

# Cisco Nexus 9000 Series NX-OS Verified Scalability Guide, Release 10.3(8)M


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# Preface

## Audience

This publication is for network administrators who configure and maintain Cisco Nexus devices.

## Document Conventions

**Note** As part of our constant endeavor to remodel our documents to meet our customers' requirements, we have modified the manner in which we document configuration tasks. As a result of this, you may find a deviation in the style used to describe these tasks, with the newly included sections of the document following the new format.

Command descriptions use the following conventions:

| Convention | Description |
|---|---|
| **bold** | Bold text indicates the commands and keywords that you enter literally as shown. |
| *Italic* | Italic text indicates arguments for which the user supplies the values. |
| [x] | Square brackets enclose an optional element (keyword or argument). |
| [x \| y] | Square brackets enclosing keywords or arguments separated by a vertical bar indicate an optional choice. |
| {x \| y} | Braces enclosing keywords or arguments separated by a vertical bar indicate a required choice. |
| [x {y \| z}] | Nested set of square brackets or braces indicate optional or required choices within optional or required elements. Braces and a vertical bar within square brackets indicate a required choice within an optional element. |
| `variable` | Indicates a variable for which you supply values, in context where italics cannot be used. |

| Convention | Description |
|---|---|
| string | A nonquoted set of characters. Do not use quotation marks around the string or the string will include the quotation marks. |

Examples use the following conventions:

| Convention | Description |
|---|---|
| `screen font` | Terminal sessions and information the switch displays are in screen font. |
| **`boldface screen font`** | Information you must enter is in boldface screen font. |
| *italic screen font* | Arguments for which you supply values are in italic screen font. |
| < > | Nonprinting characters, such as passwords, are in angle brackets. |
| [ ] | Default responses to system prompts are in square brackets. |
| !, # | An exclamation point (!) or a pound sign (#) at the beginning of a line of code indicates a comment line. |

This document uses the following conventions:

**Note** Means *reader take note*. Notes contain helpful suggestions or references to material not covered in the manual.

**Caution** Means *reader be careful*. In this situation, you might do something that could result in equipment damage or loss of data.

# Documentation Feedback

To provide technical feedback on this document, or to report an error or omission, please send your comments to: .

We appreciate your feedback.

**Revised: August 28, 2026,**

# Introduction

This document describes the Cisco NX-OS configuration limits for Cisco Nexus 9000 Series switches.

The values provided in this guide should not be interpreted as theoretical system limits for Cisco NX-OS 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 - Unidimensional

The tables in this section list the verified scalability limits for the Cisco Nexus 9000 Series switches for Cisco NX-OS Release 10.3(8)M.

These limits are validated with a unidimensional configuration. The values are provided in these tables focus on the scalability of one particular feature at a time.

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

**Note**

1. If only one number is provided, the verified limit applies to all supported platforms and line cards.
2. Verified limits are provided only for supported platforms.
3. If a feature is not supported for a particular platform, the verified limit is not provided.

**Note** You can deploy up to 500 commands under config-profile.

***Table 1: Cisco Nexus 2000 Series Fabric Extenders (FEX) Straight Through Mode Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Fabric Extenders[1] and Fabric Extender server interfaces | Nexus 9300-EX/FX/FX2/FX3/GX switches | 16 and 768 |
| VLANs across all Fabric Extenders | Nexus 9300-EX/FX/FX2/FX3/GX switches | 562 |
| VLANs per Fabric Extender server interface[2] | Nexus 9300-EX/FX/FX2/FX3/GX switches | 75 |
| Port channels | Nexus 9300-EX/FX/FX2/FX3/GX switches + FEX | 511 |

[1] When FEX configured using "AA" mode, then the maximum number of 6 FEX on the NFE base ToR and 16 FEX for the LSE base ToR are supported.

[2] For FEX HIF port channels, Cisco recommends that you enable STP port type edge using the **spanning tree port type edge [trunk]** command.

***Table 2: ePBR Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Maximum services per switch | Nexus 9300 and 9500 switches | 150[3] |
| Endpoints per service | Nexus 9300 and 9500 switches | 64 |
| ePBR policies per switch | Nexus 9300 and 9500 switches | 150 |
| Policies per VRF | Nexus 9300 and 9500 switches | 16 |
| Services per chain | Nexus 9300 and 9500 switches | 6 |
| Match per policy | Nexus 9300 and 9500 switches | 16 |
| Aces per match | Nexus 9300 and 9500 switches | 256 |

[3] Only 62 unique ACLs can be configured per slice of ASIC. Each ACL takes one label. If the same ACL is configured on multiple interfaces, the same label is shared. If each ACL has unique entries, the ACL labels are not shared, and the label limit is 62. In order to achieve 150 services per switch with the limitation of 62 ACLs per slice, the ingress interfaces should be spread across multiple slices of ASIC.



**Note**

1. For a list of platforms on which ePBR is supported, see the Cisco Nexus 9000 Series NX-OS ePBR Configuration Guide.
2. For the ACL limitations, see the Cisco Nexus 9000 Series NX-OS Security Configuration Guide.

