



## CHAPTER 4

# Managing VDCs

---

This chapter describes how to manage virtual device contexts (VDCs) on Cisco NX-OS devices.

This chapter includes the following sections:

- [Information About Managing VDCs, page 4-1](#)
- [Licensing Requirements for Managing VDCs, page 4-6](#)
- [Prerequisites for Managing VDCs, page 4-7](#)
- [Guidelines and Limitations for Managing VDCs, page 4-7](#)
- [Managing VDCs, page 4-7](#)
- [Verifying the VDC Configuration, page 4-22](#)
- [Configuration Examples for VDC Management, page 4-22](#)
- [Additional References, page 4-23](#)
- [Feature History for Managing VDCs, page 4-23](#)

## 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 4-4](#)
- [HA Policies, page 4-5](#)
- [Saving All VDC Configurations to the Startup Configuration, page 4-5](#)
- [Suspending and Resuming VDCs, page 4-5](#)
- [VDC Reload, page 4-5](#)
- [MAC Addresses, page 4-6](#)
- [VDC Boot Order, page 4-6](#)

**Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).**

## Interface Allocation



### Note

See the *Cisco NX-OS FCoE Configuration Guide for Cisco Nexus 7000 and Cisco MDS 9500* for information on allocating interfaces for storage VDCs and FCoE.

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.



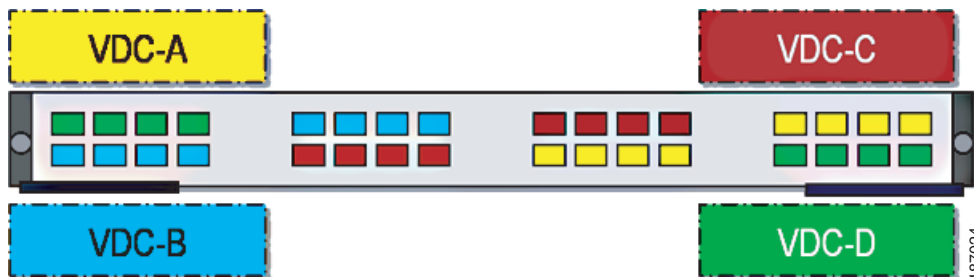
### Note

Beginning with Cisco Release 5.2(1) for Nexus 7000 Series devices, all members of a port group are automatically allocated to the VDC when you allocate an interface.

The following Cisco Nexus 7000 Series Ethernet modules have the following number of port groups and interfaces:

- N7K-M108X2-12L (1 interface x 8 port groups = 8 interfaces)—There are no restrictions on the interface allocation between VDCs.
- N7K-M132XP-12 (4 interfaces x 8 port groups = 32 interfaces)—Interfaces belonging to the same port group must belong to the same VDC. See the example for this module in [Figure 4-1](#).
- N7K-M148GS-11L, N7K-M148GT-11, and N7K-M148GS-11 (12 interfaces x 4 port groups = 48 interfaces)—There are no restrictions on the interface allocation between VDCs, but we recommend that interfaces that belong to the same port group be in a single VDC.

**Figure 4-1 Example Interface Allocation for Port Groups on the Cisco Nexus 7000 Series 10-Gbps Ethernet Module N7K-M132XP-12**



[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 10-Gbps Ethernet Module N7K-M132XP-12**

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

**Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).**

**Table 4-1** Port Numbers for Port Groups on the Cisco Nexus 7000 Series 10-Gbps Ethernet Module N7K-M132XP-12 (continued)

Port Group	Port Numbers
Group 7	25, 27, 29, 31
Group 8	26, 28, 30, 32

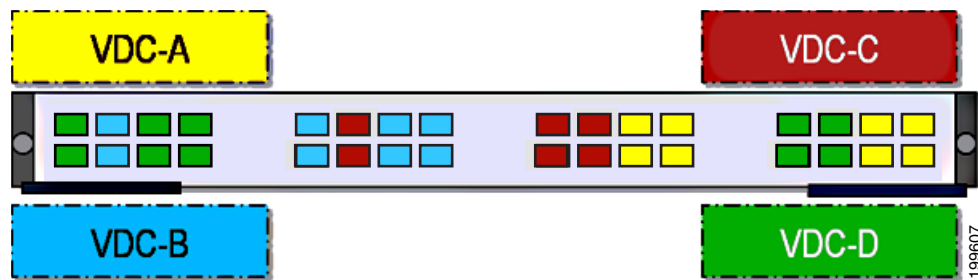
On the Cisco Nexus 7000 Series 32-port, 10-Gbps Ethernet module N7K-F132XP-15, you must allocate the interfaces on your physical device in the specified combination. This module has 16 port groups that consist of 2 ports each (2 interfaces x 16 port groups = 32 interfaces). Interfaces belonging to the same port group must belong to the same VDC (see [Figure 4-2](#)).



