events .
The fabrics along with the switch name and the events details are displayed.
The Count column displays the number of times the same event has occurred during the time period as shown in the Last Seen and First Seen columns.
Click a switch name in the Switch column to view the switch dashboard.
Select an event in the table and click the Add Suppressor icon to open the shortcut of adding an event suppressor rule.
Select one or more events from the table and click the Acknowledge icon to acknowledge the event information for the fabric.
• After you acknowledge the event for a fabric, the acknowledge icon is displayed in the Ack column next to the fabric.
Select the fabric and click the Unacknowledge icon to cancel an acknowledgment for a fabric.
Select Advanced Filter beside the filter icon to search the accounting information by Source, Username, Time, and Description. Or select Quick Filter to search under each column.
Select a fabric and use the Delete icon to delete the fabric and event information from the list.
Click the Print icon to print the event details.
Click the Export to Excel icon to export the data.

Monitoring LAN

The LAN menu includes the following submenus:

Monitoring Performance Information for Ethernet

To monitor the performance information for ethernet from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1	Choose Monitor > LAN > Ethernet .	
	The Ethernet window is displayed.	
-		

Step 2You can use the drop-down to filter the view by Last 10 Minutes, Last Hour, Last Day, Last Week, Last
Month, and Last Year.

There are variations to this procedure. In addition to these basic steps, you can also perform the following steps:

- Select the name of an Ethernet port from the **Name** column to see a graph of the traffic across that Ethernet port for the past 24 hours. You can change the time range for this graph by selecting it from the drop-down list in the upper-right corner.
- To export the data into a spreadsheet, click the **Export** icon in the upper-right corner and click **Save**.
- Use the chart icons to view the traffic chart in varied views. You can also use the icons to **Append**, **Predict**, and **Do not interpolate data**.
- **Note** Set the **pmchart.doInterpolate** property in the **Server Properties** window to false to use the **Do not interpolate data** option.
- For the Rx/Tx calculation, see the following Rx/Tx calculation.
- **Note** The conversion for Fabrics is 10 bit = 1 byte and for LAN traffic, the conversion is 8 bit = 1 byte.
 - Average Rx/Tx % = Average Rx/Tx divided by Speed * 100
 - Peak Rx/Tx % = Peak Rx/Tx divided by Speed * 100
- **Note** If the performance tables do not contain any data, see the Thresholds section to turn on performance data collection.

Monitoring ISL Traffic and Errors

To monitor the ISL traffic and errors from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1 Choose Monitor > LAN > Link.

The **ISL Traffic and Errors** window is displayed. This panel displays the ISL information for the end devices in that scope. You can reduce or expand the scope of what is displayed by using the scope menu.

Step 2 You can use the drop-down to filter the view by Last 10 Minutes, Last Hour, Last Day, Last Week, Last Month, and Last Year.

Note NaN (Not a Number) in the data grid means that the data is not available.

There are variations to this procedure. In addition to these basic steps, you can perform the following steps to view detailed information for ISLs:

- To change the time range for this graph, select it from the drop-down list in the upper-right corner.
- To view the detailed information for a specific period, drag the slider control to choose the time interval for which you need the information.
- Use the chart icons to view the traffic chart in varied views. You can also use the icons to **Append**, **Predict**, and **Do not interpolate data**.

- **Note** Set the **pmchart.doInterpolate** property in the **Server Properties** window to false to use the **Do not interpolate data** option.
- To export the data into a spreadsheet, choose **Export** from the drop-down list in the **Chart** menu and then click **Save**.
- For the Rx/Tx calculation, see the following Rx/Tx calculation.
- **Note** The conversion for Fabrics is 10 bit = 1 byte and for LAN traffic, the conversion is 8 bit = 1 byte.
 - Average Rx/Tx % = Average Rx/Tx divided by Speed * 100
 - Peak Rx/Tx % = Peak Rx/Tx divided by Speed * 100
- **Note** If the performance tables do not contain any data, see the Performance Setup Thresholds section to turn on performance.

Monitoring a vPC

The virtual port channel (vPC) feature enables you to view the links that are physically connected to different devices as a single port channel. A vPC is an extended form of a port channel which allows you to create redundancy and increase bisectional bandwidth by enabling multiple parallel paths between nodes and allowing load balancing traffic. Traffic is distributed among two single device vPC endpoints. If there is an inconsistency in the vPC configurations, the vPC does not function correctly.

