



Cisco Nexus 3600 NX-OS Verified Scalability Guide, Release 70(3)I7(9)

Introduction 2

Verified Scalability Limits (Unidimensional) 2

Verified Scalability Limits (Multidimensional) 5

Introduction

This document describes the Cisco NX-OS configuration limits for the Cisco Nexus 3600 platform switch with N3K-C3636C-R and N3K-C36180YC-R line cards.



Note All the limits are for the N3K-C36180YC-R TOR. The values specific to N3K-C3636C-R are indicated against the specific limit and the table.

The values that are provided in this guide should not be interpreted as theoretical system limits for Cisco Nexus 3600 platform hardware or the 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 (Unidimensional)

The tables in this section list the verified scalability limits for Cisco NX-OS Release 7.0(3)I7(9). 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 servers/relay IPs per switch	5 (IPv4) + 5 (IPv6) ¹
Port channel member links	32
SVIs	4,000
vPCs	48

¹ This limit has not been tested

Table 2: Label Switching Verified Scalability Limits (Unidimensional)

Feature	Verified Limit
Forwarding Equivalence Classes (FECs)	1,000
Equal-cost multipaths (ECMPs)	8
FECs ECMPs	4,000
IAS option B labels	450,000
Layer 3 VPN routes	450,000

Feature	Verified Limit
ECMPs	2,000

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

Feature	Verified Limit
MAC addresses	192,000
MST instances	64
MST virtual ports	218,185
RPVST virtual ports	13,750
VLANs	3,967
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
SVI	50-60

Table 5: Security Verified Scalability Limits (Unidimensional)

Feature	Verified Limit
IPv4 ingress access control entries (ACEs)	RACL-2000, PACL-1024 (without TCAM Carving) IPv4 52640 ACEs per system
IPv6 ingress access control entries (ACEs)	RACL-1000, PACL-1024 (without TCAM Carving) IPv6 25200 ACEs per system

Table 6: System Management Verified Scalability Limits (Unidimensional)

Feature	Verified Limit
SPAN and ERSPAN	
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

Feature	Verified Limit
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	6

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

Feature	Verified Limit
BFD sessions (echo mode)	288
BGP neighbors	256
HSRP groups	498
IPv4 ARP	80,000
IPv4 host routes	750,000
IPv6 host routes	62,000
IPv6 ND	32,000
IPv4 unicast routes (LPM)	192,000
IPv6 unicast routes (LPM)	62,000
OSPFv2 neighbors	1,000
OSPFv3 neighbors	1,000
OSPF/OSPFv3 LSA/LSDB size	250,000
OSPF/OSPFv3 areas	15
VRFs	3,967
VRRP	
VRRP groups per interface or I/O module	15

Table 8: HSRP Verified Scalability Limits (Unidimensional)

Feature	Verified Limit
Groups with default timers (3s/10s) and multiple group optimization. [There are 2 primary, one for IPv4 and the other for IPv6, and 7926 secondary]	7,928

Feature	Verified Limit
Groups with aggressive timers (1s/3s) and multiple groups optimization. [There are 2 primary, one for IPv4 and the other for IPv6, and 7926 secondary] ²	7,928
Groups per interface or I/O module	Maximum 16 (Because 16 is the unique virtual MAC address limit)
HSRP groups	8000

² If the user has Multi-protocol configuration, user should configure appropriate CoPP policies so as to avoid any control plane traffic drops.

Verified Scalability Limits (Multidimensional)

The tables in this section list the verified scalability limits for Cisco NX-OS Release 7.0(3)I7(9). 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.



Attention

These numbers are not the maximum verified values if each feature is viewed in isolation. For these numbers, see the "Verified Scalability Limits" section.

Table 9: MSDC Profile Verified Scalability Limits (Multidimensional)

Feature	Verified Limit
Number of 100G ports	6
VPC port channels	10
ISIS IPv4 /32 unicast routes	1,291
ISIS IPv6 /128 unicast routes	1,291
Multicast IPv4 SSM	10,000
VRF IPv4/IPv6	100
PIM neighbors	100
IGMP snooping database entries	240
VRRP IPv4 and IPv6	1,000 vlans
Multicast SSM	10,000
HSRP IPv4 and IPv6	1,000 vlans

Feature	Verified Limit
SVI	100 (N3K-C3636C-R)
Sub-interfaces	100 (N3K-C3636C-R)
MAC	1000 (N3K-C3636C-R)
BGP IPv4/IPv6 VLSM routes	1000 (N3K-C3636C-R)
BGP IPv4/IPv6 Unicast routes	10,000 (N3K-C3636C-R)
ECMP	16-way Upstream (N3K-C3636C-R)
SPAN sessions	1 local SPAN session (N3K-C3636C-R)

Table 10: MPLS Verified Scalability Limits (Multidimensional)

Feature	Verified Limit
MPLS L3VPN	3,715
VPE	3,715
PE nodes	Nil
PE routes	Nil
ACL (IPv4)	1,100
ACL (IPv6)	440
HSRP and IPv6 VIP	3,715 each for v4 and v6
vPC uRPF	Nil
Strict uRPF	Yes
VRF	3,715
SVI	3,715
Layer 3 VPN routes IP ECMP	<500
MPLS LSR ECMP	<500
VPN IPv4 routes	65,000
VPN IPv6 routes	25,000
EBGP neighbors	Nil