**Note**

You can configure the **limit-resource linecard-type** command only from the VDC configuration mode and not from a VDC resource template.

**Figure 4-2** Example Interface Allocation for Port Groups on the Cisco Nexus 7000 Series 10-Gbps Ethernet Module N7K-F132XP-15



[Table 4-2](#) shows the port numbering for the port groups.

**Table 4-2** Port Numbers for Port Groups on the Cisco Nexus 7000 Series 10-Gbps Ethernet Module N7K-F132XP-15

Port Group	Port Numbers
Group 1	1 and 2
Group 2	3 and 4
Group 3	5 and 6
Group 4	7 and 8
Group 5	9 and 10
Group 6	11 and 12
Group 7	13 and 14
Group 8	15 and 16
Group 9	17 and 18
Group 10	19 and 20
Group 11	21 and 22
Group 12	23 and 24

**Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).**

**Table 4-2 Port Numbers for Port Groups on the Cisco Nexus 7000 Series 10-Gbps Ethernet Module N7K-F132XP-15 (continued)**

Port Group	Port Numbers
Group 13	25 and 26
Group 14	27 and 28
Group 15	29 and 30
Group 16	31 and 32

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



#### Note

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

When interfaces in different VDCs share the same port ASIC, reloading the VDC (with the **reload vdc** command) or provisioning interfaces to the VDC (with the **allocate interface** command) might cause short traffic disruptions (of 1 to 2 seconds) for these interfaces. If such behavior is undesirable, make sure to allocate all interfaces on the same port ASIC to the same VDC.

To see how the interfaces are mapping to the port ASIC, use this command:

**slot slot\_number show hardware internal dev-port-map**

```

+-----+
+-----+++FRONT PANEL PORT TO ASIC INSTANCE MAP+++-----+
+-----+
FP port|PHYS |SECUR |MAC_0 |RWR_0 |L2LKP |L3LKP |QUEUE |SWICHF
1      0      0      0      0      0      0      0      0
2      0      0      0      0      0      0      0      0
3      0      0      0      0      0      0      0      0
4      0      0      0      0      0      0      0      0
5      0      1      0      0      0      0      0      0
6      0      1      0      0      0      0      0      0
7      0      1      0      0      0      0      0      0
8      0      1      0      0      0      0      0      0
9      1      2      0      0      0      0      0      0
10     1      2      0      0      0      0      0      0
11     1      2      0      0      0      0      0      0
12     1      2      0      0      0      0      0      0
13     1      3      1      0      0      0      0      0
14     1      3      1      0      0      0      0      0
15     1      3      1      0      0      0      0      0
16     1      3      1      0      0      0      0      0
17     2      4      1      0      0      0      0      0

```

The interface number is listed in the FP port column, and the port ASIC number is listed in the MAC\_0 column, which means that in the above example, interfaces 1 through 12 share the same port ASIC (0).

## VDC Resource Limits

You can change the resource limits for your VDC individually or by applying a VDC resource template as your needs change. You can change the following limits for the following resources:

- IPv4 multicast route memory

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

- IPv6 multicast route memory
- IPv4 unicast route memory
- IPv6 unicast 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.

## Saving All VDC Configurations to the Startup Configuration

From the VDC, a user with the vdc-admin or network-admin role can save the VDC configuration to the startup configuration. However, you might want to save the configuration of all VDCs to the startup configuration from the default VDC.

## Suspending and Resuming VDCs

Users with the network-admin role can suspend and resume a nondefault VDC. You must save the VDC running configuration to the startup configuration before suspending the VDC. Otherwise, you will lose the changes to the running configuration when you resume the VDC. You cannot remove interfaces allocated to a suspended VDC. All other resources in use by the VDC are released while the VDC is suspended.

**Note**

You cannot perform an in-service software upgrade (ISSU) when a VDC is suspended.

**Note**

You cannot suspend the default VDC.

**Caution**

Suspending a VDC disrupts all traffic on the VDC.

## VDC Reload

You can load an active nondefault VDC that is in any state. The impact of reloading a nondefault VDC is similar to reloading a physical device. The VDC reloads using the startup configuration.

**Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).**



**Note**

You cannot reload the default VDC.



**Caution**

Reloading a VDC disrupts all traffic on the VDC.

## MAC Addresses

The default VDC has a management MAC address. Beginning with Cisco Release 5.2(1) for the Cisco Nexus 7000 Series devices, subsequent nondefault VDCs that you create are assigned MAC addresses automatically as part of the bootstrap process.

