



## CHAPTER 2

# Configuring VDC Resource Templates

---

This chapter describes how to configure virtual device context (VDC) resource templates on NX-OS devices.

This chapter includes the following sections:

- [Information About VDC Resource Templates, page 2-1](#)
- [Licensing Requirements for VDC Templates, page 2-3](#)
- [Guidelines and Limitations, page 2-3](#)
- [Configuring VDC Resource Templates, page 2-3](#)
- [Verifying the VDC Resource Template Configuration, page 2-6](#)
- [Example VDC Resource Template Configuration, page 2-6](#)
- [Default Settings, page 2-6](#)
- [Additional References, page 2-7](#)
- [Feature History for VDC Resource Templates, page 2-7](#)

## Information About VDC Resource Templates

VDC resource templates set the minimum and maximum limits for shared physical device resources when you create the VDC. The Cisco NX-OS software reserves the minimum limit for the resource to the VDC. Any resources allocated to the VDC beyond the minimum are based on the maximum limit and availability on the device.

You can explicitly specify a VDC resource template or you can use the default VDC template provided by the NX-OS software. VDC templates set limits on the following resources:

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

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

**Note**

The IPv4 and IPv6 route memory available for all VDCs on a physical device with 4 GB of memory is 256 MB. You can have approximately 11,000 routes, each with 16 next hops, in 13 MB of route memory. The **show routing memory estimate routes** *number-of-routes* **next-hops** *number-of-next-hops* command shows the amount of unicast RIB (IPv4 RIB and IPv6 RIB) shared memory needed to support the specified number of routes and next hops.

If you do not set a limit for a resource in a VDC resource template, the default limits for that resource are the same as those in the default VDC resource template. [Table 2-1](#) and [Table 2-2](#) list the default VDC resource template limits.

**Table 2-1** *Default VDC Resource Template Limits for Cisco NX-OS Release 4.0(1a) and Earlier Releases*

Resource	Minimum	Maximum
IPv4 route memory <sup>1</sup>	8	256
IPv6 route memory <sup>1</sup>	4	256
Port channels	0	256
SPAN sessions	0	2
VLANs	16	4094
VRFs	16	8192

1. Route memory limits are in megabytes.

**Table 2-2** *Default VDC Resource Template Limits for Cisco NX-OS Release 4.0(2) and Later Releases*

Resource	Minimum	Maximum
IPv4 route memory <sup>1</sup>	8	320
IPv6 route memory <sup>1</sup>	4	192
Port channels	0	256
SPAN sessions	0	2
VLANs	16	4094
VRFs	16	8192

1. Route memory limits are in megabytes.

**Note**

You cannot change the limits in the default VDC resource template.

Any changes that you make to a VDC resource template do not affect any VDCs you created using that VDC resource template. To update a VDC with the new limits in the VDC resource, you must explicitly reapply the template to the VDC (see [Chapter 4, “Managing VDCs”](#)).

**Note**

Only the network administrator can change a VDC template in the default VDC.

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

## Licensing Requirements for VDC Templates

The following table shows the licensing requirements for this feature:

Product	License Requirement
NX-OS	VDC templates require no license. Any feature not included in a license package is bundled with the Cisco NX-OS system images and is provided at no extra charge to you. For a complete explanation of the NX-OS licensing scheme, see the <i>Cisco Nexus 7000 Series NX-OS Licensing Guide, Release 4.1</i> .

## Guidelines and Limitations

VDC templates have the following guidelines and limitations:

- VDC templates can only be created by the network administrator in the default VDC.
- You can create a maximum of 64 VDC templates.

## Configuring VDC Resource Templates

The maximum amount of system resources assigned to a VDC is limited by the VDC resource template used when the VDC is created. You can create VDC resource templates to use when creating VDCs to use resource limits other than those provided in the default VDC resource template. You can create a maximum of 64 VDC resource templates.



### Note

If you do not set limits for a resource in a VDC resource template, the default limits are the limits for that resource in the default VDC resource template (see [Table 2-1 on page 2-2](#)).



### Note

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



### Note

You cannot change the configuration of the default resource templates.

### SUMMARY STEPS

1. `config t`
2. `vdc resource template vdc-template-name`
3. `limit-resource monitor-session 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}`

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

4. `exit`
5. `show vdc resource template`
6. `copy running-config startup-config`

## DETAILED STEPS

	Command	Purpose
Step 1	<pre>config t</pre> <p><b>Example:</b>  <pre>switch# config t switch(config)#</pre></p>	Enters configuration mode.
Step 2	<pre>vdc resource template vdc-template-name</pre> <p><b>Example:</b>  <pre>switch(config)# vdc resource template TemplateA switch(config-vdc-template)#</pre></p>	Specifies the VDC resource template name and enters VDC resource template configuration mode. The name is a maximum of 32 characters and is not case sensitive.

