Cisco Nexus 1000V Resource Availability Reference, Release 4.2(1)SV2(1.1)

This document describes the availability of the system-wide resources with respect to the supported configuration limits on the Cisco Nexus 1000V Release 4.2(1)SV2(1.1) software. The following is the change history for this document.

Part Number	Revision	Date	Description
OL-27751-01	A0	October 7, 2012	Created Cisco Nexus 1000V Resource Availability Document for Release 4.2(1)SV2(1.1).
	B0	December 14, 2012	Updated support limit for "Distributed Virtual Switches (DVS) per vCenter with VMware vCloud Director (vCD)".

Contents

This document includes the following sections:

CISCO

Introduction to Resource Availability

Starting with Release 4.2(1)SV2(1.1), the Cisco Nexus 1000V software is enhanced to keep a track of the usage of system-wide resources with respect to the supported configuration limits on Cisco Nexus 1000V. This enhancement to the NX-OS code base implements a series of show commands that display the current and maximum system limits for the various resources and their current availability.

The format for the command is **show resource-availability [resource] [module <id>]**. The **resource** is an optional argument that could either be a specific resource, for example, **VLAN** or **all**. The **module** is an optional keyword that is followed by a specific module number argument.

The **show resource-availability <resource>** command displays the availability information on the distributed virtual switch (DVS) and on each module for the specified resource. The **show resource-availability <resource> module <id>** command displays the availability information only for the specified module.

The command **show resource-availability** only displays the DVS-wide availability information about the key resources, for example, hosts, port-profiles, vEthernet ports, port-channels, and VLANs.

The **show resource-availability all** command prints the availability information on the DVS and each module for all the resources. The CLI is implemented as a sequence of **show resource-availability <resource>** commands iterating through all the resources.

✎ **Note** You cannot generate xml output for **show resource-availability all** command.

The **show resource-availability module <id>** command displays the availability information for the specified module for all the resources that have a per-module configuration limit. The CLI is implemented as a series of **show resource-availability <resource> module <id>** commands.

Table 1 lists the resources and the corresponding aggregate commands.

Table 1   Resources and the Corresponding Aggregate Commands

Resource	show resource-availability	show resource-availability all	show resource-availability module *<mod>*
Hosts	X	X	
Port-profiles	X	X	
vEthernet ports	X	X	X
Port-channels	X	X	X
VLANs	X	X	
VXLANs (Bridge Domains)	X	X	
ACL		X	X
Ethernet ports		X	X
MAC table entries		X	X
Multicast groups		X	
Netflow		X	X
Port security		X	
PVLANs		X	

Table 1   Resources and the Corresponding Aggregate Commands (continued)

Resource	show resource-availability	show resource-availability all	show resource-availability module *<mod>*
QoS		X	X
SPAN/ERSPAN		X	

Availability of the Resources

Table 2 lists the resources and the corresponding aggregate commands.

Table 2   Availability of the Resources

Resource	Command	Description
Hosts	**show resource-availability hosts**	Displays the maximum number of hosts that can be added to the DVS, the number of hosts that are currently powered up, the number of hosts that are currently absent, and the number of hosts that can be further added to the DVS.
Port-profiles	**show resource-availability port-profile**	Displays the maximum number of the port profiles and the system port profiles that are supported on the DVS, their current usage, and availability.
vEthernet ports	**show resource-availability vethports**	Displays the maximum number of vEthernet ports supported per DVS, their current usage, and availability. Displays the maximum number of vEthernet ports per module, their current usage, and availability.
Port-channels	**show resource-availability port-channel**	Displays the maximum number of port channels supported per DVS, their current usage, and availability. Displays the maximum number of port channels supported per module, their current usage, and the availability for each module.
VLANs	**show resource-availability vlan**	Displays the maximum number of user VLANs supported on the DVS, their current usage, and availability. **Note** The VLANs and VXLANs share the same resource limit and the availability information can only be obtained by checking the resource-availability information for VXLANs.