You will see a syslog message if there are not sufficient MAC addresses to supply all the VDCs on the device.

## VDC Boot Order

You can specify the boot order for the VDCs on the Cisco NX-OS device. By default, all VDCs start in parallel with no guarantee as to which VDC completes starting first. Using the boot order value, the Cisco NX-OS software starts the VDCs in a predictable sequence. The boot order feature has the following characteristics:

- More than VDC can have the same boot order value. By default, all VDCs have the boot order value of 1.
- VDCs with the lowest boot order value boot first.
- The Cisco NX-OS software starts all VDCs with the same boot order value followed by the VDCs with the next boot order value.
- The Cisco NX-OS software starts VDCs that have the same boot order value in parallel.
- You cannot change the boot order for the default VDC; you can change the boot order only for nondefault VDCs.

## Licensing Requirements for Managing VDCs

The following table shows the licensing requirements for this feature:

Product	License Requirement
Cisco NX-OS	Managing nondefault VDCs requires an Advanced Services license. Managing the default VDC requires no license. For a complete explanation of the Cisco NX-OS licensing scheme and how to obtain and apply licenses, see the <a href="#">Cisco NX-OS Licensing Guide</a> .
	<b>Note</b> The Cisco NX-OS software allows 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.

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

## Prerequisites for Managing VDCs

VDC management has the following prerequisites:

- You must have the network-admin user role.
- You must log in to the default VDC.

## Guidelines and Limitations for Managing VDCs

VDC management has the following configuration guidelines and limitations:

- Only users with the network-admin user role can manage VDCs.
- You can change VDCs only from the default VDC.
- If sufficient MAC addresses to program the management port of all the nondefault VDCs are unavailable, do not program the MAC address in any of the nondefault VDCs.
- A syslog message is generated if sufficient MAC addresses are unavailable to program the management port in all VDCs.
- When you have back-to-back connected interfaces in two different VRFs within the same VDC, the Address Resolution Protocol (ARP) fails to complete and packet drops occur because the VRFs obtain their own source MAC addresses. If you need two interfaces on the same VDC with different VRFs, assign a static MAC address to the VRF interfaces.

## Managing VDCs

This section includes the following topics:

- [Changing the Nondefault VDC Prompt Format, page 4-7](#)
- [Allocating Interfaces to an Ethernet VDC, page 4-8](#)
- [Applying a VDC Resource Template, page 4-10](#)
- [Changing VDC Resource Limits, page 4-12](#)
- [Changing the HA Policies, page 4-14](#)
- [Saving VDC Configurations, page 4-16](#)
- [Suspending a Nondefault VDC, page 4-17](#)
- [Resuming a Nondefault VDC, page 4-18](#)
- [Reloading a Nondefault VDC, page 4-19](#)
- [Configuring the VDC Boot Order, page 4-19](#)
- [Deleting a VDC, page 4-21](#)

## Changing the Nondefault VDC Prompt Format

You can change the format of the CLI prompt for nondefault VDCs. By default, the prompt format is a combination of the default VDC name and the nondefault VDC name. You can change the prompt to only contain the nondefault VDC name.

**Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).**

BEFORE YOU BEGIN


Log in to the default VDC with a username that has the network-admin user role.

SUMMARY STEPS

- 1. `config t`
- 2. `[no] vdc combined-hostname`
- 3. (Optional) `copy running-config startup-config vdc-all`


	Command	Purpose
Step 1	<code>config t</code>  <b>Example:</b> switch# <code>config t</code> switch(config)#	Enters configuration mode.
Step 2	<code>[no] vdc combined-hostname</code>  <b>Example:</b> switch(config)# <code>no vdc combined-hostname</code>	Changes the format of the CLI prompt for the nondefault VDC. To change the prompt to show only the nondefault VDC name, use the <b>no</b> format of the command. By default, the CLI prompt for a nondefault VDC consists of the default VDC name and the nondefault VDC name.
Step 3	<code>copy running-config startup-config vdc-all</code>  <b>Example:</b> switch(config)# <code>copy running-config startup-config vdc-all</code>	(Optional) Copies the running configuration for all the VDCs to the startup configuration. If you disable the combined hostname, this command prevents the VDC names from reverting back to their original format (with combined hostnames) after the running configuration is saved and the system is reloaded. Enter this command after turning off the combined hostname.

Allocating Interfaces to an Ethernet VDC




**Note**

See the *Cisco NX-OS FCoE Configuration Guide for Cisco Nexus 7000 and Cisco MDS 9500* for information on allocating interfaces to storage VDCs for FCoE.




**Note**

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.



