



## **Cisco Nexus 9000 Series NX-OS Verified Scalability Guide, Release 7.0(3)F1(1)**

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## Verified Scalability Limits

This document describes the Cisco NX-OS configuration limits for the Cisco Nexus 9508 switch with an X9636C-R or X9636Q-R line card or a C9508-FM-R fabric module.

### Introduction

The values provided in this guide should not be interpreted as theoretical system limits for Cisco Nexus 9000 Series hardware or Cisco NX-OS software. These limits refer to values that have been validated by Cisco. They can increase over time as more testing and validation is done.

### Verified Scalability Limits

The tables in this section list the verified scalability limits for Cisco NX-OS Release 7.0(3)F1(1). These limits are validated with a unidimensional configuration. The values provided in these tables focus on the scalability of one particular feature at a time.

Each number is the absolute maximum currently supported by this Cisco NX-OS release for the corresponding feature. If the hardware is capable of a higher scale, future software releases might increase this verified maximum limit. Results might differ from the values listed here when trying to achieve maximum scalability with multiple features enabled.

**Table 1: Interfaces Verified Scalability Limits (Unidimensional)**

Feature	Verified Limit
DHCP clients per switch	5 (IPv4) + 5 (IPv6)
Port channel links	32
SVIs	410 (with HSRP), 2000 without HSRP
vPCs	30

**Table 2: Label Switching Verified Scalability Limits (Unidimensional)**

Feature	Verified Limit
Forwarding Equivalence Classes (FECs)	1000
Equal-cost multipaths (ECMPs)	8
FECs ECMPs	8000
Flex counters for static MPLS in egress direction	0

Feature	Verified Limit
Flex counters per adjacency	0

**Table 3: Layer 2 Switching Verified Scalability Limits (Unidimensional)**

Feature	Verified Limit
MAC addresses	92,000
MST instances	64
MST virtual ports	218,185
RPVST virtual ports	13,750
VLANs	4000
VLANs in RPVST mode	250

**Table 4: Layer 3 Multicast Verified Scalability Limits (Unidimensional)**

Feature	Verified Limit
IPv4 multicast routes	32,000 (Layer 3)
Outgoing interfaces (OIFs)	16 OIFs for 32K mroutes or 287 OIFs for 1000 mroutes
PIM neighbors	500

**Table 5: Security Verified Scalability Limits (Unidimensional)**

Feature	Verified Limit
IPv4 ingress access control entries (ACEs)	RACL-2048, PACL-1024 (without TCAM Carving) IPv4 52640 ACEs per system
IPv4 egress access control entries (ACEs)	N/A
IPv6 ingress access control entries (ACEs)	RACL-1024, PACL-1024 (without TCAM Carving) IPv4 25200 ACEs per system
IPv6 egress access control entries (ACEs)	N/A

**Table 6: System Management Verified Scalability Limits (Unidimensional)**

<b>Feature</b>	<b>Verified Limit</b>
<b>SPAN and ERSPAN</b>	
Configurable SPAN or ERSPAN sessions	32
Active SPAN or ERSPAN sessions	32
Active localized SPAN or ERSPAN session per line card	32 sessions across ports on single line card
Active localized SPAN or ERSPAN session (Rx and Tx, Rx, or Tx)	32 sessions, 128 sources and 1 destination
Destination interfaces per SPAN session	1
Source VLANs per SPAN or ERSPAN	32

**Table 7: Layer 3 Unicast Routing Verified Scalability Limits (Unidimensional)**

<b>Feature</b>	<b>Verified Limit</b>
BFD sessions (echo mode)	288
BGP neighbors	256
HSRP groups	410
IPv4 ARP	80,000
IPv4 host routes	750,000
IPv6 host routes	62,000
IPv6 ND	32,000
IPv4 unicast routs (LPM)	192,000
IPv6 unicast routs (LPM)	62,000
OSPFv2 neighbors	1000
OSPFv3 neighbors	1000
OSPF/OSPFv3 LSA/LSDB size	100,000
OSPF/OSPFv3 areas	15

Feature	Verified Limit
VRFs	1000

**Table 8: Unicast Routing Verified Scalability Limits (Unidimensional)**

Feature	Verified Limit
<b>VRRP</b>	
VRRP groups per interface or I/O module	15

**Table 9: Tunnels Verified Scalability Limits (Unidimensional)**

Feature	Verified Limit
<b>VxLAN BGP eVPN</b>	
Layer 3 VNIs / VRFs	100
VTEPs	256
IPv4 host routes	128,000
IPv6 host routes	32,000
IPinIP Tunneling	4000

The tables in this section list the verified scalability limits for Cisco NX-OS Release 7.0(3)F1(1). These limits are validated with a multidimensional configuration. The values provided in these tables focus on the scalability of one particular feature at a time.

