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Cisco Nexus 5000 Series Configuration Limits

for Cisco NX-OS Release 5.0(3)N1(1b)

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This document describes the Cisco Cisco Nexus 5000 Series switch configuration limits for Cisco NX-OS Release 5.0(3)N1(1b). Use this document in combination with documents listed in the "Related Documentation" section on page 7.

Contents

This document includes the following sections:

Introduction

The Cisco Nexus 5000 Series switches include a family of line-rate, low-latency, lossless 10-Gigabit Ethernet, Cisco Data Center Ethernet, Fibre Channel over Ethernet (FCoE), and now native Fibre Channel switches for data center applications. The Cisco Nexus 5000 Series includes the Cisco Nexus 5500 Platform and the Cisco Nexus 5000 Platform.

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Cisco NX-OS Software Release 5.0(3)N1(1b) introduces two new Cisco Nexus 5500 Platform switches that extend the versatility of the data-center class Cisco Nexus 5000 Series switches and provide higher density, lower latency, multilayer services.

The Cisco Nexus 5000 Platform includes the following switches:

- Cisco Nexus 5020 switch
- Cisco Nexus 5010 switch

For information about the Cisco Nexus 5000 Series, see the *Cisco Nexus 5000 Series and Cisco Nexus 5500 Platform Hardware Installation Guide*.

Cisco Nexus 5000 Series and Cisco Nexus 5500 Platform switches have been tested for scaling purposes under the following deployment scenarios:

- Layer 2-only deployments
- Layer 2 and Layer 3 combined deployments
- Fibre Channel and FCOE deployments

Note Verification topologies included all listed features configured to the Verified Limits simultaneously. The Maximum Limit for a given feature is the configuration limit or the hardware limit on a specific platform.

Layer 2 Topology Configuration Limits

This section describes the configuration limits in topologies that include only Layer 2 feature configurations.

Table 1 shows the Layer 2 configuration limits for Cisco NX-OS Release 5.0(3)N1(1b):

Table 1 Cisco NX-OS Release 5.0(3) Layer 2 Topology Configuration Limits

	Cisco Nexus 5000 Platform		Cisco Nexus 5500 Platform	
Feature	**Verified Topology[1]**	**Maximum Limits[2]**	**Verified Topology[1]**	**Maximum Limits[2]**
Active VLANs/VSANs per switch	504	507 (504 when FCoE is enabled) 31 are set aside for VSANs and the remaining are for VLANs.	4013 (31 are set aside for VSANs and the remaining are for VLANs)	4013 (31 are set aside for VSANs and the remaining are for VLANs)
VLAN/VSAN ID Space	4,013 Unreserved Space	4,013 Unreserved Space	4013 Unreserved Space	4013 Unreserved Space
Logical Interfaces[3]	12,000	12,000	14,500	14,500
VLAN ACLs (VACLs) per switch	128 (10 unique VACLs)	1024 (128 unique VACLs)	128 (10 unique VACLs)	1024 (62 unique VACLs with up to 2048 ACE entries across all VACLs)
Port ACLs (PACLs) per switch	576	576	1152	1152

Table 1 Cisco NX-OS Release 5.0(3) Layer 2 Topology Configuration Limits (continued)