**Note**

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



**Note**

Beginning with Cisco Release 5.2(1) for Nexus 7000 Series devices, all members of a port group are automatically allocated to the VDC when you allocate an interface.



***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

## BEFORE YOU BEGIN

Log in to the default VDC with a username that has the network-admin user role.

## SUMMARY STEPS

1. **config t**
2. **vdc vdc-name**
3. **show vdc membership [status]**
4. **allocate interface ethernet slot/port**  
**allocate interface ethernet slot/port - last-port**  
**allocate interface ethernet slot/port, ethernet slot/port, ...**
5. **exit**
6. (Optional) **show vdc membership [status]**
7. (Optional) **copy running-config startup-config**

## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>vdc vdc-name</b>  <b>Example:</b> switch(config)# vdc Engineering switch(config-vdc)#	Specifies a VDC and enters VDC configuration mode.
Step 3	<b>show vdc membership [status]</b>  <b>Example:</b> switch(config-vdc)# show vdc membership	(Optional) Displays VDC interface membership information.

**Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).**

	Command	Purpose
Step 4	<b>allocate interface ethernet <i>slot/port</i></b>  <b>Example:</b> <pre>switch(config-vdc)# allocate interface ethernet 2/1</pre> Moving ports will cause all config associated to them in source vdc to be removed. Are you sure you want to move the ports? [yes] yes	Allocates one interface to the VDC.
	<b>allocate interface ethernet <i>slot/port - last-port</i></b>  <b>Example:</b> <pre>switch(config-vdc)# allocate interface ethernet 2/1 - 4</pre> Moving ports will cause all config associated to them in source vdc to be removed. Are you sure you want to move the ports? [yes] yes	Allocates a range of interfaces on the same module to the VDC.
	<b>allocate interface ethernet <i>slot/port, ethernet slot/port, ...</i></b>  <b>Example:</b> <pre>switch(config-vdc)# allocate interface ethernet 2/1, ethernet 2/3, ethernet 2/5</pre> Moving ports will cause all config associated to them in source vdc to be removed. Are you sure you want to move the ports? [yes] yes	Allocates a list of interfaces to the VDC.
Step 5	<b>exit</b>  <b>Example:</b> <pre>switch(config-vdc)# exit</pre> <pre>switch(config)#</pre>	Exits VDC configuration mode.
Step 6	<b>show vdc membership [<i>status</i>]</b>  <b>Example:</b> <pre>switch(config)# show vdc membership</pre>	(Optional) Displays VDC interface membership information.
Step 7	<b>copy running-config startup-config</b>  <b>Example:</b> <pre>switch(config)# copy running-config startup-config</pre>	(Optional) Copies the running configuration to the startup configuration.  <b>Note</b> After you add an interface to a VDC, you must copy the default VDC running configuration to the startup configuration before users can copy the changed VDC running configuration to the startup configuration.

## Applying a VDC Resource Template

You can change the VDC resource limits by applying a new VDC resource template. Changes to the limits take effect immediately except for the IPv4 and IPv6 route memory limits, which take effect after the next VDC reset, physical device reload, or physical device stateful switchover.

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

## BEFORE YOU BEGIN

Log in to the default VDC with a username that has the network-admin user role.

## SUMMARY STEPS

1. **config t**
2. **show vdc resource detail**
3. **vdc vdc-name**
4. **template template-name**
5. **exit**
6. (Optional) **show vdc vdc-name resource**
7. (Optional) **copy running-config startup-config**

## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>show vdc resource detail</b>  <b>Example:</b> switch(config)# show vdc resource detail	(Optional) Displays the resource information for all VDCs.
Step 3	<b>vdc vdc-name</b>  <b>Example:</b> switch(config)# vdc Engineering switch(config-vdc)#	Specifies a VDC and enters VDC configuration mode.
Step 4	<b>template template-name</b>  <b>Example:</b> switch(config-vdc)# template MyTemplate	Applies a new resource template for the VDC.
Step 5	<b>exit</b>  <b>Example:</b> switch(config-vdc)# exit switch(config)#	Exits VDC configuration mode.
Step 6	<b>show vdc vdc-name resource</b>  <b>Example:</b> switch(config)# show vdc MyVDC resource	(Optional) Displays the resource information for a specific VDC.
Step 7	<b>copy running-config startup-config</b>  <b>Example:</b> switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

## 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 set only one value for the multicast and unicast route memory resources maximum and minimum limits. If you specify a minimum limit, that is the value for both the minimum and maximum limits and the maximum limit is ignored. If you specify only a maximum limit, that is the value for both the minimum and maximum limits.



