



Verified Scalability for Cisco Nexus 5500 Series NX-OS Release 7.3(0)N1(1)

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Overview of Verified Scalability

This document lists the Cisco verified scalability limits.

In the following tables, the Verified Topology column lists the verified scaling capabilities with all listed features enabled at the same time. The numbers listed here exceed those 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.

The Verified Maximum column lists the maximum scale capability tested for the corresponding feature individually. This number is the absolute maximum currently supported by the Cisco NX-OS Release software for the corresponding feature. If the hardware is capable of a higher scale, future software releases may increase this verified maximum limit.

Verified Scalability for a Layer 2 Switching Deployment

This table lists the verified scalability for a Layer 2 switching deployment.

Table 1: Verified Scalability for a Layer 2 Switching Deployment

Feature	Verified Topology	Verified Maximum
Active VLANs/VSANs per switch	4000	4013 (31 are reserved for VSANs and the remaining are for VLANs)
VLAN/VSAN ID Space	4013 Unreserved space	4013 Unreserved space
Logical Interfaces 1	48,000 2	48,000
VLAN ACLs (VACLs)	128 (10 unique VACLs)	1024 (512 unique VACLs with up to 1,024 ACE entries across all VACLs)
PVLANs	512	512
Maximum number of PVLANs supported on a promiscuous trunk port	64	64
Number of primary and secondary mappings of PVLANs on a promiscuous trunk port	128	128
Maximum Interfaces per EtherChannel	16	16
IGMP Snooping Groups	4000 (in FEX deployments) 8000 (in non-FEX deployments)	4000 (in FEX deployments) 8000 (in non-FEX deployments)
Maximum FEXs per Cisco Nexus 5500 Series Switch	24	48
Maximum FEXs Dual-homed to a vPC Cisco Nexus 5500 Series Switch Pair	24	24
MAC Table Size (Entries)	25,000 Unicast 4000 Multicast	25,000 Unicast 4000 Multicast
Number of Switchport EtherChannels	48 for the Cisco Nexus 5548 or Nexus 5548UP Switch	48 for the Cisco Nexus 5548 or Nexus 5548UP Switch 96 for the Cisco Nexus 5596 Switch

Feature	Verified Topology	Verified Maximum
Number of FEX Port Channels/vPCs (across the maximum number of FEXs)	576	1152
SVIs	2	256
FabricPath VLANs	4000 ³	4000
SPAN Sessions	4 active sessions 32 source VLANs as a RX source	4 active sessions 32 source VLANs as a RX source
FabricPath Switch IDs	500	500
FabricPath Multicast Trees	2	2
Number of FabricPath Topologies	2	2
Number of FabricPath Core Port-Channels	4 core links with 4 ports each	16
FEX Host Interface Storm Control	1152 ⁴	1152
ACL Accounting	32	32

¹ 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.

² For the Cisco Nexus 5548 switch, there are no non-edge restrictions.

³ FabricPath VLANs are verified in the unified fabric topology

⁴ This is the target maximum number that HIF-SC can support. Beyond this number, NIF-SC is recommended for deployment.

Verified Scalability for a Layer 2 Switching and Layer 3 Routing Deployment

This table contains the verified scalability for a Layer 2 switching and Layer 3 routing deployment.



Note

The currently tested values do not provide an indication for the maximum scalability of the control plane. These numbers vary based on the load of the system in terms of routing protocols, timers settings, and other values. Proof of concept testing should be used to determine the scalability of a given feature for your environment.