Ø

Note To view the vPC in **vPC Performance**, both primary and secondary device should be designated to the user. If either one kind of switch is not designated, vPC information is isplayed.

Cisco DCNM **Web Client > Monitor> vPC** displays only consistent vPCs displays both the consistent and inconsistent vPCs.

You can identify the inconsistent vPCs and resolve the inconsistencies in each vPC by using the Cisco DCNM Web UI > Configure > Deploy > vPC Peer and Web Client > Configure > Deploy > vPC.

Table 11: vPC Performance, on page 24 displays the following vPC configuration details in the data grid view.

Table 11: vPC Performance

Column	Description
Search box	Enter any string to filter the entries in their respective column.
vPC ID	Displays vPC ID's configured device.
Domain ID	Displays the domain ID of the vPC peer switches.

I

Column	Description
Multi Chassis vPC EndPoints	Displays the multi-chassis vPC endpoints for each vPC ID under a vPC domain.
Primary vPC Peer - Device Name	Displays the vPC Primary device name.
Primary vPC Peer - Primary vPC Interface	Displays the primary vPC interface.
Primary vPC Peer - Capacity	Displays the capacity for the primary vPC peer.
Primary vPC Peer - Avg. Rx/sec	Displays the average receiving speed of primary vPC peer.
Primary vPC Peer - Avg. Tx/sec	Displays the average sending speed of primary vPC peer.
Primary vPC Peer - Peak Util%	Displays the peak utilization percentage of primary vPC peer.
Secondary vPC Peer - Device Name	Displays the vPC secondary device name.
Secondary vPC Interface	Displays the secondary vPC interface.
Secondary vPC Peer - Capacity	Displays the capacity for the secondary vPC peer.
Secondary vPC Peer - Avg. Rx/sec	Displays the average receiving speed of secondary vPC peer.
Secondary vPC Peer - Avg. Tx/sec	Displays the average sending speed of secondary vPC peer.
Secondary vPC Peer - Peak Util%	Displays the peak utilization percentage of secondary vPC peer.

You can use this feature as following:

Monitoring vPC Performance

You can view the relationship among consistent virtual port channels (vPCs). You can view the statistics of all member interfaces and the aggregate of the statistics at the port-channel level.



Note This tab only displays consistent vPCs.

To view the VPC performance information from the Cisco DCNM Web UI, perform the following steps:

Procedure

Step 1 Choose **Monitor** > **LAN** > **vPC**.

The **vPC Performance** statistics is displayed. The aggregated statistics of all vPCs are displayed in a tabular manner.

Step 2 Click the vPC ID.

The vPC topology, vPC Details, Peer-link Details, and Peer-link Status are displayed.

The vPC Consistency, Peer-link Consistency, and vPC Type2 Consistency for the vPC are displayed.

- Click the vPC Details tab, you can view the parameter details of vPC Basic Setting and Layer 2 Settings for both Primary and Secondary vPC devices.
- Click the Peer-link Details tab, to view the parameter details of peer-link vPC Global Setting and STP Global Settings for both Primary and Secondary vPC devices.
- Click the **Peer-link Status** tab, the **vPC Consistency**, and **Peer-Link Consistency** status is displayed. The parameter details of **Role Status** and **vPC Peer keep-alive Status** for both Primary and Secondary vPC devices is also displayed.
- **Step 3** Click the peer-link icon in front of the **Device Name** in the **Primary vPC peer** or **Secondary vPC peer** column to view its member interface.
- **Step 4** Click the **Show Chart** icon of the corresponding interface to view its historical statistics.

The traffic distribution statistics appear at the bottom of the vPC window. By default, the Cisco DCNM Web Client displays the historical statistics for 24 hours.

There are variations to this procedure. In addition to these basic steps, you can also perform the following steps to view detailed information for flows:

- To change the time range for this graph, select it from the drop-down list in the upper right corner.
- To view the detailed information for a specific period, drag the slider control to choose the time interval for which you need the information.
- Use the chart icons to view the traffic chart in varied views.
- You can also use the icons to Append, Predict, and Do not interpolate data.
- **Note** Set the **pmchart.doInterpolate** property in the **Server Properties** window to false to use the **Do not interpolate data** option.
- To print the vPC Utilization data, click the **Print** icon in the upper-right corner. The vPC Utilization page appears.
- To export the data into a spreadsheet, click the Export icon in the upper-right corner and click Save File.
- **Note** If the performance tables do not contain any data, see the Thresholds section to turn on performance data collection.