Feature	Cisco Nexus 5000 Platform		Cisco Nexus 5500 Platform	
	Verified Topology[1]	Maximum Limits[2]	Verified Topology[1]	Maximum Limits[2]
Member interfaces per EtherChannel	16	16	16	16
IGMP Snooping groups	1,000	1,000	3,700	4,000
Maximum Fabric Extenders per Cisco Nexus 5000 Series or Nexus 5500 Series switch	12 units	12 units	24 units	24 units in Layer 2 mode 16 units in Layer 3 mode
Maximum Fabric Extenders dual-homed to a vPC Cisco Nexus 5000 Series or Nexus 5500 Series switch pair	12 units	12 units	24 units	24 units in Layer 2 mode 16 units in Layer 3 mode
MAC Table Size	13,800[4]	16,000[4]	29,000[5]	32,000[5]
Number of Switchport EtherChannels	16 (with the combination not exceeding 16, and not more than a total of 16 ports per EtherChannel)	16 (with the combination not exceeding 16, and not more than a total of 16 ports per EtherChannel)	48—Nexus 5548 or Nexus 5548UP switch 96—Nexus 5596 switch	48—Nexus 5548 or Nexus 5548UP switch 96—Nexus 5596 switch
Number of FEX Port channels/VPCs (across maximum number of FEXs)	576	576	900 in FEX-active/ active configuration 750 in FEX-straight through configuration	1152
SPAN Sessions	2 active sessions 32 source VLANs as a TX source	2 active sessions 32 source VLANs as a TX source	2 active sessions 32 source VLANs as a TX source	4 active sessions 32 source VLANs as a TX source
Configurable QoS groups (including class default)	5	5	6	6
No-drop qos-groups	1 class - FCoE no-drop	3 (including FCoE)	1 class - FCoE no-drop	4

1. Verified Topology—Indicates the verified scaling capabilities with **all listed features enabled at the same time**. The numbers listed here exceed that used by most customers in their topologies. The scale numbers listed here are not the maximum verified values if each feature is viewed in isolation.
2. Maximum Limits—Indicates the maximum scale capability tested for the corresponding feature **individually**. This number is the absolute maximum currently supported by Cisco NX-OS Release 5.0(3)N1(1b) software for the corresponding feature. If the hardware is capable of a higher scale, future software releases may increase this maximum limit.
3. Logical interfaces are a product of the number of VLANs times the number of ports. This parameter reflects the load of handling port programming, and is not dependent on the spanning-tree mode or configuration.
4. 2,200 entries are reserved multicast MAC addresses. The usable limit for unicast MAC addresses is 13,800.
5. 4,000 entries are reserved multicast MAC addresses; 25,000 entries are reserved unicast entries.

Layer 2 and Layer 3 Topology Configuration Limits

Table 2 shows the configuration limits when using a Layer 3 module (N55-D160L3, N55-M160L3) on the Cisco Nexus 5500 Platform switch with Cisco NX-OS Release 5.0(3)N1(1b):

Table 2 Cisco NX-OS Release 5.0(3) Layer 2 and Layer 3 Configuration Limits

Feature	Cisco Nexus 5500 Platform	
	Verified Topology[1]	Maximum Limits[2]
Active VLANs/VSANs per switch	4,013 (31 are reserved for VSANs and the remaining are for VLANs)	4,013 (31 are reserved for VSANs and the remaining are for VLANs)
VLAN/VSAN ID Space	4,013 Unreserved Space	4,013 Unreserved Space
Logical Interfaces[3]	10,000	10,000
Member interfaces per EtherChannel	16	16
IGMP Snooping groups	3,400	4,000
Maximum Fabric Extenders per Cisco Nexus 5000 Series or Nexus 5500 Series switch	16	16
Maximum Fabric Extenders dual-homed to a vPC Cisco Nexus 5000 Series or Nexus 5500 Platform switch pair	16 per Nexus 5000 Series switch	16 per Nexus 5000 Series switch
MAC table size	27,400[4]	32,000[4]
Number of Switchport EtherChannels	48—Nexus 5548P and Nexus 5548UP switch 96—Nexus 5596UP switch	48—Nexus 5548P and Nexus 5548UP switch 96—Nexus 5596UP switch
Number of FEX port channels/vPCs (across the maximum number of FEXs)	512	768
SPAN Sessions	2 active sessions 32 source VLANs as a TX source	4 active sessions 32 source VLANs as a TX source
Configurable QoS groups (including class default)	6	6
No-drop qos-groups	1 class - FCoE no-drop	4
Layer 3 Configuration Limits		
BGP	7,200[5]	8,000
RIP	7,200[5]	8,000
Multicast routes	2,000	2,000
RACLs	62 Ingress RACLs with up to 1664 ACE entries across all the RACLs	62 Ingress RACLs with up to 1664 ACE entries across all the RACLs
VRFs	25	1,000
Layer 3 Subinterfaces	100	100
ARPs	6,500[6]	8,000