***Table 3: FC and FCoE Switch Level Configuration Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| FLOGI per port | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 256 |
| FLOGI per switch | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 1000 |
| Port channels | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 8[4] |
| Maximum number of member ports in a port channel | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 16 |
| NPV switches per NPIV core switch | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 8[5] |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Maximum number of FC ports supported | Nexus 93180YC-FX switches | 48 |
| | Nexus 93360YC-FX2 switches | 96 |
| | Nexus 9336C-FX2-E switches | 112 |
| VFCs | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 512[6] |
| VSANs | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 32 |

[4] The number of SAN port channels and virtual FC port channels, together, can be only 8 on the Cisco Nexus 9000 Series switch.
[5] Tested with FC NPV.
[6] This is applicable only for the NPV mode.

***Table 4: FC and FCoE Fabric Level Configuration Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Zones | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 8000 |
| Zone members | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 16,000 |
| Zone sets | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 32 |
| Zone database size | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 2 MB |
| FCNS entries in the fabric | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 10,000 |
| Device Alias | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 8000 |
| Switch hops from server to storage | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 7 |

***Table 5: Intelligent Traffic Director Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Nodes per device group | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 64 |
| | N9K-X96136YC-R, N9K-X9636Q-R, N9K-X9636C-R, and N9K-X9636C-RX line cards | 16 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| ITD services per switch | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 150 [7] |
| Buckets per ITD service | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 256 |
| | Nexus X96136YC-R, X9636Q-R, X9636C-R, and X9636C-RX line cards | 64 |

[7] Only 62 unique ACLs can be configured per slice of ASIC. Each ACL takes one label. If the same ACL is configured on multiple interfaces, the same label is shared. If each ACL has unique entries, the ACL labels are not shared, and the label limit is 62. In order to achieve 150 ITD services per switch with the limitation of 62 ACLs per slice, the ingress interfaces should be spread across multiple slices of ASIC.



**Note**

1. For a list of platforms on which ITD is supported, see the *Cisco Nexus 9000 Series NX-OS Intelligent Traffic Director Configuration Guide*.
2. For the ACL limitations, see the *Cisco Nexus 9000 Series NX-OS Security Configuration Guide*.

***Table 6: Interfaces Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| DHCP clients per switch | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 10 (IPv4) + 10 (IPv6) |
| | N9K-X9716D-GX and Nexus 9700-EX/FX line cards | |
| Flex link | Nexus 9300-EX/FX/FX2, and 9364C switches | 12 pairs<br>One pair consists of one each of active and backup interface. The active and backup interface can be either a physical port or port channel. |
| IP DHCP relay addresses (helper addresses) per interface | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 and Nexus 9808 switches | 32 (IPv4) + 32 (IPv6) |
| | N9K-X9716D-GX and Nexus 9700-EX/FX line cards | |
| Generic routing encapsulation (GRE) tunnels | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches | 16 |
| | N9K-X9716D-GX and Nexus 9700-EX/FX line cards | |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| LACP rate fast support during system switchover | N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 606 ports in total on Nexus 9516 with 16 line cards |
| Port channel links | Nexus 9300-EX/FX/FX2/FX3/GX2, 9408 switches and Nexus 9600-R, 9600-RX, and 9700-EX line cards | 32 |
| SVIs | Nexus 9300-EX/FX/FX2/GX/GX2 switches and Nexus 9408 switches | 1000 (with HSRP)<br>1000 HSRP groups |
| | Nexus 9300-FX3 switches | 510 |
| | N9K-X9716D-GX and Nexus 9700-EX/FX Line cards | 1000 (with HSRP), 1500 (without HSRP) |
| | Nexus 9600-R and 9600-RX line cards | 3967 |
| | Nexus N9K-X9636C-R, N9K-X9636Q-R, N9K-X9636C-RX and N9K-X96136YC-R line cards | 350 (with HSRP), 3967 (without HSRP) |
| Selective Q-in-Q with Multiprovider tag | Nexus 9300-EX/FX/FX2/FX3 switches | 4000 mappings, 10 provider VLANs; System wide: 48,000 mappings, 512 Provider VLANs |
| SVI Unnumbered | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches | Primary (50); Secondary (450), 1 primary SVI can have a maximum of 50 secondary SVIs |
| | N9K-X9716D-GX and Nexus 9700-EX/FX line cards | |
| vPCs | Nexus 9300-FX/FX3 switches | 80 |
| | Nexus 9300-EX switches | 48 |
| | Nexus 9300-FX2 switches | 98 |
| | Nexus 9300-GX2, 9408 switches | 128 |
| | Nexus 9300-GX switches | 60 (for flat Layer 2 Network) |
| | | 56 (for L2/L3 Network) |
| | N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 300 |
| | Nexus 9600-R/RX line cards | 255 |
| | Nexus N9K-X9636C-R, N9K-X9636Q-R, N9K-X9636C-RX and N9K-X96136YC-R line cards | 110 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Static Network Address Translation (NAT) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | Non-Atomic mode: 1023<br>Atomic mode: 60% of Non-Atomic scale number is supported. |
| Dynamic Network Address Translation (NAT) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | Non-Atomic mode: 1023<br>Atomic mode: 60% of Non-Atomic scale number is supported. |
| Static twice Network Address Translation (NAT) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | Non-Atomic mode: 580<br>Atomic mode: 60% of Non-Atomic scale number is supported. |
| Dynamic twice Network Address Translation (NAT) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | Non-Atomic mode: 875<br>Atomic mode: 60% of Non-Atomic scale number is supported. |
| Sub-interfaces | Nexus 9808 switches | 2000 |
| | Nexus 9300-FX2/FX3/GX/GX2 and Nexus 9408 switches | 3900<br>**Note**<br>It is recommended to configure 60% of the mentioned limits with higher route scale deployments. |
| | Nexus 9300-FX and 9300C switches | 1900<br>**Note**<br>It is recommended to configure 60% of the mentioned limits with higher route scale deployments. |
| | Nexus 9300-EX platform switches | 900<br>**Note**<br>It is recommended to configure 60% of the mentioned limits with higher route scale deployments. |
| Port VLAN translations under an interface | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 100 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 3967 |
| Port VLAN translations in a switch | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 2000 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 24,000 |