Alarms

The Alarms menu includes the following submenus:

Viewing Alarms and Events

You can view the alarms, cleared alarms, and events.

Procedure

- **Step 1** Choose **Monitor > Alarms > View**.
- **Step 2** Choose any of the following tabs.
 - Alarms: This tab displays the alarms that are generated for various categories. This tab displays information such as ID (optional), Severity, Failure Source, Name, Category, Acknowledged, Creation Time, Last Updated (optional), Policy, and Message. You can specify the **Refresh Interval** in this tab. You can select one or more alarms and then acknowledge or unacknowledge their status using the **Change Status** drop-down list. In addition, you can select one or more alarms and then click the **Delete** button to delete them.
 - Cleared Alarms: This tab displays the cleared alarms. This tab displays information such as ID (optional), Severity, Failure Source, Name, Category, Acknowledged, Creation Time, Cleared At (optional), Cleared By, Policy, and Message. You can select one or more alarms and then click the Delete button to delete them.
 - Events: This tab displays the events that are generated for the switches. This tab displays information such as Ack, Acknowledged user, Group, Switch, Severity, Facility, Type, Count, Last Seen, and Description. You can select one or more events and then acknowledge or unacknowledge their status using the Change Status drop-down list. In addition, you can select one or more alarms and then click the Delete button to delete them. If you want to delete all events, click the Delete All button.

Monitoring and Adding Alarm Policies



```
Note
```

 Alarm policies are stored in compute nodes. Therefore, run the appmgr backup command on each compute node in addition to taking a backup of DCNM.

You can forward alarms to registered SNMP listeners in DCNM. From Cisco DCNM web UI, choose Administration > DCNM Server > Server Properties, enter an external port address in alarm.trap.listener.address field, click Apply Changes, and restart DCNM services.



Note Ensure that you select Forwarding check box in Alarm Policy creation dialog window to enable forwarding alarms to external SNMP listener.

You can add alarm policies for the following:

- **Device Health**: Device health policies enable you to create alarms when Device ICMP Unreachable, Device SNMP Unreachable, or Device SSH Unreachable. Also, these policies enable you to monitor chassis temperature, CPU, and memory usage.
- Interface Health: Interface health policies enable you to monitor Up or Down, Packet Discard, Error, Bandwidth details of the interfaces. By default all interfaces are selected for monitoring.
- Syslog Alarm: Syslog Alarm Policy defines a pair of Syslog messages formats; one which raises the alarm, and one which clears the alarm.

Procedure

- **Step 1** Choose **Monitor** > **Alarms** > **Alarm Policies**.
- **Step 2** Select the **Enable Alarms** check box to enable alarm policies.
- **Step 3** From the **Add** drop-down list, choose any of the following:
 - Device Health Policy: Select the devices for which you want to create policies. Specify the policy name, description, CPU Utilization parameters, Memory Utilization parameters, Environment Temperature parameters, device availability, and device features. Under Device Features, you can select the BFD, BGP, and HSRP protocols. When these check boxes are selected, alarms are triggered for the following traps: BFD- ciscoBfdSessDown, ciscoBfdSessUp, BGP- bgpEstablishedNotification, bgpBackwardTransNotification, cbgpPeer2BackwardTransition (), cbgpPeer2EstablishedNotification, and HSRP- cHsrpStateChange. Please refer
 https://snmp.cloudapps.cisco.com/Support/SNMP/do/BrowseOID.do?local=en for detailed trap OID definition.
 - Interface Health Policy: Select the devices for which you want to create policies. Specify the policy name, description, link-state, Bandwidth (In/Out), Inbound errors, Outbound errors, Inbound Discards, and Outbound Discards.
 - Syslog Alarm Policy: Select the devices for which you want to create policies and then specify the following parameters.
 - Devices: Define the scope of this policy. Select individual devices or all devices to apply this policy.
 - Policy Name: Specify the name for this policy. It must be unique.
 - Description: Specify a brief description for this policy.
 - Severity: Define the severity level for this syslog alarm policy. Choices are: Critical, Major, Minor, and Warning.
 - Identifier: Specify the identifier portions of the raise & clear messages.
 - Raise Regex: Define the format of a syslog raise message. The syntax is as follows: Facility-Severity-Type: Message
 - Clear Regex: Define the format of a syslog clear message. The syntax is as follows: Facility-Severity-Type: Message

The Regex definitions are simple expressions but not a complete regex. Variable regions of text are noted using \$(LABEL) syntax. Each label represents a regex capture group (.+), which corresponds to one or more characters. The variable texts found in both raise and clear messages are used to associate the two messages. An Identifier is a sequence of one or more labels that appear in both messages. An Identifier is used to match a clear syslog message to the syslog message that raised the alarm. If the text appears only in one of the messages, it can be noted with a label and exclude it from the identifier.