### Note

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

## BEFORE YOU BEGIN

Log in to the default VDC with a username that has the network-admin user role.

## SUMMARY STEPS

1. **config t**
2. (Optional) **show vdc resource detail**
3. **vdc vdc-name**
4. **limit-resource m4route-mem [minimum min-value] maximum max-value**  
**limit-resource m6route-mem [minimum min-value] maximum max-value**  
**limit-resource monitor-session minimum min-value maximum {max-value | equal-to-min}**  
**limit-resource monitor-session-erspan-dst minimum min-value maximum {max-value | equal-to-min}**  
**limit-resource port-channel minimum min-value maximum {max-value | equal-to-min}**  
**limit-resource u4route-mem [minimum min-value] maximum max-value**  
**limit-resource u6route-mem [minimum min-value] maximum max-value**  
**limit-resource vlan minimum min-value maximum {max-value | equal-to-min}**  
**limit-resource vrf minimum min-value maximum {max-value | equal-to-min}**  
**limit-resource linecard-type {M1 | F1}**
5. **exit**
6. (Optional) **show vdc vdc-name resource**
7. (Optional) **copy running-config startup-config**

**Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).**

## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>show vdc resource detail</b>  <b>Example:</b> switch(config)# show vdc resource detail	(Optional) Displays the resource information for all VDCs.
Step 3	<b>vdc vdc-name</b>  <b>Example:</b> switch(config)# vdc Engineering switch(config-vdc)#	Specifies a VDC and enters VDC configuration mode.
Step 4	<b>limit-resource m4route-mem [minimum min-value] maximum max-value</b>  <b>Example:</b> switch(config-vdc)# limit-resource m4route-mem minimum 4 maximum 40	Specifies the minimum and maximum limits for IPv4 multicast route memory in megabytes. The range is from 1 to 90.
	<b>limit-resource m6route-mem [minimum min-value] maximum max-value</b>  <b>Example:</b> switch(config-vdc)# limit-resource m6route-mem minimum 4 maximum 12	Specifies the minimum and maximum limits for IPv6 multicast route memory in megabytes. The range is from 1 to 20.
	<b>limit-resource monitor-session minimum min-value maximum {max-value   equal-to-min}</b>  <b>Example:</b> switch(config-vdc)# limit-resource monitor-session minimum 0 maximum 1	Configures the SPAN monitor session resource limits. The range is from 0 to 2. The <b>equal-to-min</b> keyword automatically sets the maximum limit equal to the minimum limit.  <b>Note</b> You can have a maximum of two SPAN monitoring sessions on your physical device.
	<b>limit-resource monitor-session-erspan-dst minimum min-value maximum {max-value   equal-to-min}</b>  <b>Example:</b> switch(config-vdc)# limit-resource monitor-session-erspan-dst minimum 2 maximum 10	Configures the ERSPAN monitor session resource limits. The range is from 0 to 23. The <b>equal-to-min</b> keyword automatically sets the maximum limit equal to the minimum limit.
	<b>limit-resource port-channel minimum min-value maximum {max-value   equal-to-min}</b>  <b>Example:</b> switch(config-vdc)# limit-resource port-channel minimum 0 maximum 128	Configures the port-channel resource limits. The range is from 0 to 768. The <b>equal-to-min</b> keyword automatically sets the maximum limit equal to the minimum limit.

**Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).**

Command	Purpose
<b>limit-resource u4route-mem</b> [ <b>minimum</b> <i>min-value</i> ] <b>maximum</b> <i>max-value</i>  <b>Example:</b> switch(config-vdc)# limit-resource u4route-mem minimum 16 maximum 40	Specifies the minimum and maximum limits for IPv4 unicast route memory in megabytes. The range is from 1 to 350.
<b>limit-resource u6route-mem</b> [ <b>minimum</b> <i>min-value</i> ] <b>maximum</b> <i>max-value</i>  <b>Example:</b> switch(config-vdc)# limit-resource u6route-mem minimum 16 maximum 32	Specifies the minimum and maximum limits for IPv6 unicast route memory in megabytes. The range is from 1 to 100.
<b>limit-resource vlan</b> <b>minimum</b> <i>min-value</i> <b>maximum</b> { <i>max-value</i>   <b>equal-to-min</b> }  <b>Example:</b> switch(config-vdc)# limit-resource vlan minimum 24 maximum 2056	Configures the VLAN resource limits. The range is from 16 to 4094. The <b>equal-to-min</b> keyword automatically sets the maximum limit equal to the minimum limit.
<b>limit-resource vrf</b> <b>minimum</b> <i>min-value</i> <b>maximum</b> { <i>max-value</i>   <b>equal-to-min</b> }  <b>Example:</b> switch(config-vdc)# limit-resource vrf minimum 32 maximum 1000	Configures the VRF resource limits. The VRF minimum and maximum range is from 2 to 1000. The <b>equal-to-min</b> keyword automatically sets the maximum limit equal to the minimum limit.
<b>limit-resource linecard-type</b> { <i>M1</i>   <i>F1</i> }  <b>Example:</b> switch(config-vdc)# limit-resource linecard-type M1	Configures the specified line card type. VDCs support the M1 and F1 line card types.  <b>Note</b> The <b>no limit-resource linecard-type</b> command allows a mix of M1 and F1 line cards in the VDC.
<b>Step 5</b> <b>exit</b>  <b>Example:</b> switch(config-vdc)# exit switch(config)#	Exits VDC configuration mode.
<b>Step 6</b> <b>show vdc</b> <i>vdc-name</i> <b>resource</b>  <b>Example:</b> switch(config)# show vdc MyVDC resource	(Optional) Displays the VDC resource information.
<b>Step 7</b> <b>copy running-config startup-config</b>  <b>Example:</b> switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration. If you disable the combined hostname, this command prevents the VDC names from reverting back to their original format (with combined hostnames) after the running configuration is saved and the system is reloaded. Enter this command after turning off the combined hostname.

