



## CHAPTER 4

# Managing VDCs

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## Information About Managing VDCs

After you create a VDC, you can change the interface allocation, VDC resource limits, and the single-supervisor and dual-supervisor high availability (HA) policies. You can also save the running configuration of all VDCs on the physical device to the startup configuration.

This section includes the following topics:

- [Interface Allocation, page 4-2](#)
- [VDC Resource Limits, page 4-3](#)
- [HA Policies, page 4-3](#)

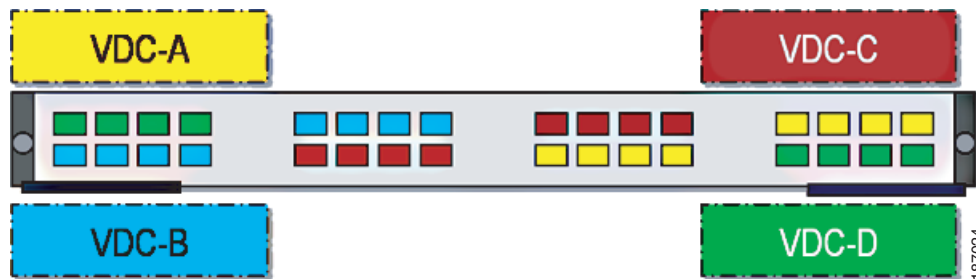
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## Interface Allocation

When you create a VDC, you can allocate I/O interfaces to the VDC. Later, the deployment of your physical device might change and you can reallocate the interfaces as necessary.

You can allocate the interfaces on your physical device in any combination, except for the interfaces on the Cisco Nexus 7000 Series 32-port 10-Gbps Ethernet module (N7K-M132XP-12). This module has eight port groups that consist of four interfaces each. You must you assign all four interfaces in a port group to the same VDC (see [Figure 4-1](#)).

**Figure 4-1** Example Interface Allocation for Port Groups on a Cisco 7000 Series 10-Gbps Ethernet Module



[Table 4-1](#) shows the port numbering for the port groups.

**Table 4-1** Port Numbers for Port Groups on the Cisco Nexus 7000 Series 32-port 10-Gbps Ethernet Module

Port Group	Port Numbers
Group 1	1, 3, 5, 7
Group 2	2, 4, 6, 8
Group 3	9, 11, 13, 15
Group 4	10, 12, 14, 16
Group 5	17, 19, 21, 23
Group 6	18, 20, 22, 24
Group 7	25, 27, 29, 31
Group 8	26, 28, 30, 32

For more information on port groups on the Cisco Nexus 7000 Series 32-port 10-Gbps Ethernet module, see the *Cisco Nexus 7000 Series Hardware Installation and Reference Guide*.



### Note

When you add or delete interfaces, the NX-OS software removes the configuration and disables the interfaces.

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## VDC Resource Limits

You can change the resource limits for your VDC individually as your needs change. You can change the following limits for the following resources:

- IPv4 route memory
- IPv6 route memory
- Port channels
- Switched Port Analyzer (SPAN) monitor sessions
- VLANs
- Virtual routing and forwarding instances (VRFs)

## HA Policies

The HA policy determines the action that the physical device takes when the VDC encounters an unrecoverable field. You can change the HA policy for the VDC that was specified when you created the VDC.



**Note**

You cannot change the HA policies for the default VDC.

## Licensing Requirements for Managing VDCs

The following table shows the licensing requirements for this feature:

Product	License Requirement
DCNM	Managing nondefault VDCs requires an Advanced Services license. Managing the default VDC requires no license. For a complete explanation of the DCNM licensing scheme, see the <i>Cisco DCNM Fundamentals Configuration Guide, Release 4.1</i> .
NX-OS	Managing nondefault VDCs requires an Advanced Services license. Managing the default VDC requires no license. For a complete explanation of the NX-OS licensing scheme and how to obtain and apply licenses, see the <i>Cisco Nexus 7000 Series NX-OS Licensing Guide, Release 4.1</i> .
<b>Note</b>	The DCNM and NX-OS software allow a grace period of 120 days to use VDCs without an Advanced Services license. If the grace period expires before you obtain a license, all nondefault VDC configuration is removed from the physical device.

## Prerequisites for Managing VDCs

VDC management has the following prerequisites:

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

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## Guidelines and Limitations

VDC management has the following guidelines and limitations:

- Only users with the network-admin user role can manage VDCs.
- You can only change VDCs from the default VDC.