Example: A policy with "Value": "ID1-ID2",

"syslogRaise": "SVC-5-DOWN: \$(ID1) module \$(ID2) is down \$(REASON)"

"syslogClear": "SVC-5-UP: \$(ID1) module \$(ID2) is up."

In the example, ID1 and ID2 labels can be marked as an identifier to find the alarm. This identifier will be found in corresponding syslog messages. Label "REASON" is in the raise but not in the clear message. This label can be excluded from the identifier, as it has no impact on the syslog message to clear the alarm.

Table 12: Example 1

Identifier	ID1-ID2
Raise Regex	ETHPORT-5-IF_ADMIN_UP: Interface Ethernet15/1 is admin up .
Clear Regex	ETHPORT-5-IF_DOWN_NONE: Interface Ethernet15/1 is down (Transceiver Absent)

In the above example, the regex expressions are part of the syslog messages that appear in the terminal monitor.

Table 13: Example 2

Identifier	ID1-ID2
Raise Regex	ETH_PORT_CHANNEL-5-PORT_DOWN: \$(ID1): \$(ID2) is down
Clear Regex	ETH_PORT_CHANNEL-5-PORT_UP: \$(ID1): \$(ID2) is up

Table 14: Example 3

Identifier	ID1-ID2
Raise Regex	ETHPORT-5-IF_SFP_WARNING: Interface \$(ID1), High Rx Power Warning
Clear Regex	ETHPORT-5-IF_SFP_WARNING: Interface \$(ID1), High Rx Power Warning cleared

Step 4 Click **OK** to add the policy.

Syslog Messages in Terminal Monitor and Console

The following examples show how the syslog messages appear in the terminal monitor and the console. The regex expression is matched with the part of the syslog messages after the % sign.

```
leaf-9516# terminal monitor
leaf-9516# conf t
leaf-9516(config)# int e15/1-32
leaf-9516(config-if-range)# no shut
2019 Aug 2 04:41:27 leaf-9516 %ETHPORT-5-IF_ADMIN_UP: Interface
Ethernet15/1 is admin up .
2019 Aug 2 04:41:27 leaf-9516 %ETHPORT-5-IF_DOWN_NONE: Interface
Ethernet15/1 is down (Transceiver Absent)
2019 Aug 2 04:41:27 leaf-9516 %ETHPORT-5-IF_ADMIN_UP: Interface
Ethernet15/2 is admin up .
2019 Aug 2 04:41:27 leaf-9516 %ETHPORT-5-IF_DOWN_NONE: Interface
Ethernet15/2 is down (Transceiver Absent)
```