**Note** You must have TCAM space carved at 2048 for NAT to achieve this scale.

***Table 7: Label Switching Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Forwarding Equivalence Classes (FECs) (Node/Prefix/Adj/Binding SID) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-EX/FX/GX line cards | MPLS Heavy Template: 4096; Default: 1024 |
| | Nexus 9600-R and 9600-RX line cards | 1000 |
| Equal-cost multipaths (ECMPs) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches, and Nexus 9700-EX/FX/GX line cards | 32 |
| | Nexus 9600-R and 9600-RX line cards | 8 - way |
| Equal-cost multipaths Groups (ECMPs) | Nexus 9300-EX/FX2/FX3, and 9364C switches | MPLS Heavy Template: 7,166 (with 4-way ECMP) and 4096 (with 8-way ECMP)<br>Default: 1024<br>**Note** After the ECMP objects are exhausted, there is a fallback to the adjacency for all further routes. |
| | Nexus 9300-FX/GX/GX2 switches | MPLS Heavy Template and Default Routing Mode: 7166 (with a 4-way ECMP) and 4096 (with 8-way ECMP)<br>**Note** After the ECMP objects are exhausted, there is a fallback to the adjacency for all further routes. |
| | Nexus 9600-RX line cards | 24,000 ECMP Groups 2 paths per ECMP<br>**Note** Supported only on Cisco NX-OS Release 9.2(4). |
| FECs * ECMPs | Nexus 9600-R and 9600-RX line cards | 8000 |
| Flex counters for segment-routing in ingress direction | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and 9300C switches and Nexus 9700-EX/FX/GX line cards | Total ingress label stats: 4000; VRF ingress label stats: 1000; (MPLS Heavy Template) |
| Flex counters for segment-routing in Egress direction | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and 9300C switches and Nexus 9700-EX/FX/GX line cards | Total ingress label stats: 48,000 (MPLS Heavy Template) |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Egress Peer Engineering | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and 9300C switches and Nexus 9700-EX/FX/GX line cards | 64 |
| IAS option B labels | Nexus 9600-R and 9600-RX line cards | 450,000 |
| Label-switched paths (LSPs) for label stack imposition[8] | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-EX/FX/GX line cards | 256 (with 32 - way ECMP and 5 label stack push) |
| Layer 3 VPN routes | Nexus 9600-R and 9600-RX line cards | 450,000 |
| Layer 3 EVPN Labels | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-EX/FX/GX line cards | 1000 (With MPLS Heavy Template) |
| LDP session | Nexus 9600-R and 9600-RX line cards[9] | 200 |
| Node Sid/Prefix SID | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-EX/FX/GX line cards | 4000 |
| Adjacency SID | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-EX/FX/GX line cards | 112 |
| Binding SID | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-EX/FX/GX line cards | 1000 |
| **SRTE Policy** | | |
| SRTE policy with PBR | Nexus 9300-FX/FX2/FX3/GX/GX2 and 9364C switches | 512 per slice with 4 way ECMP/1024 per slice with 2 way ECMP |
| Number of route-maps with SRTE policy (IPv4/IPv6) | Nexus 9300-FX/FX2/FX3/GX/GX2 and 9364C switches | 256 (IPv4) + 256 (IPv6) per slice with 4 way ECMP |

[8] For Cisco Nexus 9300 and 9500 Series switches, LSPs *ECMP* label stack push cannot exceed 1500.
[9] N9K-X9636C-RX, N9K-X9636C-R, N9K-X9636Q-R, and N9K-96136YC-R



**Note**

- For network scalability, Cisco recommends using a hierarchical routing design with multi-hop BGP for advertising the attached prefixes from a top-of-rack (ToR) or border leaf switch.

*Table 8: Private VLANs (PVLANs) Verified Scalability Limits (Unidimensional)*

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Primary VLANs<br>**Note**<br>The 400 PVLAN-mapping scale per PVLAN port is only applicable when port is configured as promiscuous trunk port. | Nexus N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 16 |
| | Nexus 9300-EX/FX/FX2/FX3/GX switches | 400 |
| Secondary VLANs<br>**Note**<br>The 400 PVLAN-mapping scale per PVLAN port is only applicable when port is configured as promiscuous trunk port. | Nexus N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 20 |
| | Nexus 9300-EX/FX/FX2/FX3/GX switches | 400 |
| Ports in Community host mode | Nexus 9300-EX/FX/FX2/FX3/GX | 40 |
| | Nexus N9K-X9716D-GX and Nexus 9700-EX/FX line cards | |
| Ports in isolated host mode | Nexus 9300-EX/FX/FX2/FX3/GX switches | 40 |
| | Nexus N9K-X9716D-GX and Nexus 9700-EX/FX line cards | |
| Ports in isolated trunk host mode | Nexus 9300-EX/FX/FX2/FX3/GX switches | 40 |
| | Nexus N9K-X9716D-GX and Nexus 9700-EX/FX line cards | |
| Ports in promiscuous mode | Nexus 9300-EX and 9300-FX switches | 10 |
| | Nexus 9300-FX2/FX3/GX switches, Nexus N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 5 |
| Ports in promiscuous trunk mode | Nexus 9300-EX and 9300-FX switches | 10 |
| | Nexus 9300-FX2/FX3/GX switches, Nexus N9K-X9716D-GX, and Nexus 9700-EX/FX line cards | 5 |
| PVLANs allowed on a PVLAN port<br>**Note**<br>The 400 PVLAN-mapping scale per PVLAN port is only applicable when port is configured as promiscuous trunk port. | Nexus N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 16 |
| | Nexus 9300-EX/FX/FX2/FX3/GX switches | 400 |