## 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.

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

- Restart—Restarts the VDC. This process includes shutting down all the interfaces within that VDC and stopping all the virtualized services processes. The Cisco 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:
  - 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 Cisco 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

Log in to the default VDC with a username that has the network-admin user role.

## SUMMARY STEPS

1. **config t**
2. **vdc vdc-name**
3. **ha-policy { dual-sup { bringdown | restart | switchover } | single-sup { bringdown | reload | restart } }**
4. **exit**
5. (Optional) **show vdc detail**
6. (Optional) **copy running-config startup-config**

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>vdc vdc-name</b>  <b>Example:</b> switch(config)# vdc Engineering switch(config-vdc)#	Specifies a VDC and enters VDC configuration mode.
Step 3	<b>ha-policy {dual-sup {bringdown   restart   switchover}   single-sup {bringdown   reload   restart}}</b>	Configures the HA policy for the VDC. The <b>dual-sup</b> and <b>single-sup</b> option keyword values are as follows: <ul style="list-style-type: none"> <li>• <b>bringdown</b>—Puts the VDC in the failed state. To recover from the failed state, you must reload the physical device.</li> <li>• <b>reload</b>—Initiates a supervisor module switchover for physical devices with two supervisor modules, or reloads physical devices with one supervisor module.</li> <li>• <b>restart</b>—Takes down the VDC processes and interfaces and restarts it using the startup configuration.</li> <li>• <b>switchover</b>—Initiates a supervisor module switchover.</li> </ul> <p><b>Note</b> You cannot change the HA policies for the default VDC.</p>
Step 4	<b>exit</b>  <b>Example:</b> switch(config-vdc)# exit switch(config)#	Exits VDC configuration mode.
Step 5	<b>show vdc detail</b>  <b>Example:</b> switch(config)# show vdc detail	(Optional) Displays VDC status information.
Step 6	<b>copy running-config startup-config</b>  <b>Example:</b> switch(config)# copy running-config startup-config	(Optional) Copies the running configuration to the startup configuration.

## Saving VDC Configurations

You can save the configuration of all the VDCs on the physical device to the startup configuration.



***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

## BEFORE YOU BEGIN

Log in to the default VDC with a username that has the network-admin user role.

## SUMMARY STEPS

1. `switchto vdc vdc-name`
2. `copy running-config startup-config`
3. `switchback`
4. `copy running-config startup-config vdc-all`

## DETAILED STEPS

	Command	Purpose
Step 1	<b>switchto vdc vdc-name</b>  <b>Example:</b> switch# switchto vdc TestVDC switch-TestVDC#	Switches to the nondefault VDC.
Step 2	<b>copy running-config startup-config</b>  <b>Example:</b> switch-TestVDC# copy running-config startup-config	Copies the running configuration for the VDC to the startup configuration.
Step 3	<b>switchback</b>  <b>Example:</b> switch-TestVDC# switchback switch#	Switches back to the default VDC.
Step 4	<b>copy running-config startup-config vdc-all</b>  <b>Example:</b> switch# copy running-config startup-config vdc-all	Copies the running configuration for all the VDCs to the startup configuration.

## Suspending a Nondefault VDC

You can suspend an active nondefault VDC. You must 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.

*Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).*

BEFORE YOU BEGIN

Log in to the default VDC with a username that has the network-admin user role.