Table 2 **Availability of the Resources (continued)**

Resource	Command	Description
VXLANs (Bridge Domains)	**show resource-availability bridge-domain**	Displays the maximum number of bridge-domains per DVS, the number of bridge-domains that are currently created, and the number of bridge-domains that are available.
ACL	**show resource-availability acl**	Displays the maximum number of ACLs per DVS, their current usage, and the availability. Displays the maximum number of ACL instances per DVS, their current usage, and the availability. Displays the maximum number of ACL instances per module and the ACL instance usage per module.
Ethernet ports	**show resource-availability ethports**	Displays the maximum number of physical NICs that can be added to a module, their current usage, and availability.
MAC table entries	**show resource-availability mac-address-table**	Displays the maximum number of MAC addresses supported per module, their current usage, and availability.
Netflow	**show resource-availability netflow**	Displays the maximum number of netflow monitors per DVS, their current usage, and availability. Displays the maximum number of netflow instances per DVS, their current usage, and availability. Displays the maximum number of netflow instances per module and the instance usage per module.
Port security	**show resource-availability port-security macs**	Displays the maximum number of secure MAC addresses that are allowed, their current usage, and availability.
Private VLANs	**show resource-availability private-vlan**	Displays the maximum number of private VLANs per DVS, their current usage, and availability. Displays the maximum number of primary VLANs per promiscuous trunk port and the maximum number of Private VLAN associations.

Table 2 Availability of the Resources (continued)

Resource	Command	Description
QoS	**show resource-availability qos-queuing**	Displays the maximum number of classmaps per DVS, their current usage, and availability.
		Displays the maximum number of policy maps per DVS, their current usage, and availability.
		Displays the maximum number of instances per DVS, their current usage, and availability.
		Displays the maximum number of instances per module and the instance usage per module.
SPAN/ERSPAN	**show resource-availability monitor**	Displays the following details:
		• The maximum number of monitor sessions supported on a DVS, current usage, and availability.
		• The maximum number of source interfaces per monitor session.
		• The maximum number of source VLANs per monitor session.
		• The maximum number of destination interfaces per local monitor session.
		• The maximum number of destination IP addresses per ERSPAN source session.