*Table 9: Layer 2 Switching Verified Scalability Limits (Unidimensional)*

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| MAC addresses | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 92,000 (default system routing mode)<br>200,000 [11] |
| | Nexus 9364C switches | 90,000 (default system routing mode without system routing layer 3 scale)<br>32,000 (default system routing mode with system routing layer 3 scale) |
| | Nexus N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 92,000 |
| | Nexus 9600-R and 9600-RX line cards | 192,000 |
| | N9K-C9264PQ and 9300-EX switches | 200,000 [12] |
| | Nexus 92348GC-X switches | 97,000 |
| MST instances | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, 9408 switches and Nexus 9600-R, 9600-RX, N9K-X9716D-GX, and 9700-EX/FX line cards | 64 |
| MST PV count with single instances 0 | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408 switches | 190,000 |
| MST virtual ports with more than 1 MST instance | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, 9408 switches | 48,000 |
| | Nexus N9K-X9716D-GX and 9700-EX/FX line cards | 85,000 |
| | Nexus 9600-R and 9600-RX line cards | 236,000 |
| RPVST virtual ports (physical ports * vlans) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, 9408 switches | 48,000 |
| | Nexus N9K-X9716D-GX and 9700-EX/FX line cards | 65,000 |
| | Nexus 9600-R and 9600-RX line cards | 13,750 |
| RPVST logical ports (logical ports * vlans) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, 9408 switches | 22,000 |
| | Nexus N9K-X9716D-GX and 9700-EX/FX line cards | 45,000 |
| | Nexus 9600-R and 9600-RX line cards | 13,750 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| VLANs in MST mode | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, 9408 switches and Nexus N9K-X9716D-GX, 9600-R/RX, and 9700-EX/FX line cards | 3967 (the remaining 127 VLANs are reserved) |
| | Nexus 92348GC-X switches | 3967 |
| VLANs in RPVST mode | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 3967 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 3967[13] |
| | Nexus 9600-R and 9600-RX line cards | 250 |
| Total number of VLANs × ports with switch port isolated (3967 VLANs x 48 ports) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, 9408 switches, and Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 190,000 |
| Total number of VLANs × ports with switch port isolated (3967 VLANs x 144 ports) | Nexus N9K-X9636C-R, N9K-X9636Q-R, N9K-X9636C-RX, and N9K-X96136YC-R line cards | 571,248 |

[10] Layer 2 unidimensional scale only. SVI, Layer 3 interface, and VXLAN VLANs are not supported. 200K MAC is enabled only when " system routing template-l2-heavy" is configured and the system is reloaded.

[11] Layer 2 unidimensional scale only. SVI, Layer 3 interface, and VXLAN VLANs are not supported. 200K MAC is enabled only when " system routing template-l2-heavy" is configured and the system is reloaded.

[12] Layer 2 unidimensional scale only. SVI, Layer 3 interface, and VXLAN VLANs are not supported. 200K MAC is enabled only when " system routing template-l2-heavy" is configured and the system is reloaded.

[13] On EOR, support is for 12,000 PV count with 3967 vlans and RPVST with default timers. If 22,000 PV count is needed with 3968 vlans and RPVST, recommended hello timer value is 4 or higher. It is also recommended to tune forward delay and max age accordingly.

**Note**

- For more information on STP scale considerations, see Spanning Tree Protocol scale considerations, on page 59.
- The number of supported VLANs per vPC should be within the MST or RPVST virtual port count that is specified in this table, depending on the topology.
- The number of supported STP VLAN port instances, for Fabric Extender host interface ports, should be less than 13000.
- The ports with switch port isolated are only supported on Layer 2 ports. However, on Layer 2 the following port types are not supported:
  - FEX host interfaces
  - FEX host interface port channels
  - PVLAN ports