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

	Command	Purpose
Step 3	<p><b>limit-resource monitor-session minimum</b> <i>min-value maximum {max-value   equal-to-min}</i></p> <p><b>Example:</b> switch(config-vdc-template)# limit-resource monitor-session minimum 1 maximum equal-to-min</p>	<p>Specifies the limits for SPAN monitor session resources. The default minimum value is 0. The default maximum value is 2. The range is from 0 to 2. The <b>equal-to-min</b> keyword automatically sets the maximum limit equal to the minimum limit.</p> <p><b>Note</b> You can have a maximum of two SPAN monitoring sessions on your physical device.</p>
	<p><b>limit-resource port-channel minimum</b> <i>min-value maximum {max-value   equal-to-min}</i></p> <p><b>Example:</b> switch(config-vdc-template)# limit-resource port-channel minimum 4 maximum 128</p>	<p>Specifies the limits for port channels. The default minimum value is 0. The default maximum value is 256. The range is from 0 to 256. The <b>equal-to-min</b> keyword automatically sets the maximum limit equal to the minimum limit.</p>
	<p><b>limit-resource u4route-mem minimum</b> <i>min-value maximum max-value</i></p> <p><b>Example:</b> switch(config-vdc-template)# limit-resource u4route-mem minimum 4 maximum 40</p>	<p>Specifies the limits for IPv4 route memory in megabytes. The default minimum value is 8.</p> <p>In Cisco NX-OS Release 4.0(1a) and earlier releases, the default maximum value is 256 and the range for both values is from 1 to 256. In Cisco NX-OS Release 4.0(2) and later releases, the default maximum value is 320 and the range for both values is from 1 to 320.</p>
	<p><b>limit-resource u6route-mem minimum</b> <i>min-value maximum max-value</i></p> <p><b>Example:</b> switch(config-vdc-template)# limit-resource u6route-mem minimum 4 maximum 32</p>	<p>Specifies the limits for IPv6 route memory in megabytes. The default minimum value is 4.</p> <p>In Cisco NX-OS Release 4.0(1a) and earlier releases, the default maximum value is 256. In Cisco NX-OS Release 4.0(2) and later releases, the default maximum value is 192. The range for both values is from 1 to 256.</p>
	<p><b>limit-resource vrf minimum</b> <i>min-value maximum {max-value   equal-to-min}</i></p> <p><b>Example:</b> switch(config-vdc-template)# limit-resource vrf minimum 32 maximum 4096</p>	<p>Specifies the limits for VRF. The default minimum value is 16. The default maximum value is 8192. The range is from 16 to 8192. The <b>equal-to-min</b> keyword automatically sets the maximum limit equal to the minimum limit.</p>
Step 4	<p><b>exit</b></p> <p><b>Example:</b> switch(config-vdc-template)# exit switch(config)#</p>	<p>Exits VDC template configuration mode.</p>
Step 5	<p><b>show vdc resource template</b></p> <p><b>Example:</b> switch(config)# show vdc resource template</p>	<p>(Optional) Displays VDC template configuration information.</p>
Step 6	<p><b>copy running-config startup-config</b></p> <p><b>Example:</b> switch(config)# copy running-config startup-config</p>	<p>(Optional) Copies the running configuration to the startup configuration.</p>

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

## Verifying the VDC Resource Template Configuration

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

Command	Purpose
<code>show running-config {vdc   vdc-all}</code>	Displays the VDC information in the running configuration.
<code>show vdc resource template [template-name]</code>	Displays the VDC template configuration.

For detailed information about the fields in the output from this command, see the [Cisco Nexus 7000 Series NX-OS Virtual Device Context Command Reference, Release 4.1](#).

## Example VDC Resource Template Configuration

The following example shows how to configure a VDC resource template:

```
vdc resource template TemplateA
  limit-resource port-channel minimum 4 maximum 128
  limit-resource span-ssn minimum 1 maximum equal-to-min
  limit-resource vlan minimum 32 maximum 1024
  limit-resource vrf minimum 32 maximum 4096
```

## Default Settings

Table 2-3 and Table 2-4 lists the default settings for VDC resource template parameters.

**Table 2-3** Default VDC Resource Template Settings For Cisco NX-OS Release 4.0(1) and Release 4.0(1a)

Parameter	Minimum	Maximum
Port channel resource limit	0	256
SPAN session resource limit	0	2
VLAN resource limit	16	4094
VRF resource limit	16	8192
<b>Nondefault VDCs</b>		
IPv4 route memory resource limit <sup>1</sup>	8	256
IPv6 route memory resource limit <sup>1</sup>	4	256
<b>Default VDC</b>		
IPv4 route memory resource limit <sup>1</sup>	32	256
IPv6 route memory resource limit <sup>1</sup>	16	256

1. Route memory limits are in megabytes.

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

**Table 2-4** *Default VDC Resource Template Settings For Cisco NX-OS Release 4.0(2) and Later Releases*

Parameter	Minimum	Maximum
Port channel resource limit	0	256
SPAN session resource limit	0	2
VLAN resource limit	16	4094
VRF resource limit	16	8192
<b>Nondefault VDCs</b>		
IPv4 route memory resource limit <sup>1</sup>	8	320
IPv6 route memory resource limit <sup>1</sup>	4	192
<b>Default VDC</b>		
IPv4 route memory resource limit <sup>1</sup>	32	320
IPv6 route memory resource limit <sup>1</sup>	16	192

1. Route memory limits are in megabytes.

## Additional References

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

- [Related Documents, page 2-7](#)

## Related Documents

Related Topic	Document Title
DCNM Licensing	<i>Cisco Nexus 7000 Series NX-OS Licensing Guide, Release 4.1</i>
VDC commands	<i>Cisco Nexus 7000 Series NX-OS Virtual Device Context Command Reference, Release 4.1</i>

## Feature History for VDC Resource Templates

Table 2-5 lists the release history for this feature.

**Table 2-5** *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.

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