Each number is the absolute maximum currently supported by this Cisco NX-OS release for the corresponding feature. If the hardware is capable of a higher scale, future software releases might increase this verified maximum limit. Results might differ from the values listed here when trying to achieve maximum scalability with multiple features enabled.

**Table 10: MSDC iBGP/OSPF Profile Verified Scalability Limits (Multidimensional)**

Feature	Verified Limit <sup>1</sup>
Number of 100G ports	144
Number of 40G ports	144
ECMP	16-way (Upstream)
BGP neighbors	16

Feature	Verified Limit <sup>1</sup>
BGP IPv4 VLSM unicast routes	18,000
BGP IPv6 VLSM unicast routes	10,000
OSPFv2 neighbors	264
OSFPv3 neighbors	264
OSPF IPv4 /32 unicast routes	26,000
OSPF IPv4 VLSM unicast routes	1200
OSPF IPv6 /128 unicast routes	26,000
OSPF IPv6 VLSM unicast routes	1200
BFD sessions	264
VRF	250
PIM neighbors	264
IPv4 (*,G) multicast routes	1500
IPv4 (S,G) multicast routes	3000
RACL	1500 500
SPAN sessions	1 local SPAN sessions

<sup>1</sup> A fully loaded chassis consisting of 4 X9636C-R line cards and 4 X9636Q-R line cards and 6 C9508-FM-R fabric modules and 2 System controllers and 2 Supervisor modules

**Table 11: MSDC eBGP Profile Verified Scalability Limits (Multidimensional)**

Feature	Verified Limit <sup>2</sup>
Number of 100G ports	288
ECMP	16-way (Upstream)
BGP neighbors	268
BGP IPv4 /32 unicast routes	30,000
BGP IPv4 VLSM unicast routes	18,000

Feature	Verified Limit <sup>2</sup>
BGP IPv6 /128 unicast routes	30,000
BGP IPv6 VLSM unicast routes	10,000
BFD sessions	272
VRF	250
PIM neighbors	256
IPv4 (*,G) multicast routes	1000
IPv4 (S,G) multicast routes	2500
RACL	1500 500
SPAN sessions	1 local SPAN sessions

<sup>2</sup> A fully loaded chassis consisting of 8 X9636C-R line cards and 6 C9508-FM-R fabric modules and 2 System controllers and 2 Supervisor modules

**Table 12: L2/L3 Aggregation Verified Scalability Limits (Multidimensional)**

Feature	Verified Limit <sup>3</sup>
Number of 100G ports	36
ECMP	16-way (Upstream)
OSPFv2 neighbors	17
OSPFv3 neighbors	17
OSPF IPv4 /32 unicast routes	30,000
OSPF IPv4 VLSM unicast routes	1000
OSPF IPv6 /128 unicast routes	30,000
OSPF IPv6 VLSM unicast routes	1000
BFD sessions	17
VRF	250
VLAN	2000

Feature	Verified Limit <sup>3</sup>
SVI	2000
VRRP v4 Groups	2000 VRRS / 16 VRRPv3
VRRP v6 Groups	2000 VRRS / 16 VRRPv3
PIM neighbors	17
IPv4 (*,G) multicast routes	1500
IPv4 (S,G) multicast routes	20,000
RACL	1500 500
SPAN sessions	2 local SPAN sessions

<sup>3</sup> A fully loaded chassis consisting of 1 X9636C-R line cards and 2 C9508-FM-R fabric modules and 2 System controllers and 2 Supervisor modules

**Table 13: VxLAN Profile Verified Scalability Limits (Multidimensional)**

Feature	Verified Limit <sup>4</sup>
Number of ports	36
ECMP	8-way (Upstream)
BGP neighbors	258
BGP EVPN L2VPN host routes	64,000
BGP IPv4 VLSM unicast routes or OSPF	10,000
BGP IPv6 VLSM unicast routes or OSPF	6000
BFD sessions	31
PIM neighbors	288
IPv4 (*,G) multicast routes	2000
IPv4 (S,G) multicast routes	16,000
RACL	1500 500



Feature	Verified Limit <sup>4</sup>
SPAN sessions	2 local SPAN sessions

<sup>4</sup> A fully loaded chassis consisting of 1 X9636C-R line cards and 2 C9508-FM-R fabric modules and 2 System controllers and 2 Supervisor modules

**Table 14: vPC Verified Scalability Limits (Multidimensional)**

Feature	Verified Limit
Physical interfaces enabled	70
IPv4 unicast routes (LPM)	60,060
IPv6 unicast routes (LPM)	15,676
IPv4 ARP	33,500
IPv6 ND	26,500
MAC addresses	46,000
VLANs	410
vPCs	30
OSPFv2 neighbors	380
OSPFv3 neighbors	380
BGP (IPv4) neighbors	16
BGP (IPv6) neighbors	16
SVIs	410
HSRP VLANs (IPv4/IPv6)	380 IPV4 and 380 IPv6
Virtual ports	450
Port channel links	8,4,2,1 VPC member ports

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