*Table 10: Multicast Routing Verified Scalability Limits (Unidimensional)*

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Egress NAT | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches | 2000 |
| Ingress NAT | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches | 2000 |
| Egress and Ingress NAT | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches | 2000 |
| IPv4 multicast routes<br>**Note**<br>The limits are for a combination of IPv4 and IPv6 multicast routes. Layer 2 multicast entries are a part of the total 120K limits. For example, 110K IPv4 + 2K IPv6 multicast routes + 8K Layer 2 multicast entries. | Nexus 9348GC-FXP switches | 8192 (Layer 2 + Layer 3) |
| | Nexus 9300-EX switches and Nexus 9700-EX line cards | 8192 (Layer 2 + Layer 3); 32,768 (layer 2 + Layer 3 with system routing template - multicast -heavy mode); 8192 (with system routing template - lpm - heavy mode) |
| | Nexus 9332C and 9364C switches | 16,384 (Layer 2 + Layer 3) with the default template and the system routing layer 3 scale configuration. |
| | Nexus 9300-FX2 switches | 8192 (Layer 2 + Layer 3); 32,768 (Layer 2 + Layer 3 with system routing template -multicast -heavy mode); 131,072 (with system routing template -multicast - ext - heavy mode) |
| | Nexus 9700-FX line cards | 8192 (Layer 2 + Layer 3); 32,768 (layer 2 + Layer 3 with system routing template - multicast -heavy mode); 131,072 (with system routing template - multicast - ext - heavy mode) [14] |
| | Nexus 9408 switches | 8192 (Layer 2 + Layer 3); 32,768 (layer 2 + Layer 3 with system routing template - multicast -heavy mode); 131,072 (with system routing template - multicast - ext - heavy mode) [15] |
| | Nexus 9300-FX/FX3/GX/GX2 | 32,768 (layer 2 + Layer 3 with system routing template - default, multicast -heavy mode); 131,072 (with system routing template - multicast - ext - heavy mode) |
| | Nexus 9600-R and 9600-line cards | 32,768 (Layer 3) |
| | Nexus N9K-X9716D-GX line card | 131,072 (65,536 *,G + 65,536 S,G) |
| | Nexus 9808 switches | 32,768 (Layer 3) |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IPv6 multicast routes | Nexus 92160YC-X, 9300-EX/FX, and 9500 switches | 8192 (Layer 3 with system routing template - default, multicast - heavy, multicast - ext - heavy and multicast - heavy, multicast - ext - heavy, dual - stack - multicast) |
| | Nexus 9300-FX2 and 9364C switches | 8192 (Layer 3 with system routing template -multicast -heavy mode) |
| | Nexus 9300-FX3 switches and N9K-X9716D-GX line card | 8192 (4096 - *, G + 4096 - S,G) |
| | Nexus 9332C and 9364C switches | 8192 (Layer 2 + Layer 3 with system routing template -multicast -heavy mode) |
| | Nexus 9348GC-FXP switches | 8192 (layer 2 + Layer 3 with system routing template - multicast -heavy -multicast - ext - heavy mode) |
| | Nexus 9300-GX/GX2 and Nexus 9408 switches | 8192 |
| MLD snooping groups | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches, N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 8192 |
| Multicast FPV | Nexus 9300-EX/FX2 switches | 8000 (with system routing template - default), 32,000 (with system routing template - multicast -heavy - multicast - ext - heavy mode) |
| | Nexus 9300-FX/FX3/GX/GX2, and Nexus 9408 switches | IPv4 32,000 (Layer 2 + Layer 3) multicast routes |
| Outgoing interfaces (OIFs) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches, N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 40 (SVI + physical layer 3) or 256 (physical layer 3) |
| | Nexus 9600-R and 9600-RX line cards | 16 OIFs for 32K mroutes or 287 OIFs for 1000 mroutes |
| | Nexus 9808 switches | 256 (physical layer 3) |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IGMP snooping groups | Nexus 9300-EX switches and Nexus 9700-EX line cards | 8000 |
| | Nexus 9300-FX2 switches and Nexus 9700-FX line cards | 8000 (with system routing template - default), 16000 (with system routing template - multicast -heavy - multicast - ext - heavy mode) |
| | Nexus 9600-R, 9600-RX, and 9600-R2 line cards | 8000 |
| | Nexus 9300-FX/FX3/GX/GX2 switches and N9K-X9716D-GX line card | 16,000 |
| PIM neighbors | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches | 250 |
| | Nexus 9808 switches | 500 |
| | Nexus 9600-R, 9600-RX, N9K-X9716D-GX and 9700-EX/FX line cards | 500 |
| **MVPN - unidimensional** | | |
| Multicast VRFs | Nexus 9600-R and 9600-RX line cards (except the N9K-X96136YC-R line card) | 300 |
| Default MDT groups | Nexus 9600-R and 9600-RX line cards (except the N9K-X96136YC-R line card) | 300 |
| MVPN Peers (PIM neighbors) per device | Nexus 9600-R and 9600-RX line cards (except the N9K-X96136YC-R line card) | 900 |
| Maximum number of PEs per VRF | Nexus 9600-R and 9600-RX line cards (except the N9K-X96136YC-R line card) | 200 PEs per VRF with up to 3 VRFs (600 PIM neighbors) |
| Maximum number of Data MDT groups per VRF on a PE | Nexus 9600-R and 9600-RX line cards (except the N9K-X96136YC-R line card) | 1000 |
| Maximum number of Data MDT groups across all VRFs on a PE | Nexus 9600-R and 9600-RX line cards (except the N9K-X96136YC-R line card) | 10,000 |
| Maximum number of MDT groups across all VRFs on PE | Nexus 9600-R and 9600-RX line cards (except the N9K-X96136YC-R line card) | 10,300 (10,000 Data + 300 default DMT) |
| Maximum number of Multicast routes on a PE node | Nexus 9600-R and 9600-RX line cards (except the N9K-X96136YC-R line card) | 32,000 |

[14] All line cards must have the FX type.
[15] All line cards must have the FX type.

**Note**

- The IPv4 multicast routes and the IPv4/IPv6 host routes share the same hardware table. Limits are provided for both the default line card mode and the max host line card mode.
- High availability (graceful restart and stateful switchover) is not supported when unicast or multicast aggressive timers are configured at any scale.
- The hash table is subject to collisions. Depending on the host route pattern, collisions might occur with an expected hashing efficiency of about 80%.