2019 Aug 2 04:41:28 leaf-9516 $T-5-IF_ADMIN_UP: Interface Ethernet15/3 is admin up .$

The syslog messages in the console have a similar format as they would appear in the terminal monitor, except for the additional port information enclosed in the %\$ signs. However, the regex expression is matched with the part of the syslog messages after the last % sign.

```
SR-leaf1# 2019 Aug 26 23:55:45 SR-leaf1 %$ VDC-1 %$ %PLATFORM-1-
PFM ALERT: FAN BAD: fan6
2019 Aug 26 23:56:15 SR-leaf1 %$ VDC-1 %$ %PLATFORM-1-PFM ALERT:
FAN BAD: fan6
2019 Aug 26 23:56:18 SR-leaf1 %$ VDC-1 %$ %ASCII-CFG-2-CONF CONTROL:
System ready
2019 Aug 26 23:56:25 SR-leaf1 %$ VDC-1 %$ %PLATFORM-1-PFM ALERT:
FAN BAD: fan6
2019 Aug 26 23:56:35 SR-leaf1 %$ VDC-1 %$ %PLATFORM-1-PFM ALERT:
FAN BAD: fan6
2019 Aug 26 23:56:39 SR-leaf1 %$ VDC-1 %$ %VMAN-2-ACTIVATION STATE:
Successfully activated virtual service 'guestshell+'
2019 Aug 26 23:56:39 SR-leaf1 %$ VDC-1 %$ %VMAN-2-GUESTSHELL ENABLED:
The guest shell has been enabled. The command 'guestshell' may be used
to access it, 'guestshell destroy' to remove it.
2019 Aug 26 23:56:45 SR-leaf1 %$ VDC-1 %$ %PLATFORM-2-FAN REMOVED: Fan
module 5 (Serial number ) Fan5(sys fan5) removed
2019 Aug 26 23:56:45 SR-leaf1 %$ VDC-1 %$ %PLATFORM-1-PFM ALERT:
System will shutdown in 2 minutes 0 seconds due to fan policy
 pfm fanabsent any singlefan.
2019 Aug 26 23:56:45 SR-leaf1 %$ VDC-1 %$ %PLATFORM-1-PFM ALERT:
FAN BAD: fan6
2019 Aug 26 23:56:54 SR-leaf1 %$ VDC-1 %$ %PLATFORM-1-PFM ALERT:
System will shutdown in 1 minutes 40 seconds due to fan policy
 pfm fanabsent any singlefan.
2019 Aug 26 23:56:54 SR-leaf1 %$ VDC-1 %$ %PLATFORM-1-PFM_ALERT:
FAN BAD: fan6
2019 Aug 26 23:57:03 SR-leaf1 %$ VDC-1 %$ %PLATFORM-2-FANMOD FAN OK:
Fan module 5 (Fan5(sys fan5) fan) ok
2019 Aug 26 23:57:03 SR-leaf1 %$ VDC-1 %$ %PLATFORM-1-PFM ALERT:
FAN BAD: fan6
```

Activating Policies

After you create new alarm policies, activate them.

Procedure

Step 1	Choose Monitor > Alarms > Policies.
Step 2	Select the policies that you want to activate and then click the Activate button.

Deactivating Policies

You can deactivate the active alarm policies.

Procedure

Step 1 Choose Monitor > Alarms > Policies.

Step 2 Select the policies that you want to deactivate and then click the **Deactivate** button.

Importing Policies

You can create alarm policies using the import functionality.

Procedure

Step 1	Choose Monitor > Alarms > Policies and then click the Import button
Step 2	Browse and select the policy file saved on your computer.
	You can only import policies in text format.

Exporting Policies

You can export the alarm policies into a text file.

Procedure

Step 1	From the menu bar, choose Monitor > Alarms > Policies .
Step 2	Click the Export button and then select a location on your computer to store the exported file.

Editing Policies

Procedure

Step 1	From the menu bar, choose Monitor > Alarms > Policies .
Step 2	Select the policy that you want to edit.
Step 3	Click the Edit button and then make necessary changes.
Step 4	Click the OK button.

Deleting Policies

Procedure

Step 1	From the menu bar, choose Monitor > Alarms > Policies .
Step 2	Select the policy that you want to delete.

Step 3 Click the **Delete** button. The policy is deleted.

Enabling External Alarms

You can enable external alarms using one of the following methods:

- Using Cisco DCNM Web UI
- 1. From Cisco DCNM Web UI, choose Administration > DCNM Server > Server Properties.
- 2. Locate the alarm.enable.external property.
- 3. Enter the value in the field as true.
- Using REST APIs
- 1. Go the API documentation URL from your DCNM setup: https://<DCNM-ip>/api-docs
- 2. Navigate to the Alarms section.
- 3. Click POST > rest/alarms/enabledisableextalarm.
- 4. Choose the body parameter value as true from the Value drop-down list.
- 5. Click **Try it out!**.
- Using CLI
- **1.** Log into the DCNM server using SSH.
- 2. Set the alarm.enable.external property to true in the server.properties file.

The filepath is /usr/local/cisco/dcm/fm/config/server.properties.

Configuration Compliance Alarms

Starting from Cisco DCNM Release 11.3(1), the alarm policies and alarms under the External category are created by the applications running on DCNM. These External alarm policies are created by the applications and cannot be created or added via the DCNM Web UI.

Config-Compliance(CC) is a core application running on DCNM. CC registers and creates Alarms under the External Alarm category.

Config-Compliance : Alarm Policy

This External alarm category policy is activated on creation of the fabric and is enabled on all the devices in that fabric. The severity level of the policy is CRITICAL. If any device in the fabric moves from In-Sync to Out-of-Sync and the **Enable Alarms** checkbox is selected, a critical severity alarm is generated.