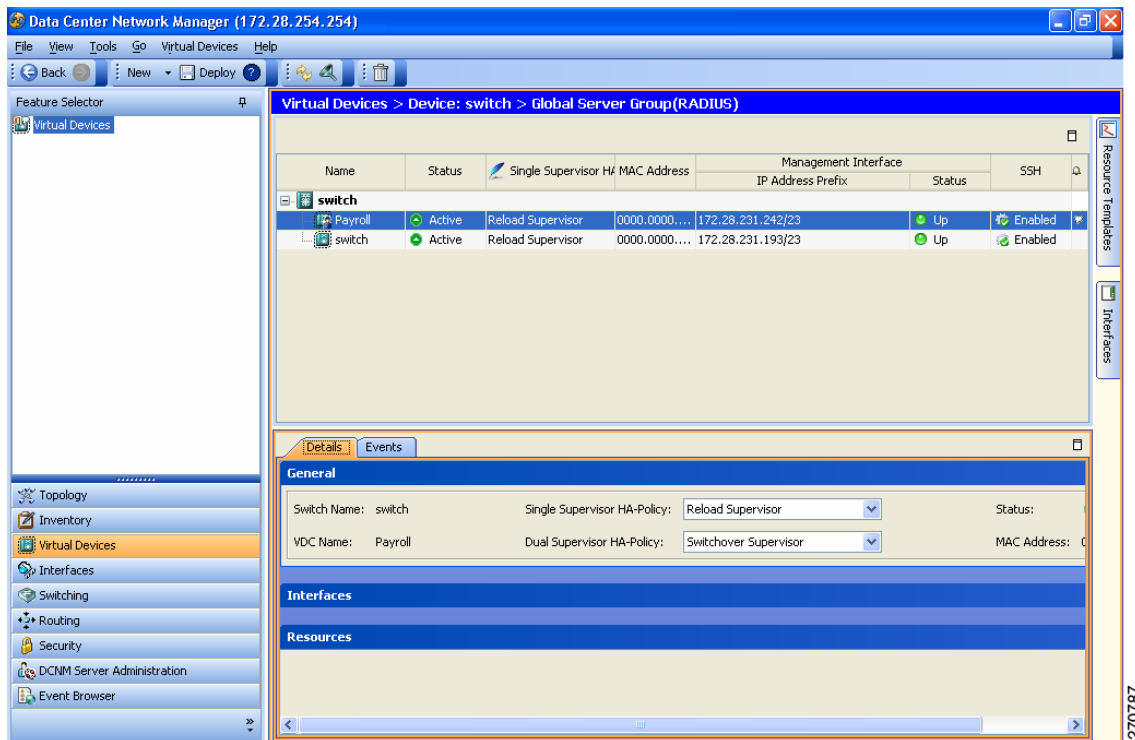
## Managing VDCs

This section includes the following topics:

- [Allocating Interfaces to a VDC, page 4-4](#)
- [Changing VDC Resource Limits, page 4-6](#)
- [Changing the HA Policies, page 4-6](#)
- [Discovering VDCs, page 4-7](#)
- [Deleting a VDC, page 4-8](#)

Figure 4-2 shows the Virtual Devices pane.

**Figure 4-2** Virtual Devices Pane



## Allocating Interfaces to a VDC

You can allocate one or more interfaces to a VDC. When you allocate an interface, you move it from one VDC to another VDC. The interfaces are in the down state after you move them.

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### Note

When you allocate an interface, all configuration on the interface is lost.

### BEFORE YOU BEGIN

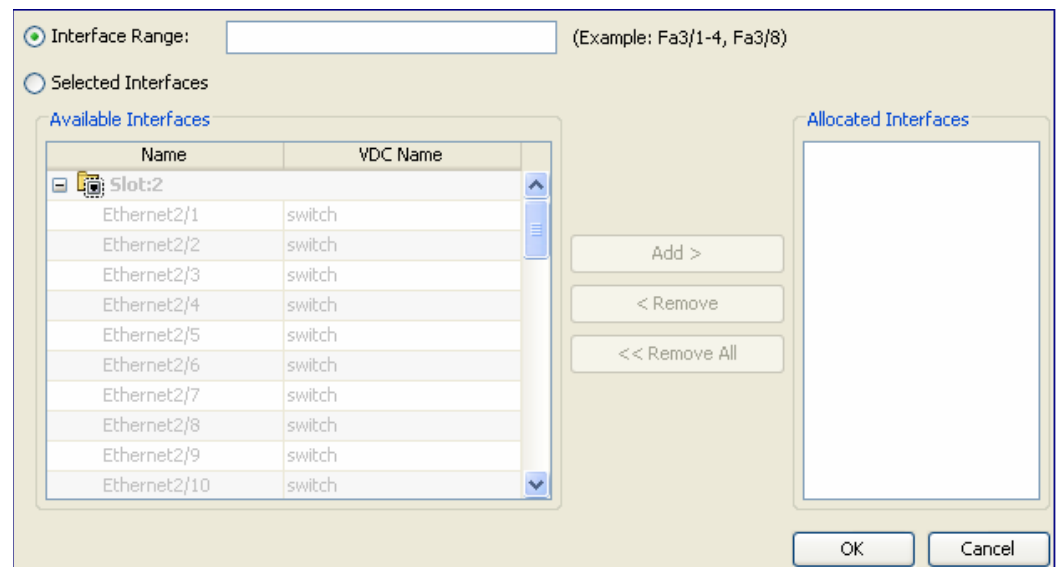
Ensure that you have discovered the physical device using a username that has the network-admin role.