***Table 11: IP Fabric for Media Solution Verified Scalability Limits (Unidimensional)***

| **Description** | **Verified Limit** | | | |
|---|---|---|---|---|
| | **NBM-Active Mode Only** | **NBM-Passive Mode Only** | **Mixed Mode** | |
| | | | **NBM-Active VRF** | **NBM-Passive VRF** |
| Switches | 120 | 32 | 32 | |
| Number of flows | 32000 | 32000 | 32000 | |
| VRFs | 16 | 16 | 16 | |
| Host Policy - Sender | 16000 | N/A | 16000 | N/A |
| Host Policy - Receiver | 16000 | N/A | 16000 | N/A |
| Host Policy - PIM | 2000 | N/A | 2000 | N/A |
| Flow Policy | 32000 | N/A | 32000 | N/A |
| ASM group-range | 20 | N/A | 20 | N/A |
| **NBM Static Receiver** | | | | |
| Per Switch Maximum (receiver leaf where the static OIF will be programmed) | 1500 | 8000 | 1500 | |
| Per Fabric Maximum | 8000 | 32000 | 8000 | |
| **NBM IGMP Receivers** | | | | |
| Per Switch Maximum | 8000 | N/A | 8000 | N/A |
| Per Fabric Maximum | 24000 | N/A | 24000 | N/A |
| **NBM NAT Flows** | | | | |
| Egress-NAT (E-NAT) | 2000 | 2000 | 1000 | 1000 |

| Description | Verified Limit | | | |
|---|---|---|---|---|
| | NBM-Active Mode Only | NBM-Passive Mode Only | Mixed Mode | |
| | | | NBM-Active VRF | NBM-Passive VRF |
| Ingress-NAT (I-NAT) | 2000 | 2000 | 1000 | 1000 |
| Multicast-Unicast NAT (MU-NAT) | 2000 | 2000 | 1000 | 1000 |
| Unicast-Multicast NAT (UM-NAT) | 2000 | 2000 | 1000 | 1000 |
| Mixed Mode (E-NAT, I-NAT, MU-NAT, UM-NAT together) | 2000 | 2000 | 1000 | 1000 |
| **RTP Flow Monitoring with ACL** | | | | |
| ACL | 128 IPv4 ACL entries or 64 IPv6 ACL entries (total 128 TCAM spaces)<br>**Note**<br>With combined IPv4 and IPv6 ACL entries, the scale limit cannot exceed 128 TCAM spaces. | | | |

***Table 12: IP Fabric for Media Solution Policer Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| **IPFM** | | |
| NBM Flow Policers (Slice/System) | Nexus 9300-EX switches | 1536/3072 |
| | Nexus 9300-FX/FX3 switches | 1536/1536 |
| | Nexus 9300-FX2 switches | 1536/3072 |
| | Nexus 9300-GX/GX2B switches | 1536/6144 |
| | Nexus 9300-GX2A switches | 1536/12288 |
| | Nexus N9K-X9636C-R Line Card | 2048/12288 |
| | Nexus N9K-X9636Q-R Line Card | 2048/6144 |
| | Nexus N9K-X9636C-RX Line Card | 2048/8192 |
| | Nexus N9K-X9624D-R2 Line Card | 2048/8192 |
| | Nexus N9K-X9836DM-A Line Card | 700/6300 |

**Note** When storm control is enabled on Nexus 9300-FX3/GX/GX2 Platform Series switches, the maximum supported scale for NBM flow policers is limited to 1534.

For a list of supported platforms, see Cisco Nexus 9000 Series NX-OS IP Fabric for Media Solution Guide.

***Table 13: Programmability Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| **gNMI** | | |
| VRF - Default | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-FX line cards | 16 concurrent subscriptions |
| VRF - Management | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-FX line cards | 16 concurrent subscriptions |
| VRF - Default and Management | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-FX line cards | 32 concurrent subscriptions |
| Paths | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-FX line cards | 48 paths in a single subscription |
| Message size | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-FX line cards | Less than 12 MB |
| Aggregate MO's | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-FX line cards | 150,000 |
| **NX-API**<br>See **Guidelines and Limitations** for NX-API limitations. | | |
| Maximum Number of concurrent VSH session | Nexus 9000 switches and line cards | 5 concurrent VSH sessions and 5 persistent VSH sessions per worker process. |
| Number of worker processes in Nginx | Nexus 9000 switches and line cards | 4 worker processes |
| Number of VSH sessions per worker process | Nexus 9000 switches and line cards | A maximum of 5 persistent VSH sessions are supported for each worker process |
| Maximum response size supported in output | Nexus 9000 switches and line cards | 10 MB |
| Maximum number of concurrent session supported for chunk mode. See **Configuring the Message Format and Command Type** to know more about chunk mode | Nexus 9000 switches and line cards | 2 |
| Maximum size of response supported in chunk mode | Nexus 9000 switches and line cards | After 10.3(1) release, the maximum size supported in chunk mode is the same as the amount of space available in volatile. |