1. Verified Topology—Indicates the verified scaling capabilities with **all listed features enabled at the same time**. The numbers listed here exceed that used by most customers in their topologies. The scale numbers listed here are not the maximum verified values if each feature is viewed in isolation.
2. Maximum Limits—Indicates the maximum scale capability tested for the corresponding feature **individually**. This number is the absolute maximum currently supported by Cisco NX-OS Release 5.0(3)N1(1b) software for the corresponding feature. If the hardware is capable of a higher scale, future software releases may increase this maximum limit.
3. Logical interfaces are a product of the number of VLANs times the number of ports. This parameter reflects the load of handling port programming, and is not dependent on the spanning-tree mode or configuration.
4. 24,000 entries are reserved for unicast MAC entries and 3,400 entries are reserved for IGMP groups.
5. 7,200 is the maximum number of dynamic routes supported regardless of protocol.
6. The maximum LPM entries plus ARP entries plus SVI route entries is 12,000 entries.

Layer 2 Switching, Fibre Channel, and FCoE Topology Configuration Limits

Table 3 shows the configuration limits in topologies that include Layer 2 switching, Fibre Channel, and FCoE configurations.

Table 3 Cisco NX-OS Release 5.0(3) Layer 2 Switching, Fibre Channel, and FCoE Configuration Limits

Feature	Cisco Nexus 5000 Platform		Cisco Nexus 5500 Platform	
	Verified Topology[1]	Maximum Limits[2]	Verified Topology[1]	Maximum Limits[2]
Active VLANs/VSANs per switch	504	507 (504 when FCoE is enabled) 31 are reserved for VSANs and the remaining are for VLANs.	512	4,013 (31 are reserved for VSANs and the remaining are for VLANs)
VLAN/VSAN ID space	4,013 unreserved space	4,013 unreserved space	4,013 unreserved space	4,013 unreserved space
Logical interfaces[3]	12,000	12,000	12,000	14,500
IGMP groups	1,000	1,000	1,000	4,000
Maximum Fabric Extenders per Cisco Nexus 5000 Series or Nexus 5500 Platform switch	5	12	5	24
MAC table size	14,000[4]	16,000[4]	14,000[4]	32,000[4]
Number of Switchport EtherChannels	8	16 (with the combination not exceeding 16, and not more than a total of 16 ports per EtherChannels)	8	48—Nexus 5548P and Nexus 5548UP switch 96—Nexus 5596UP switch
SPAN Sessions	2 active sessions 32 source VLANs as a TX source	2 active sessions 32 source VLANs as a TX source	2 active sessions 32 source VLANs as a TX source	4 active sessions 32 source VLANs as a TX source
Configurable QoS groups (including class default)	2	5	2	6
No-drop qos-groups	1 - FCoE	3 (including FCoE)	1 - FCoE	4
Native FC links per switch	16	16	8 on N5548	8—Nexus 5548 switch 48—Nexus 5548UP switch 96—Nexus 5596UP switch
FLOGIs or FDISCs per NPV port group	106	255	106	255
Zones per virtual or physical F port (includes all VSANs)	32	32	32	32

Table 3 Cisco NX-OS Release 5.0(3) Layer 2 Switching, Fibre Channel, and FCoE Configuration Limits (continued)

Feature	Cisco Nexus 5000 Platform		Cisco Nexus 5500 Platform	
	Verified Topology[1]	Maximum Limits[2]	Verified Topology[1]	Maximum Limits[2]
Zone sets per switch (includes all VSANs)	32	500	32	500
Zone members per physical fabric (includes all VSANs)	1,280	8,000	1,280	8,000
Zones per switch (includes all VSANs)	640	8,000	640	8,000
Maximum diameter of a SAN Fabric	7	12	7	12
FSPF interface instances per switch	192	512	192	256—Nexus 5548 switch 1,536—Nexus 5548UP switch 3,072—Nexus 5596UP switch
ISL instances per switch	6	16	6	8—Nexus 5548 switch 48—Nexus 5548UP switch 96—Nexus 5596UP switch
Virtual Fibre Channel interfaces	160	160	160	160
Max FCIDs allocated	320	2,048	320	2,048
Fibre Channel Flows	32	32	32	32