Table 2: Verified Scalability for a Layer 2 Switching and Layer 3 Routing Deployment

Feature	Verified Topology	Maximum Limits
Active VLANs/VSANs per Switch	1000	4013 (31 are reserved for VSANs)
VLAN/VSAN ID Space	4013 Unreserved space	4013 Unreserved space
STP Instances	16,000	16,000
Maximum Interfaces per EtherChannel	16	16
IGMP Snooping Groups	4000 (in FEX deployments) 8000 (in non-FEX deployments)	4000 (in FEX deployments) 8000 (in non-FEX deployments)
Maximum FEXs per Cisco Nexus 5500 Series Switch 5	16	16
Maximum FEXs Dual-homed to a vPC Switch Pair 6	16	16
MAC Table Size (Entries)	23,400 Unicast entries and 4,000 Multicast entries	23,400 Unicast entries and 4,000 Multicast entries
Number of FEX Port-Channels/vPCs (across the maximum number of FEXs)	470	768
SPAN Sessions	2 active sessions 32 source VLANs as a RX source	4 active sessions 32 source VLANs as a RX source
SVIs	256	256
Dynamic IPv4 Routes 7	7200 8	<ul style="list-style-type: none"> 7200 for the Cisco Nexus 5548 Layer 3 Daughter Card (N55-D160L3(=)) 14,400 for the Cisco Nexus 5548 Layer 3 Daughter Card, version 2 (N55-D160L3-V2(=))

Feature	Verified Topology	Maximum Limits
Dynamic IPv6 Routes 9	3600 10	<ul style="list-style-type: none"> • 3600 for the Cisco Nexus 5548 Layer 3 Daughter Card (N55-D160L3(=)) • 7200 for the Cisco Nexus 5548 Layer 3 Daughter Card, version 2 (N55-D160L3-V2(=))
Multicast IPv4 Routes 1112	<ul style="list-style-type: none"> • 1000 for the Cisco Nexus 5548 Layer 3 Daughter Card (N55-D160L3(=)) • 2000 for the Cisco Nexus 5548 Layer 3 Daughter Card, version 2 (N55-D160L3-V2(=)) 13	<ul style="list-style-type: none"> • 4000 for the Cisco Nexus 5548 Layer 3 Daughter Card (N55-D160L3(=)) • 8000 for the Cisco Nexus 5548 Layer 3 Daughter Card, version 2 (N55-D160L3-V2(=))
ARPs (IPv4 Hosts) 1415	<ul style="list-style-type: none"> • 6500 for the Cisco Nexus 5548 Layer 3 Daughter Card (N55-D160L3(=)) • 6500 for the Cisco Nexus 5548 Layer 3 Daughter Card, version 2 (N55-D160L3-V2(=)) 16	<ul style="list-style-type: none"> • 8000 for the Cisco Nexus 5548 Layer 3 Daughter Card (N55-D160L3(=)) • 16,000 for the Cisco Nexus 5548 Layer 3 Daughter Card, version 2 (N55-D160L3-V2(=))

Feature	Verified Topology	Maximum Limits
IPv6 Hosts 17	1600 18	<ul style="list-style-type: none"> • 4000 for the Cisco Nexus 5548 Layer 3 Daughter Card (N55-D160L3(=)) • 8000 for the Cisco Nexus 5548 Layer 3 Daughter Card, version 2 (N55-D160L3-V2(=))
VRFs	25	1000
RACLs	62 Ingress RACLs with up to 1,664 ACE entries across all of the RACLs	62 Ingress RACLs with up to 1,664 ACE entries across all of the RACLs
HSRP Groups	254	256
VRRP Groups	254	256
BFD Sessions over L3-intf for CE Mode	8 sessions (250 ms intvl, 750 ms dead-intvl)	32 sessions (250 ms intvl, 750 ms dead-intvl)
BFD Sessions over SVI for FabricPath mode	64 sessions (250 ms intvl, 750 ms dead-intvl)	64 sessions (250 ms intvl, 750 ms dead-intvl)
PBR IPv4	15	15
PBR IPv6	15	15

⁵ FEXs are verified in the Layer 2 topology.

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⁷ The maximum number of entries that can be supported is 8000. This table is shared between IPv4 and IPv6. An IPv4 route takes up one entry in the table and an IPv6 route takes up two entries.

⁸ Entries shared between IPv4, IPv6 network routes .

⁹ The maximum number of entries that can be supported is 8000. This table is shared between IPv4 and IPv6. An IPv4 route takes up one entry in the table and an IPv6 route takes up two entries.