SUMMARY STEPS

- 1. `copy running-config startup-config vdc-all`
- 2. `config t`
- 3. `vdc vdc-name suspend`

DETAILED STEPS

	Command	Purpose
Step 1	<code>copy running-config startup-config vdc-all</code>  <b>Example:</b> switch# copy running-config startup-config vdc-all	Copies the running configuration for all the VDCs to the startup configuration.
Step 2	<code>config t</code>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 3	<code>vdc vdc-name suspend</code>  <b>Example:</b> switch(config)# vdc TestVDC suspend	Suspends a nondefault VDC.

Resuming a Nondefault VDC

You can resume a nondefault VDC from the suspended state. The VDC resumes with the configuration saved in the startup configuration.

BEFORE YOU BEGIN

Log in to the default VDC with a username that has the network-admin user role.

SUMMARY STEPS

- 1. `config t`
- 2. `no vdc vdc-name suspend`

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>no vdc vdc-name suspend</b>  <b>Example:</b> switch(config)# no vdc TestVDC suspend	Resumes a suspended nondefault VDC.

## Reloading a Nondefault VDC

You can load a nondefault VDC that is in a failed state. The VDC reloads using the startup configuration.



### Note

Use the **reload** command to reload the default VDC. Reloading the default VDC reloads all VDCs on the Cisco NX-OS device.



### Caution

Reloading a VDC disrupts all traffic on the VDC.

## BEFORE YOU BEGIN

Log in to the nondefault VDC with a username that has the vdc-admin user role or use the **switchto vdc** command from the default VDC to access the nondefault VDC.

## SUMMARY STEPS

1. **copy running-config startup-config vdc-all**
2. **reload vdc**

## DETAILED STEPS

	Command	Purpose
Step 1	<b>copy running-config startup-config</b>  <b>Example:</b> switch-TestVDC# copy running-config startup-config	Copies the running configuration for the nondefault VDC to the startup configuration.
Step 2	<b>reload vdc</b>  <b>Example:</b> switch-TestVDC# reload vdc	Reloads a nondefault VDC.

## Configuring the VDC Boot Order

You can configure the boot order for the VDCs on your Cisco NX-OS device.

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

**Note**

You cannot change the boot order of the default VDC.

**BEFORE YOU BEGIN**

Log in to the default VDC with a username that has the network-admin user role.

**SUMMARY STEPS**

1. **config t**
2. **vdc vdc-name**
3. **boot-order number**
4. **exit**
5. (Optional) **show vdc detail**
6. **copy running-config startup-config vdc-all**

**DETAILED STEPS**

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>vdc vdc-name</b>  <b>Example:</b> switch(config)# vdc Engineering switch(config-vdc)#	Specifies a VDC and enters VDC configuration mode.
Step 3	<b>boot-order number</b>  <b>Example:</b> switch(config-vdc) boot-order 2	Configures the boot order value for the VDC. The range for the <i>number</i> argument is from 1 to 4. The VDC starts from the lowest to the highest boot order value.  You cannot change the boot order for the default VDC.
Step 4	<b>exit</b>  <b>Example:</b> switch(config-vdc)# exit switch(config)#	Exits VDC configuration mode.
Step 5	<b>show vdc detail</b>  <b>Example:</b> switch(config)# show vdc detail	(Optional) Displays VDC status information.
Step 6	<b>copy running-config startup-config vdc-all</b>  <b>Example:</b> switch(config)# copy running-config startup-config vdc-all	Copies the running configuration for all the VDCs to the startup configuration.

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

## Deleting a VDC

When you delete a VDC, the ports on the VDC are moved to unallocated interfaces. To allocate the interfaces back to the VDC, see the “[Allocating Interfaces to an Ethernet VDC](#)” section on page 4-8.



### Note

You cannot delete the default VDC (VDC 1).



### Caution

Deleting a VDC disrupts all traffic on the VDC.


## BEFORE YOU BEGIN

Log in to the default VDC with a username that has the network-admin user role.

## SUMMARY STEPS

1. **config t**
2. **no vdc vdc-name**
3. **exit**
4. (Optional) **show vdc**
5. **copy running-config startup-config**

## DETAILED STEPS

	Command	Purpose
Step 1	<b>config t</b>  <b>Example:</b> switch# config t switch(config)#	Enters configuration mode.
Step 2	<b>no vdc vdc-name</b>  <b>Example:</b> switch(config)# no vdc NewVDC Deleting this vdc will remove its config. Continue deleting this vdc? [yes] yes	Removes the VDC.  <div>  <b>Caution</b> </div> Deleting a VDC disrupts all traffic on the VDC and removes all configuration on all the interfaces allocated to the VDC.
Step 3	<b>exit</b>  <b>Example:</b> switch(config)# exit switch#	Exits VDC configuration mode.