Choose **Monitor>Alarms>Policies** to display the default alarm policies. This alarm policy is not editable on the web UI. Click **Activate** or **Deactivate** to activate or deactivate the selected policy.

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	Dashboard		•	Monitor / Alarms / F	Policies									
				Enable Alarms										
*	Topology		Pol	cies							Selected	0 / Total	2 Ø	\$ v
				Add 🔻 Edit D	elete Activate Deacti	Quick Filter		•						
٩	Control	٥	C	Name	Description	Status	Policy Type	Devices	Interfaces 🔺	Details				
~	Marchen	•												
	WORITO	•		Config-Compliance:	Device level Config-Complia	Active	External	All Devices		Alarm created when device status is Out-of-Sync, cle	ared when dev	ce status	is	
				Config-Compliance:	Device level Config-Complia	Active	External	All Devices		Alarm created when device status is Out-of-Sync, cle	ared when dev	ce status	is	
L 🔶	Administration	•												
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In case an alarm policy is deactivated using the DCNM Web UI, any alarms created or cleared for that policy will not be displayed in the **Monitor>Alarms>View** tab. To delete a policy, select the checkbox next to the policy and click **Delete**. However, we recommend not deleting a policy from the DCNM Web UI. If a policy is deleted, CC regenerates the policy on the next periodic run or when a Re-sync is triggered at the device level or fabric level under that fabric.

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Click the arrow icon next to Critical to display detailed information about the alarm.

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An Out-of-Sync status indicates that there is a difference between the intent defined for the device on DCNM and the running configuration on the device. An In-Sync status indicates that the intent defined for the device

When a fabric is deleted, the alarm policy along with all the active alarms for the devices in that fabric are deleted.

more details on computation of diff, refer *Configuration Compliance in DCNM*.

Config-Compliance : Active Alarms

Consider a scenario in which CC is running on a fabric and a device in that fabric moves to Out-of-Sync status. This leads to the generation of a Critical severity alarm. Choose **Monitor->Alarms->View** to display the alarms. These alarms are active until the device moves from Out-of-Sync to In-Sync.

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				+	Critical	172.28.194.32	n9k-z17-32	EXTERNAL		11 Nov 2019 07 : 23 : 30 AM	Config-Co	172.28.194.32(n9k-z17-32): Ou	t-of-Sync			

To clear active alarms, select the checkbox next to the alarm, click **Change Status** and select **Clear**. In case the same device moves to Out-of-Sync status again, the active alarm is re-created.

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To delete active alarms, select the checkbox next to the alarm and click **Delete**. In case the same device moves to Out-of-Sync status again, a new active alarm is created.

Config-Compliance : Cleared Alarms

When the device that is in Out-of-Sync status moves to In-Sync status, the active alarm is cleared. To view the cleared alarms, select **Monitor>Alarms>View>Cleared Alarms**. The cleared alarms do not contribute to the overall device health score.

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To delete a cleared alarm from the list of cleared alarms, choose **Monitor>Alarms>View>Cleared Alarms**, select the checkbox next to the alarm, and click **Delete**. This will delete the selected cleared alarms from the list.

Alarms are cleared when a switch moves from Out-of-Sync to In-Sync. Configuration compliance alarms also contribute to the overall Health score of a device.

For more information on Alarms and Policies, refer Alarms.

Endpoint Locator Alarms

Starting from Cisco DCNM Release 11.4(1), alarms are registered and created under the External alarm category by the Endpoint Locator (EPL).

Endpoint Locator: Alarm Policy

The EPL external alarm category policy is activated when EPL is enabled on a fabric. Alarms are raised for issues such as Duplicate IP addresses, Duplicate MAC addresses, Endpoints appearing on a VRF and Endpoints disappearing from a VRF, Endpoints moving within a fabric, loss of Route Reflector connectivity, and restoration of Route Reflector connectivity. Depending on the issue, the severity level of the alarm policy can be CRITICAL or MINOR.