¹⁰ Entries shared between IPv4, IPv6 network routes .

¹¹ All numbers are for individual feature scalability.

¹² This includes (*,G) entries, (S,G) entries, and the entries required for vPC with bind-vrf configured. When bind-vrf is configured, each (*,G) and (S,G) entry is replicated.

¹³ Entries shared between IPv4 multicast, IPv4, IPv6 host routes .

¹⁴ All numbers are for individual feature scalability.

- 15 The maximum number of entries the table can support is the sum of LPM entries plus ARP entries plus SVI route entries.
 16 Entries shared between IPv4 multicast, IPv4, IPv6 host routes .
 17 All numbers are for individual feature scalability.
 18 Entries shared between IPv4 multicast, IPv4, IPv6 host routes .

Verified Scalability for Fiber Channel (FC) and Fiber Channel over Ethernet (FCoE)

Refer to [Cisco Nexus 5000 and 6000 Series FC and FCoE Configuration Limits for NX-OS Release 7.3\(0\)N1\(1\)](#)

Verified Scalability for Multicast Routing

This table lists the verified scalability for multicast routing.

Table 3: Verified Scalability for Multicast Routing

Feature	Parameter	Verified Maximum
Protocol Independent Multicast (PIM)	Number of neighbors	500
	Number of neighbors/total routes per system with aggressive hello timers (5 seconds)	16/4,000
Multicast Source Discovery Protocol (MSDP)	Number of MSDP Source-Active (SA) cache entries	6,000



Note

- In vPC setup, TCAM exhaustion failure will lead to some routes not getting programmed in the hardware. Hence, there might exist a condition where mrib will show the route exists but mfib may not have it programmed.
- In bind-vrf configuration, for every mroute, additional mroute is programmed in the hardware and this could lead to TCAM exhaustion. Hence, ensure that the mroute count does not exceed $((\text{max-limit}/2) - 4)$ default routes.

For example: If the hardware profile multicast max-limit is 8000, then mroute count should not exceed $((8000/2)-4)$ default routes.

Verified Scalability for Unicast Routing

Guidelines and Limitations for Unicast Routing

- You can have up to four instances of OSPFv2.
- You can have up to four instances of OSPFv3.

This table lists the verified scalability for unicast routing.

Table 4: Verified Scalability for Unicast Routing

Feature	Parameter	Verified Maximum
OSPFv2	Number of active interfaces	256
	Number of passive interfaces	256
	Number of neighbors/total routes with aggressive timers (1 sec/ 3 sec)	16/6,000
OSPFv3	Number of active interfaces	256
	Number of passive interfaces	256
EIGRP	Number of active interfaces	50
BGP	Number of peers (iBGP and eBGP, active)	256
	Number of AS path entries	512
	Number of prefix-list entries in a single prefix-list	10,000
HSRP	Number of groups with aggressive timers (1 sec/3 sec)	500
L3 ISIS	Number of adjacencies	100
Unicast Adjacencies	Number of regular/ECMP adjacencies	8192

Verified Scalability for a Layer 2 Switching and Virtualization (Adapter-FEX or VM-FEX) Deployment

This table lists the verified scalability for a Layer 2 switching and virtualization (Adapter-FEX or VM-FEX) deployment.

Table 5: Scalability Limits for a Layer 2 Switching and Virtualization (Adapter-FEX or VM-FEX) Deployment

Feature	Verified Topology	Verified Maximum
Number of VFCs over Virtual Ethernet Interfaces	40	40
Number of Port Profiles	1,000	1,000
Number of Virtual Machines (VMs) Concurrently not VMotioned	5 VMs with 10 vNICs each	5 VMs with 10 vNICs each
Number of Virtual Ethernet Interfaces Enabled with vNIC Shaping	2,000	2,000
Number of Virtual Ethernet Interfaces Enabled with Untagged CoS	2,000	2,000
Server - Number of Adapters per Server	1	1
Server - Number of vNICs per Server	50	96