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

	Command	Purpose
Step 4	<b>show vdc</b>  <b>Example:</b> switch# show vdc	(Optional) Copies the running configuration to the startup configuration.
Step 5	<b>copy running-config startup-config</b>  <b>Example:</b> switch(config)# copy running-config startup-config	Copies the running configuration to the startup configuration.

## Verifying the VDC Configuration

To display the VDC configuration, perform one of the following tasks:

Command	Purpose
<b>show running-config {vdc   vdc-all}</b>	Displays the VDC information in the running configuration.
<b>show vdc [vdc-name]</b>	Displays the VDC configuration information.
<b>show vdc current-vdc</b>	Displays the current VDC number.
<b>show vdc membership [status]</b>	Displays the VDC interface membership information.
<b>show vdc resource template</b>	Displays the VDC template configuration.
<b>show resource</b>	Displays the VDC resource configuration for the current VDC.
<b>show vdc [vdc-name] resource [resource-name]</b>	Displays the VDC resource configuration for all VDCs.
<b>show mac vdc {vdc_id}</b>	Displays the MAC address for a specific VDC.

For detailed information about the fields in the output from these commands, see the [Cisco Nexus 7000 Series NX-OS Virtual Device Context Command Reference](#).

## Configuration Examples for VDC Management

The following example shows how to allocate interfaces between VDCs for port groups on a Cisco Nexus 7000 Series 32-port, 10-Gbps Ethernet module as described in [Figure 4-1 on page 4-2](#):



### Note

VDC-A is the default VDC.

```

config t
hostname VDC-A
vdc VDC-B
! Port group 2
allocate interfaces ethernet 2/2, ethernet 2/4, ethernet 2/6, ethernet 2/8
! Port group 3
allocate interfaces ethernet 2/9, ethernet 2/11, ethernet 2/13, ethernet 2/15

```

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

```
vdc VDC-C
! Port group 4
allocate interfaces ethernet 2/10, ethernet 2/12, ethernet 2/14, ethernet 2/16
! Port group 5
allocate interfaces ethernet 2/17, ethernet 2/19, ethernet 2/21, ethernet 2/23
vdc VDC-D
! Port group 6
allocate interfaces ethernet 2/18, ethernet 2/20, ethernet 2/22, ethernet 2/24
! Port group 7
allocate interfaces ethernet 2/25, ethernet 2/27, ethernet 2/29, ethernet 2/30
```

## Additional References

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

- [Related Documents for Managing VDCs, page 4-23](#)

## Related Documents for Managing VDCs

Related Topic	Document Title
Cisco NX-OS licensing	<i>Cisco NX-OS Licensing Guide</i>
Cisco Nexus 7000 Series 32-port, 10-Gbps Ethernet modules	<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</i>
FCoE	<i>Cisco NX-OS FCoE Configuration Guide for Cisco Nexus 7000 and Cisco MDS 9500</i>
FCoE commands	<i>Cisco NX-OS FCoE Command Reference for Cisco Nexus 7000 and Cisco MDS 9500</i>

## Feature History for Managing VDCs

[Table 4-3](#) lists the release history for this feature.

**Table 4-3** Feature History for Managing VDC

Feature Name	Releases	Feature Information
MAC addresses	5.2(1)	The default VDC has a MAC address, and subsequent nondefault VDCs that are created are assigned MAC addresses.
N7K-F132XP-15 module	5.1(1)	Added support for the N7K-F132XP-15 module.
VDC resource limits	5.1(1)	Added the ability to configure ERSPAN monitor session resource limits.

***Send document comments to [nexus7k-docfeedback@cisco.com](mailto:nexus7k-docfeedback@cisco.com).***

**Table 4-3**      ***Feature History for Managing VDC (continued)***

Feature Name	Releases	Feature Information
VDC resource limits	5.0(2)	The range for the minimum and maximum values changed for the <b>limit-resource m4route-mem</b> , <b>limit-resource m6route-mem</b> , <b>limit-resource u4route-mem</b> , <b>limit-resource u6route-mem</b> , and <b>limit-resource vrf</b> commands.
Restarting VDCs	4.2(4)	The <b>vdc restart</b> command was replaced by the <b>reload vdc</b> command.
Suspending and resuming VDCs	4.2(1)	You can suspend and resume nondefault VDCs.
Restarting VDCs	4.2(1)	You can restart active nondefault VDCs and nondefault VDCs in the failed state.
VDC prompt format	4.2(1)	You can change the format of the command-line interface (CLI) prompt for nondefault VDCs.