1. Verified Topology—Indicates the verified scaling capabilities with **all listed features enabled at the same time**. The numbers listed here exceed that used by most customers in their topologies. The scale numbers listed here are not the maximum verified values if each feature is viewed in isolation.
2. Maximum Limits—Indicates the maximum scale capability tested for the corresponding feature **individually**. This number is the absolute maximum currently supported by Cisco NX-OS Release 5.0(3)N1(1b) software for the corresponding feature. If the hardware is capable of a higher scale, future software releases may increase this maximum limit.
3. Logical interfaces are a product of the number of VLANs times the number of ports. This parameter reflects the load of handling port programming, and is not dependent on the spanning-tree mode or configuration.
4. 24,000 entries are reserved for unicast MAC entries and 3,400 entries are reserved for IGMP groups.

Related Documentation

Documentation for Cisco Nexus 5000 Series Switches and Cisco Nexus 2000 Series Fabric Extenders is available at the following URL:

http://www.cisco.com/en/US/products/ps9670/tsd_products_support_series_home.html

The following are related Cisco Nexus 5000 Series and Cisco Nexus 2000 Series Fabric Extender documents:

Release Notes

Cisco Nexus 5000 Series and Cisco Nexus 2000 Series Release Notes

Cisco Nexus 5000 Series Switch Release Notes

Configuration Guides

Cisco Nexus 5000 Series Configuration Limits for Cisco NX-OS Release 5.0(2)N1(1)

Cisco Nexus 5000 Series Configuration Limits for Cisco NX-OS Release 4.2(1)N1(1) and Release 4.2(1)N2(1)

Cisco Nexus 5000 Series NX-OS Fibre Channel over Ethernet Configuration Guide

Cisco Nexus 5000 Series NX-OS Layer 2 Switching Configuration Guide

Cisco Nexus 5000 Series NX-OS Multicast Routing Configuration Guide

Cisco Nexus 5000 Series NX-OS Quality of Service Configuration Guide

Cisco Nexus 5000 Series NX-OS SAN Switching Configuration Guide

Cisco Nexus 5000 Series NX-OS Security Configuration Guide

Cisco Nexus 5000 Series NX-OS System Management Configuration Guide

Cisco Nexus 5000 Series NX-OS Unicast Routing Configuration Guide

Cisco Nexus 5000 Series Switch NX-OS Software Configuration Guide

Cisco Nexus 5000 Series Fabric Manager Configuration Guide, Release 3.4(1a)

Cisco Nexus 7000 Series NX-OS Fundamentals Configuration Guide, Release 4.2

Cisco Nexus 2000 Series Fabric Extender Software Configuration Guide

Maintain and Operate Guides

Cisco Nexus 5000 Series NX-OS Operations Guide

Installation and Upgrade Guides

Cisco Nexus 5000 Series and Cisco Nexus 5500 Platform Hardware Installation Guide

Cisco Nexus 2000 Series Hardware Installation Guide

Cisco Nexus 5000 Series NX-OS Software Upgrade and Downgrade Guide, Release 4.2(1)N1(1)

Regulatory Compliance and Safety Information for the Cisco Nexus 5000 Series Switches and Cisco Nexus 2000 Series Fabric Extenders

Licensing Guide

Cisco NX-OS Licensing Guide

Command References

Cisco Nexus 5000 Series Command Reference

Technical References

Cisco Nexus 5000 Series and Cisco Nexus 2000 Series Fabric Extender MIBs Reference

Error and System Messages

Cisco NX-OS System Messages Reference

Troubleshooting Guide

Cisco Nexus 5000 Troubleshooting Guide

Obtaining Documentation and Submitting a Service Request

For information on obtaining documentation, submitting a service request, and gathering additional information, see the monthly *What's New in Cisco Product Documentation*, which also lists all new and revised Cisco technical documentation, at:

http://www.cisco.com/en/US/docs/general/whatsnew/whatsnew.html

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