Alarms are raised and categorized as CRITICAL for the following events:

- Route Reflector disconnection
- · Detection of a duplicate IP address
- · Detection of a duplicate MAC address

Alarms are raised and categorized as MINOR for the following events:

- Movement of an endpoint
- Appearance of a new VRF in a fabric
- Number of endpoints in a fabric goes down to 0
- Number of endpoints in a VRF goes down to 0
- Disappearance of all endpoints from a switch

• Connection of a Route Reflector (RR)

CRITICAL alarms are cleared automatically when the condition is corrected. For example, when the connectivity between DCNM and RR is lost, a CRITICAL alarm is generated. This alarm is automatically cleared when the connectivity between DCNM and RR is restored. Other MINOR alarms are automatically cleared after 30 minutes have passed since the alarm was generated.

Choose **Monitor>Alarms>Policies** to display the EPL alarm policies. These alarm policies are not editable on the web UI. Click **Activate** or **Deactivate** to activate or deactivate the selected policy.

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	Health-Monitor: Minor	Minor Health Monitor alarms	Active	External	All Devices		Minor alarms a	auto generated by Health N	Ionitor			

In case an alarm policy is deactivated using the DCNM Web UI, any alarms created or cleared for that policy will not be displayed in the **Monitor>Alarms>View** tab. To delete a policy, select the checkbox next to the policy and click **Delete**. However, we recommend not deleting a policy from the DCNM Web UI. When a fabric is deleted, the alarm policy along with all the active alarms for the devices in that fabric are deleted.

Endpoint Locator: Active Alarms

Choose Monitor>Alarms>View to display the active alarms.

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To clear active alarms, select the checkbox next to the alarm, click Change Status and select Clear.

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To delete active alarms, select the checkbox next to the alarm and click Delete.

Endpoint Locator: Cleared Alarms

To view the cleared alarms, select Monitor>Alarms>View>Cleared Alarms.

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Click the arrow icon **b** to display detailed information about the required alarm.

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To delete a cleared alarm from the list of cleared alarms, select the checkbox next to the alarm and click **Delete**.

For more information on Alarms and Policies, refer Alarms.

Health Monitor Alarms

Starting from Cisco DCNM Release 11.4(1), alarms are registered and created under the External alarm category by the Health Monitor.

Health Monitor: Alarm Policy

The Health Monitor external alarm category policy is automatically activated and enabled on all the devices in a fabric. The severity level of this alarm policy can be MINOR, MAJOR, or CRITICAL.

Alarms are raised and categorized as CRITICAL for the following events:

- Elasticsearch (ES) Cluster Status is Red: Critical (For Cluster/HA mode only)
- CPU/Memory/Disk Utilization/ES JVM Heap Used Percentage >= 90%

Alarms are raised and categorized as MAJOR for the following events:

- ES Cluster Status is Yellow (For Cluster/HA mode only)
- ES has unassigned shards (For Cluster/HA mode only)
- CPU/Memory/Disk Utilization/ES JVM Heap Used Percentage >= 80% and <90%

Alarms are raised and categorized as MINOR for the following events:

- CPU/Memory/Disk Utilization/ES JVM Heap Used Percentage >= 65% and <80%
- Kafka: Number of partitions without active leader > 0
- Kafka: Qualified partition leader not found. Unclear leaders > 0

Choose **Monitor>Alarms>Policies** to display the Health Monitor alarm policies. These alarm policies are not editable on the web UI. Click **Activate** or **Deactivate** to activate or deactivate the selected policy.

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	EPL: Terry-FX2: CRITICAL	CRITICAL EPL alarms	Active	External	All Devices		CRITICAL alarms auto generated by EPL				
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Health-Monitor: Minor		Minor Health Monitor alarms	Active	External	All Devices		Minor alarms auto generated by Health Mor				

In case an alarm policy is deactivated using the GUI, any alarms created or cleared for that policy will not be displayed in the **Monitor>Alarms>View** tab. To delete a policy, select the checkbox next to the policy and click **Delete**. However, we recommend not deleting a policy from the GUI. When a fabric is deleted, the alarm policy along with all the active alarms for the devices in that fabric are deleted.

Health Monitor: Active Alarms

Choose Monitor>Alarms>View to display the active alarms.

To clear active alarms, select the checkbox next to the alarm, click Change Status and select Clear.

To delete active alarms, select the checkbox next to the alarm and click Delete.

Health Monitor: Cleared Alarms

To view the cleared alarms, select Monitor>Alarms>View>Cleared Alarms.

Click the arrow icon **b** to display detailed information about the required alarm.

To delete a cleared alarm from the list of cleared alarms, select the checkbox next to the alarm and click **Delete**.

For more information on Alarms and Policies, refer Alarms.