### DETAILED STEPS

To allocate interfaces to a VDC, follow these steps:

- Step 1** From the Feature Selector pane, choose **Virtual Devices**.
- Step 2** From the Summary pane, double-click the device to display the list of VDCs.
- Step 3** Click the VDC to change.  
The Details tab appears in the Details pane.
- Step 4** From the Details pane, click **Interfaces**.
- Step 5** Right-click in the Interfaces area and choose **Add Interface** from the pop-up menu.  
A new row appears.
- Step 6** From the cell under Interface Name in the new row, click the down arrow to display the interfaces dialog box (see [Figure 4-3](#)).

**Figure 4-3** Interfaces Dialog Box



- Step 7** From the dialog box, you can enter the range of interfaces or select specific interfaces to allocate.
- Step 8** Click **OK**.
- Step 9** From the menu bar, choose **File > Deploy** to apply your changes to the device.

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- Step 10** (Optional) To change the configuration of an interface in the VDC, click the interface, then right-click, and choose **Manage** in the pop-up menu.
- 

## Changing VDC Resource Limits

You can change the limits on the VDC resources. Changes to the limits take effect immediately except for the IPv4 and IPv6 routing table memory limits, which take effect after the next VDC reset, physical device reload, or physical device stateful switchover.



### Note

You can have a maximum of two SPAN monitoring sessions on your physical device.

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### BEFORE YOU BEGIN

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

### DETAILED STEPS

To change a VDC resource limit, follow these steps:

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- Step 1** From the Feature Selector pane, choose **Virtual Devices**.
- Step 2** From the Summary pane, double-click the device to display the list of VDCs.
- Step 3** Click the VDC to change.  
The Details tab appears in the Details pane.
- Step 4** From the Details pane, click **Resources**.
- Step 5** Double-click the limit to change and enter the new value.
- Step 6** From the menu bar, choose **File > Deploy** to apply your changes to the device.
- 

## Changing the HA Policies

You can change the HA policies for a VDC. The VDC HA policies are as follows:

- Dual supervisor modules:
  - Bringdown—Puts the VDC in the failed state. To recover from the failed state, you must reload the physical device.
  - Restart—Restarts the VDC. This process includes shutting down all the interfaces within that VDC and stopping all the virtualized services processes. The NX-OS software restarts all the virtualized services saved in the startup configuration and brings the interfaces back up with the configuration saved in the startup configuration. Any configuration that you did not save in the startup configuration prior to the restart is lost.
  - Switchover—Initiates a supervisor module switchover.
- Single supervisor modules:

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- 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.


**Caution**

With the reload action, any configuration that you did not save in the startup configuration prior to the reload is lost.


**Note**

The reload action affects all interfaces and all VDCs on the physical device.

- Restart—Restarts the VDC. This process includes shutting down all the interfaces within that VDC and stopping all the virtualized services processes. The NX-OS software restarts all the virtualized services saved in the startup configuration and brings the interfaces back up with the configuration saved in the startup configuration. Any configuration that you did not save in the startup configuration prior to the restart is lost.


**Caution**

With the reload action, any configuration that you did not save in the startup configuration prior to the reload is lost.


**Note**

You cannot change the HA policies for the default VDC.

### BEFORE YOU BEGIN

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

### DETAILED STEPS

To change the HA policy for a VDC, follow these steps:

- Step 1** From the Feature Selector pane, choose **Virtual Devices**.
- Step 2** From the Summary pane, double-click the device to display the list of VDCs.
- Step 3** Click the VDC to change.  
The Details tab appears in the Details pane.
- Step 4** From the Single Supervisor HA-Policy field, click the down arrow and choose an HA policy from the drop-down list.
- Step 5** From the Dual Supervisor HA-Policy field, click the down arrow and choose an HA policy from the drop-down list.
- Step 6** From the menu bar, choose **File > Deploy** to apply your changes to the device.

## Discovering VDCs

You can discover a nondefault VDC with user credentials that are different from the default VDC.

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## BEFORE YOU BEGIN

Ensure that you have set the correct logging severity levels in the VDC using the NX-OS device command-line interface (CLI) (see the *Cisco DCNM Fundamentals Configuration Guide, Release 4.1*).