Table 11: L2/L3 TOR Boundary Verified Scalability Limits (Multidimensional)

Feature	Verified Limit
ECMP	16-way (Upstream)
vPC port channels	44
OSPFv2 neighbors	16
OSPFv3 neighbors	16
OSPF IPv4 /32 unicast routes	45,000
OSPF IPv4 VLSM unicast routes	1,000
OSPF IPv6 /128 unicast routes	25,000
OSPF IPv6 VLSM unicast routes	1,000
BFD sessions	230
VLAN	1,250
SVI	1,000 1250 (N3K-C3636C-R)
Sub-interfaces	250 per interface and 500 across the system (N3K-C3636C-R)
VRRP v4 groups	1,000 VRRS / 8 VRRPv3
VRRP v6 groups	1,000 VRRS / 8 VRRPv3
PIM neighbors	230
IPv4 (*,G) multicast routes	300
IPv6 (S,G) multicast routes	2,320
IGMP snooping database entries	6,300
sFlow enabled interfaces	63
UDLD enabled interfaces	65
SPAN sessions	1 local SPAN session
MVR VLANs	250
MVR receiver ports	10
MVR multicast groups	1,000
MAC	20,000 (N3K-C3636C-R)
Q-in-Q tunnel ports	26

Feature	Verified Limit
RSTP VLANS (tunneled over L2PT)	3,960

Table 12: Layer 2/Layer 3 Spine Boundary (for N3K-C3636C-R) Verified Scalability Limits (Multidimensional)

Feature	Verified Limit
Number of 100G ports	36
Number of 10G/25 ports	36 x 4 (Breakout)
ECMP	16-way (Upstream)
vPC port channels	40
OSPFv2 neighbors	100
OSPFv3 neighbors	100
OSPF IPv4 /32 unicast routes	45,000
OSPF IPv4 VLSM unicast routes	1,000
OSPF IPv6 /128 unicast routes	25,000
OSPF IPv6 VLSM unicast routes	1,000
BFD sessions	280
VLAN	3,967
SVI	3,967
Sub-interfaces	250 per interface and 511 across system
VRRP IPv4 groups	1,996 VRRS / 4 VRRPv3
VRRP IPv6 groups	1,996 VRRS / 4 VRRPv3
HSRP IPv4	1,743 Secondary Groups / 7 Primary Groups
HSRP IPv6	1,743 Secondary Groups / 7 Primary Groups
PIM neighbors	230
IPv4 (*,G) multicast routes	2,000
IPv6 (S,G) multicast routes	30,000
IGMP snooping database entries	6,300
Sflow enabled interfaces	45
UDLD enabled interfaces	48

Feature	Verified Limit
SPAN sessions	1 local SPAN session
MAC	50,000

Table 13: Segment Routing Verified Scalability Limits (Multidimensional)

Feature	Verified Limit
LACP	26
LACP members	1 or 4
eBGP IPv6 neighbors	25
eBGP IPv4 LU neighbors	24
IPv4 (LU) routes	1,537
IPv4 (LU) paths	6,987
IPv6 routes	1,486
IPv6 paths	6,915
SR ECMP (maximum)	18
MPLS HW entries	6,868

Table 14: Segment Routing (for N3K-C3636C-R) Verified Scalability Limits (Multidimensional)

Feature	Verified Limit
VLAN	100
SVI	100
MAC entries	10,000
ARP entries	70
HSRPv4, HSRPv6 VIPs	100, 100
LACP	3
LACP members	4
eBGP IPv6 neighbors	2
eBGP IPv4 neighbors	2
IPv4 (LU) routes	6,848
IPv4 (LU) paths	8,187

Feature	Verified Limit
IPv6 routes	6,640
IPv6 paths	7,975
SR ECMP	2
MPLS HW entries	2,682

Table 15: VXLAN Profile Verified Scalability Limits (Multidimensional)

Feature	Verified Limit
Number of ports	16
ECMP	8-way (Upstream)
BGP neighbors	2
BGP EVPN L2VPN host routes	60,000
BGP IPv4 VLSM unicast routes or ospf	10,000
BGP IPv6 VLSM unicast routes or ospf	2,000
BFD sessions	10
PIM neighbors	10
IPv4 (*,G) multicast routes (co-existing)	4,000
IPv4 (S,G) multicast routes (co-existing)	2,000
Layer 3 VNI	100
Layer 2 VNI	400
Local VTEP	1
Remote VTEPs	205
VLAN	400
SVI	100
MAC	80,000
vPC hosts	1

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

This product includes cryptographic software written by Eric Young (eay@cryptsoft.com).

This product includes software developed by the OpenSSL Project for use in the OpenSSL Toolkit. (<https://www.openssl.org/>)

This product includes software written by Tim Hudson (tjh@cryptsoft.com).

Cisco and the Cisco logo are trademarks or registered trademarks of Cisco and/or its affiliates in the U.S. and other countries. To view a list of Cisco trademarks, go to this URL: <https://www.cisco.com/go/trademarks>. Third-party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1110R)

© 2020 Cisco Systems, Inc. All rights reserved.



Americas Headquarters
Cisco Systems, Inc.
San Jose, CA 95134-1706
USA

Asia Pacific Headquarters
CiscoSystems(USA)Pte.Ltd.
Singapore

Europe Headquarters
CiscoSystemsInternationalBV
Amsterdam, The Netherlands

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco Website at www.cisco.com/go/offices.