*Table 14: QoS Verified Scalability Limits (Unidimensional)*

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Class maps per policy map | Nexus 9300-GX/GX2/FX2/FX3, Nexus 9408, and Nexus 9808 switches | 128 |
| AFD | Nexus 9300-GX/GX2/FX2/FX3, and Nexus 9408 switches | 30 profiles |
| WRED | Nexus 9300-GX/GX2/FX2/FX3, and Nexus 9408 switches | 30 profiles |
| | Nexus 9808 switches | 14 Profiles |
| Ingress 1R2C | Nexus 9300-GX/GX2/FX2/FX3, Nexus 9408, and Nexus 9808 switches | 1280 |
| Ingress | Nexus 9808 switches | • 3150 Policer / LC – PMN use case<br>• QoS on physical or SI – Limited by 128 unique ACLs / ASIC |
| Egress 1R2C | Nexus 9300-GX/GX2/FX2/FX3, and Nexus 9408 switches | 256 |
| Ingress 2R3C | Nexus 9300-GX/GX2/FX2/FX3, and Nexus 9408 switches | 766 |
| Total policy maps | Nexus 9300-GX/GX2/FX2/FX3, Nexus 9408, and Nexus 9808 switches | 4000 |
| QoS unique burst profiles | Nexus 9808 switches | 4/ASIC |
| TCAM label | Nexus 9300-FX3 | 64 |

*Table 15: Security Verified Scalability Limits (Unidimensional)*

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Egress ACLs | Nexus 9600-R line cards | 20,000 |
| System ACLs | Nexus 9600-R line cards | 4000 TCAM entries in internal TCAM<br>64,000 TCAM entries in external TCAM |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| ACL | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches | Ingress - 3584 IPv4, 1792 IPv6 |
| | Nexus 9808 switches | • 9216 IPv4/4.5K IPv6 overall Ingress/Egress/Features<br>• RACL on physical or SI – Limited by 128 unique ACLs / ASIC<br>• Unique feature combinations (Example: RACL1 + QoS1) / ASIC – 252<br>• IPv6 single ACL can be a maximum of 1K entries |
| RACL Labels (maximum) | Nexus 9504 and 9508 switches | 4000 |
| ACL LOU Threshold Support | Nexus 9500-R line cards | 24 LOUs per line card |
| DHCP snooping bindings | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches, N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 2048 |
| IPv4 ingress access control entries (ACEs) | Nexus 9600-R and 9600-RX line cards | • RACL on LC N9K-X9636C-RX: 100,000<br>• PACL on LC N9K-X9636C-RX: 12,000<br>• RACL-2048, PACL-1024 (without TCAM Carving) IPv4 52,640 ACEs per system<br>• PACL IPv4: 1024 TCAM entries in internal TCAM<br>• PACL MAC: 2048 TCAM entries in internal TCAM<br>• RACL IPv4: 2048 TCAM entries in internal TCAM |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IPv6 ingress access control entries (ACEs) | Nexus 9600-R and 9600-RX line cards | • RACL-1024, PACL-1024 (without TCAM Carving) IPv6 25,200 ACEs per system<br>• PACL IPv6: 1024 TCAM entries in internal TCAM<br>• RACL IPv6: 1024 TCAM entries in internal TCAM |
| IPv4 ingress TCAM entries | Nexus 9300-EX/FX/FX2/FX3 switches, N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 3582 (per slice of the forwarding engine) |
| | Nexus 9300-GX/GX2 switches | 4608 |
| IPv4 egress TCAM entries | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches, N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 1792 (per slice of the forwarding engine) |
| | Nexus 92348GC-X switches | Ingress - 3072 IPv4, 1792 IPv6 |
| IPv6 ingress TCAM entries | Nexus 9300-EX/FX/FX2/FX3 switches, N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 1792 (per slice of the forwarding engine) |
| | Nexus 9300-GX/GX2 switches | 2302 (per slice of the forwarding engine) |
| IPv6 egress TCAM entries | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches, N9K-X9716D-GX and Nexus 9700-EX/FX line cards | 896 (per slice of the forwarding engine) |
| | Nexus 92348GC-X switches | Ingress - 3072 IPv4, 1792 IPv6 |
| Ingress RACLv4 | Nexus 9808 switches | 9216 |
| Ingress QoSv4 | | |
| Ingress SPAN filter v4 | | |
| Egress RACLv4 | | |
| Ingress RACLv6 | Nexus 9808 switches | 4608 [16] |
| Ingress QoSv6 | | |
| Ingress SPAN filter v6 | | |
| Egress RACL v6 | | |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Number of unique ACLs each for RACLv4, RACLv6, QoS, ACL SPAN | Nexus 9808 switches | • 127 (per unit) each for ingress and QoS<br>• 15 (per unit) each for egress (IPv4 and IPv6 RACL) |
| Number of unique ACL combinations | Nexus 9808 switches | • 252 (per unit) for ingress<br>• 60 (per unit) for egress |
| **Key Chain Keys Verified Scalability Limits (Unidimensional)** | | |
| Type-6 Keys | Nexus 9000 Series switches | 5000 |

[16] Each IPv6 ACL is limited to 1000 ACEs. This applies to all IPv6 ACLs (RACL, QoS or SPAN filter). No such limitation applies for IPv4 ACL.

**Note**

- The TCAM entries scalability limits also apply to policy-based TCAM entries (PBACLs).
- Only 62 unique ACLs can be configured. Each ACL takes one label. If the same ACL is configured on multiple interfaces, the same label is shared. If each ACL has unique entries, the ACL labels are not shared, and the label limit is 62.