## DETAILED STEPS

To discover a VDC, follow these steps:

- 
- Step 1** From the Feature Selector pane, choose **DCNM Server Administration > Devices and Credentials**.
  - Step 2** From the menu bar, choose **Devices and Credentials > New Device**.  
A new line appears in the Devices list.
  - Step 3** Click the cell under IP Address in the new line and enter the IP address of the VDC to discover.
  - Step 4** Double click the cell under User Credentials in the new line and click the down arrow to display the user credentials dialog. Enter the user credentials information and click **OK**.
  - Step 5** From the menu bar, choose **Devices and Credentials > Discover**.
- 

## Deleting a VDC

When you delete a VDC, the NX-OS software removes the configuration for all interfaces allocated to the VDC and returns the interfaces to the default VDC. Deleting a VDC stops all virtualized services and removes any configuration within that VDC.



### Note

You cannot delete the default VDC (VDC 1).



### Caution

Deleting a VDC disrupts all traffic on the VDC.

## BEFORE YOU BEGIN

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

## DETAILED STEPS

To delete a VDC, follow these steps:

- 
- Step 1** From the Feature Selector pane, choose **Virtual Devices**.
  - Step 2** From the Summary pane, double-click the device to display the list of VDCs.
  - Step 3** Click the VDC to delete.
  - Step 4** From the menu bar, choose **Virtual Devices > Delete VDC**.  
The VDC disappears from the list in the Summary pane.

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**Step 5** From the menu bar, choose **File > Deploy** to apply your changes to the device.

## Field Descriptions for VDC Management

This section includes the following topics:

- [Field Description: Virtual Devices: Summary Pane, page 4-9](#)
- [Field Description: Virtual Devices: virtual device: Details Tab: General Section, page 4-9](#)
- [Field Description: Virtual Devices: virtual device: Details Tab: Interfaces Section, page 4-10](#)
- [Field Description: Virtual Devices: virtual device: Details Tab: Resources Section, page 4-10](#)

### Field Description: Virtual Devices: Summary Pane

**Table 4-2** *Field Description: Virtual Devices: Summary Pane*

Element	Description
Name	Name of the physical or VDC device.
Status	Status of the VDC.
Single Supervisor HA Policy	Single supervisor HA policy for the virtual device.
MAC Address	MAC address for the virtual device.
Management Interface IP Address Prefix	IP address and prefix for the VDC management interface.
Management Interface Status	Status of the VDC management interface.
SSH	SSH status.

### Field Description: Virtual Devices: virtual device: Details Tab: General Section

**Table 4-3** *Field Description: Virtual Devices: virtual device: Details Tab: General Section*

Element	Description
Switch Name	Name of the physical device.
VDC Name	Name of the virtual device.
Single Supervisor HA Policy	Single supervisor HA policy for the virtual device.
Dual Supervisor HA Policy	Dual supervisor HA policy for the virtual device.
Status	Status of the virtual device.
MAC Address	MAC address for the virtual device.

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## Field Description: Virtual Devices: virtual device: Details Tab: Interfaces Section

**Table 4-4** *Field Description: Virtual Devices: virtual device: Details Tab: Interfaces Section*

Element	Description
Interface Name	Name of the Ethernet interfaces allocated to the virtual device.
Mode	Mode for the interface.
Admin Status	Administrative status for the interface.
Operational Status	Operational status for the interface.
Description	Description for the interface.

## Field Description: Virtual Devices: virtual device: Details Tab: Resources Section

**Table 4-5** *Field Description: Virtual Devices: virtual device: Details Tab: Resource Section*

Element	Description
Name	Name of the resource.
Allocation	
Minimum	Minimum guarantee limit for a resource.
Maximum	Maximum limit for a resource on an as-available basis.
Current Usage	
Used	Amount of a resource currently in use.
Free	Amount of the resource currently not used.
Used Percent	Percent of the total resource for the virtual device.

## Additional References

For additional information related to VDCs, see the following sections:

- [Related Documents, page 4-10](#)

## Related Documents

Related Topic	Document Title
DCNM Licensing	<i>Cisco Nexus 7000 Series NX-OS Licensing Guide, Release 4.1</i>
NX-OS Licensing	<i>Cisco DCNM Fundamentals Configuration Guide, Release 4.1</i>

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Related Topic	Document Title
Cisco Nexus 7000 Series 32-port 10-Gbps Ethernet module	<i>Cisco Nexus 7000 Series Hardware Installation and Reference Guide</i>
Command reference	<i>Cisco Nexus 7000 Series NX-OS Virtual Device Context Command Reference, Release 4.1</i>

## Feature History for Managing VDCs

Table 4-6 lists the release history for this feature.

**Table 4-6** Feature History for VDC Resource Templates

Feature Name	Releases	Feature Information
IPv4 unicast route memory resource	4.0(2)	Changed the default maximum value from 256 to 320.
IPv6 unicast route memory resource	4.0(2)	Changed the default maximum value from 256 to 192.

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