Examples of the Show Commands

Refer to this section for the examples of the show commands to display the availability of the resources.

```
n1000v# show resource-availability ?
<CR>
  >                 Redirect it to a file
  >>                Redirect it to a file in append mode
  acl               Show resource information for Acl
  all               Show resource information for all resources
  bridge-domain     Show resource information for bridge-domains
  ethports          Show resource information for ethernet ports
  hosts             Show resource information for hosts
  ip                Show resource information for IP
  mac-address-table  Show resource information for mac address table
  module            Show resource information for a specific VEM
  monitor           Show resource information for ethernet span
  netflow           Show resource information for Netflow
  port-channel      Show resource information for port channels
  port-profile      Show resource information for port-profiles
  port-security     Show resource information for port security
  private-vlan      Show resource information for private vlan
  qos-queuing       Show resource information for QoS and Queuing
  vethports         Show resource information for vethernet ports
  vlan              Show resource information for vlan
```

```
                         |                        Pipe command output to filter

n1000v# show resource-availability acl
    Maximum number of access lists per DVS is 128
    The number of access lists created is 1
    The number of access lists available is 127

    Maximum number of ACL Instances per DVS is 2048
    The number of ACL Instances created is 0
    The number of ACL instances available is 2048

    Maximum number of ACL Instances per module is 256

    Following table shows the per module instance usage

    ----------------------------------------------------------------
    Module  Used  Available
    ----------------------------------------------------------------

n1000v# show resource-availability all ?
<CR>
   >      Redirect it to a file
   >>     Redirect it to a file in append mode
   |      Pipe command output to filter

n1000v# show resource-availability bridge-domain ?
<CR>
   >      Redirect it to a file
   >>     Redirect it to a file in append mode
   |      Pipe command output to filter

n1000v# show resource-availability bridge-domain
    Maximum number of bridge-domains per DVS: 2048
    Number of bridge-domains currently created: 2
    Number of bridge-domains available*: 2046

    * available bridge-domains do not account for created VLANs

n1000v# show resource-availability ethports

    Maximum number of Eth ports per module: 32

    --------------------------------------------------------------------------------
    Module  Used  Available
    --------------------------------------------------------------------------------
      3     1        31
      4     1        31
      5     2        30
      6     1        31

n1000v# show resource-availability hosts
    Maximum number of hosts that can be added to DVS: 64
    Number of hosts currently powered up: 4
    Number of hosts currently absent: 0
    Number of hosts that can be added further: 60

n1000v# show resource-availability ip igmp snooping
    Max number of IGMP groups supported: 512
    Number of IGMP groups in use: 0
    Number of IGMP groups available: 512

n1000v## show resource-availability mac-address-table

    Maximum MAC Addresses per module: 32000
```

```
      --------------------------------------------------------------------------------
      Module  Used  Available
      --------------------------------------------------------------------------------
       3      83      31917
       4      78      31922
       5      97      31903
       6      86      31914


n1000v#k# show resource-availability mac-address-table module 3

      Maximum MAC Addresses per module: 32000
      --------------------------------------------------------------------------------
      Module  Used  Available
      --------------------------------------------------------------------------------
       3      80      31920


n1000v# show resource-availability module ?
      <3-66>  Enter module number

n1000v# show resource-availability monitor
      Maximum number of monitor sessions per DVS: 64
      Number of monitor sessions in use: 0
      Number of monitor sessions available: 64
      Maximum number of source interfaces per session: 128
      Maximum number of source vlans per session: 32
      Maximum number of destination interfaces per local monitor session: 32
      Maximum number of destination IP addresses per erspan-src session: 1


      Ssn    Type      Used Src  Avl Src   Used Src  Avl Src   Used Dst  Avl Dst
                       Intf      Intf      Vlans     Vlans
      ---  ----------  --------  --------  --------  --------  --------  --------

n1000v# show resource-availability netflow
      Maximum number of netflow monitors per DVS is 32
      The number of monitors created is 0
      The number of netflow monitors available is 32

      Maximum number of netflow instances per DVS is 256
      The number of netflow instances created is 0
      The number of netflow instances available is 256

      Maximum number of netflow instances per module is 32

      Following table shows the per module instance usage
      ----------------------------------------------------------------
      Module  Used  Available
      ----------------------------------------------------------------

n1000vk# show resource-availability netflow module 3
      Maximum number of netflow instances per host is 32
      Instances created is      0
      Instances available is    32

n1000v# show resource-availability port-channel ?
  <CR>
  >        Redirect it to a file
  >>       Redirect it to a file in append mode
  module   Show VEM specific information
  |        Pipe command output to filter
n1000v# show resource-availability port-channel

      Maximum number of port channels per DVS: 256
      Number of port channels currently created: 0
      Number of port channels available: 256
```

```
    Maximum number of port channels per module: 8
    --------------------------------------------------------------------------------
    Module   Used   Available
    --------------------------------------------------------------------------------
      3      1         7
      4      1         7
      5      2         6
      6      1         7

    Note: Modules not seen in above table are either not added to DVS or have all 8
    port channels available

n1000v# show resource-availability port-channel module ?
   <3-66>  Enter module number

n1000v# show resource-availability port-channel module 3 ?
    Maximum number of port channels per module: 8
    Number of port channels in module: 1
    Number of port channels available for module: 7

n1000v# show resource-availability port-security macs

    ----------------------------------------------------
    Allowed Used    Avail
    ----------------------------------------------------
    8192    0       8192
    ----------------------------------------------------

n1000v# show resource-availability private-vlan

    Maximum number of Private VLANs per DVS: 512
    Number of used Private VLANs: 6
    Number of available Private VLANs : 506
    Maximum number of Primary VLANs per promiscuous trunk port: 64
    Maximum number of Private VLAN associations: 511


n1000v#k# show resource-availability qos-queuing
    Maximum number of classmaps per DVS is 1024
    The number of classmaps created is 171
    The number of classmaps available is 853

    Maximum number of policy maps per DVS is 128
    The number of policy maps created is 38
    The number of policy maps available is 90

    Maximum number of instances per DVS is 2048
    The number of instances created is 3
    The number of instances available is 2045

    Maximum number of instances per module is 256

    Following table shows the per module instance usage
    ----------------------------------------------------------------
    Module   Used   Available
    ----------------------------------------------------------------
      4      3       253
n1000v# show resource-availability qos-queuing module 3
    Maximum number of instances per host is    256
    Instances created is      3
    Instances available is    253

n1000v#k# show resource-availability vethports
```

```
Maximum number of Veth ports per DVS: 2048
Number of Veth ports used: 7
Number of Veth ports available : 2041
Maximum number of Veth ports per module: 216
--------------------------------------------------------------------------------
Module  Used  Available
--------------------------------------------------------------------------------
  3     3       213
  5     4       212
```

n1000v# **show resource-availability vethports module** *4*

```
Maximum number of Veth ports per module: 216
Number of Veth ports in module: 0
Number of Veth ports available for module: 216
```

n1000v# **show resource-availability vlan**

```
Maximum number of user VLANs supported: 2048
Number of user VLANs created        : 1035
Total number of available user VLANs  : 1013

Note: Total number of available user VLANs additionally depend on number of
bridge-domains under usage. Please verify the usage of bridge-domains too.
```

Limitations and Restrictions

The Cisco Nexus 1000V has the following limitations and restrictions:

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Configuration Limits

Table 3 shows the Cisco Nexus 1000V configuration limits:

Table 3   Configuration Limits for Cisco Nexus 1000V

Component	Supported Limits for a Single Cisco Nexus 1000V Deployment Spanning up to 2 Physical Data Centers
Maximum Modules	66
Virtual Ethernet Module (VEM)	64
Virtual Supervisor Module (VSM)	The VSMs can be placed in different physical data centers. Note that the previous restrictions requiring the active-standby VSMs in a single physical data center do not apply anymore.
Hosts	64
Active VLANs or VXLANs across all VEMs	2048 (any combination of VLANs and VXLANs)
MACs per VEM	32000
MACs per VLAN per VEM	4000
vEthernet interfaces per port profile	1024
PVLAN	512
Distributed Virtual Switches (DVS) per vCenter with VMware vCloud Director (vCD)	32
Distributed Virtual Switches (DVS) per vCenter without VMware vCloud Director (vCD)	32
vCenter Server connections	1 per VSM HA Pair[1]
Maximum latency between VSMs and VEMs	100ms

***Table 3** Configuration Limits for Cisco Nexus 1000V (continued)*

Component	Supported Limits for a Single Cisco Nexus 1000V Deployment Spanning up to 2 Physical Data Centers (continued)	
	Per DVS	**Per Host**
Virtual Service Domains (VSDs)	64	6
VSD interfaces	2048	216
vEthernet interfaces	2048	216
Port profiles	2048	—
System port profiles	32	32
Port channel	256	8
Physical trunks	512	—
Physical NICs	—	32
vEthernet trunks	256	8
ACL	128	16[2]
ACEs per ACL	128	128[2]
ACL instances	2048	256
NetFlow policies	32	8
NetFlow instances	256	32
SPAN/ERSPAN sessions	64	64
QoS policy map	128	128
QoS class map	1024	1024
QoS instances	2048	256
Port security	2048	216
MultiCast groups	512	512

1. Only one connection to vCenter server is permitted at a time.

2. This number can be exceeded if VEM has available memory.

Related Documentation

This section lists the documents used with the Cisco Nexus 1000V and available on Cisco.com at the following URL:

http://www.cisco.com/en/US/products/ps9902/tsd_products_support_series_home.html

General Information

Cisco Nexus 1000V Documentation Roadmap

Cisco Nexus 1000V Release Notes

Cisco Nexus 1000V Compatibility Information

Install and Upgrade

Cisco Nexus 1000V Installation and Upgrade Guide

Configuration Guides

Cisco Nexus 1000V High Availability and Redundancy Configuration Guide

Cisco Nexus 1000V Interface Configuration Guide

Cisco Nexus 1000V Layer 2 Switching Configuration Guide

Cisco Nexus 1000V License Configuration Guide

Cisco Nexus 1000V Network Segmentation Manager Configuration Guide

Cisco Nexus 1000V Port Profile Configuration Guide

Cisco Nexus 1000V Quality of Service Configuration Guide

Cisco Nexus 1000V Security Configuration Guide

Cisco Nexus 1000V System Management Configuration Guide

Cisco Nexus 1000V vCenter Plugin Configuration Guide

Cisco Nexus 1000V VXLAN Configuration Guide

Cisco Nexus 1000V vCenter Plugin Configuration Guide

Programming Guide

Cisco Nexus 1000V XML API User Guide

Reference Guides

Cisco Nexus 1000V Command Reference

Cisco Nexus 1000V MIB Quick Reference

Cisco Nexus 1000V Resource Availability Reference

Troubleshooting and

Cisco Nexus 1000V Troubleshooting Guide

Cisco Nexus 1000V Password Recovery Guide

Cisco NX-OS System Messages Reference

Virtual Services Appliance Documentation

The Cisco Nexus Virtual Services Appliance (VSA) documentation is available at

http://www.cisco.com/en/US/products/ps9902/tsd_products_support_series_home.html

Virtual Security Gateway Documentation

The Cisco Virtual Security Gateway documentation is available at
http://www.cisco.com/en/US/products/ps11208/tsd_products_support_model_home.html

Virtual Network Management Center

The Cisco Virtual Network Management Center documentation is available at

http://www.cisco.com/en/US/products/ps11213/tsd_products_support_series_home.html

Virtual Wide Area Application Services (vWAAS)

The Virtual Wide Area Application Services documentation is available at

http://www.cisco.com/en/US/products/ps6870/tsd_products_support_series_home.html

ASA 1000V Cloud Firewall

The ASA 1000V Cloud Firewall documentation is available at

http://www.cisco.com/en/US/products/ps12233/tsd_products_support_series_home.html