***Table 16: SRv6 Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| ARP | Nexus 9300-GX/GX2, and Nexus 9408 switches | 48,000 |
| Host and LPM IPv4 routes | Nexus 9300-GX/GX2, and Nexus 9408 switches | 470,000 |
| Host and LPM IPv6 routes | Nexus 9300-GX/GX2, and Nexus 9408 switches | 256,000 |
| Leaf | Nexus 9300-GX/GX2, and Nexus 9408 switches | 256 |
| SID DB | Nexus 9300-GX/GX2, and Nexus 9408 switches | 2000 |
| SRv6 and VXLAN Peer | Nexus 9300-GX/GX2, and Nexus 9408 switches | 256 |
| VRF | Nexus 9300-GX/GX2, and Nexus 9408 switches | 1000 |
| ND | Nexus 9300-GX/GX2, and Nexus 9408 switches | 24,000 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| SRv6 Traffic Engineering policies | Nexus 9300-GX/GX2, and Nexus 9408 switches | 1000 |
| Number of prefixes (IPv4 and IPv6) that use SRv6 Traffic Engineering policies | Nexus 9300-GX/GX2, and Nexus 9408 switches | 50,000 |
| Maximum number of preferences per policy | Nexus 9300-GX/GX2, and Nexus 9408 switches | 3 |
| Maximum number of segment lists | Nexus 9300-GX/GX2, and Nexus 9408 switches | 3000 |

***Table 17: System Management Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| **PTP** | | |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| PTP ports | Nexus 9300-EX/FX/GX switches | 64 per system |
| | N9K-C93180YC-FX3 and N9K-C93180YC-FX3S switches | 64 per system |
| | N9K-C93108TC-FX3P switch | Default maximum supported scale in PHY mode: 25 per system<br>Maximum supported scale in PHY mode with reduced packet rate: 35 per system (sync/delay - 4 pps) |
| | Nexus 9300-FX2/GX2 switches | 144 per system |
| | Nexus 9408 switches | 144 per system<br>32 per LEM |
| | Nexus 9500 switches with 9700-EX/FX line cards | 1305 per chassis<br>The per line card limit is based on the maximum physical ports supported.<br>**Note**<br>PTP Offload is supported on 9700-EX/FX line cards. |
| | Nexus 9508 switches with -R line cards | 64 per line card<br>300 per chassis<br>**Note**<br>PTP Offload is supported on 9508-R line cards. |
| | Nexus 9500 switches with 9600-RX line cards | 128 per line card<br>512 per chassis |
| | Nexus 9508 switches with -R2 line cards | 173 per chassis |
| | Nexus 9808 switches | 64 per line card<br>512 per chassis |
| PTP clients per port | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, 9408 and 9808 switches and Nexus 9500 switches with 9700-EX/FX, 9508-R and 9600-RX line cards | 2 |
| **sFlow** | | |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| sFlow ports | Nexus 9300-EX/FX/FX2/GX switches | 64 |
| | Nexus 9300-FX3 switches | 30 |
| | Nexus 9700-EX/FX line cards | 256 |
| | Nexus N9K-X9716D-GX line card | 16 |
| **SPAN and ERSPAN** | | |
| Configurable SPAN or ERSPAN sessions | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches, the Nexus 9600-R, 9600-RX, and N9K-X9716D-GX line cards | 32 |
| | Nexus 9808 switches | 10 |
| Active SPAN or ERSPAN sessions[17] | Nexus 9300-EX/FX/FX2/FX3/GX switches, and Nexus 9600-R, 9600-RX, and 9700-EX/FX/GX line cards | 4 sessions (per chassis/ToR or based on the number of the line cards in the EoR.<br>**Note**<br>If the source interface configured for a monitor session is on the same line card, the maximum supported active SPAN sessions are 4. Based on the number of line cards in the EoR, the total number of active SPAN sessions are 4 x n, where n is the number of line cards on EoR, provided the source and destination interface are on the same line module.<br>Port-channels count against all linecards when considering 4 x n scale of SPAN sessions when configured as a SPAN source, regardless of port-channel member interfaces. |
| | Nexus 9808 switches | 10 |
| Active localized SPAN or ERSPAN sessions per line card[18] | Nexus 9300-EX/FX/FX2/FX3 switches, and Nexus 9700-EX/FX/GX line cards | 4 |
| | Nexus 9600-R and 9600-RX line cards | 32 sessions across ports on single-line card |
| Active localized SPAN or ERSPAN session (Rx and Tx, Rx, or Tx) | Nexus 9600-R and 9600-RX line cards | 32 sessions, 128 sources, and 1 destination |
| Source interfaces per SPAN or ERSPAN session (Rx and Tx, Rx, or Tx) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9808 switches, and Nexus 9700-EX and N9K-X9716D-GX line cards | 48 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Destination interfaces per SPAN session | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches, and Nexus 9600-R, 9600-RX, N9K-X9716D-GX, and 9700-EX line cards | 1 (physical/PO interface)<br>**Note**<br>Destination as PO interface is not supported for N9K-X9716D-GX line card. |
| | Nexus 9808 switches | 1 Physical only (no PO support). |
| Source VLANs per SPAN or ERSPAN session | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches, and Nexus 9600-R, 9600-RX, N9K-X9716D-GX, and 9700-EX line cards | 32 |
| **Tap Aggregation** | | |
| Redirect interfaces in the redirect port list | Nexus 9300-EX/FX/FX2/FX3/GX | 18 |
| | Nexus 9500 Merchant Silicon platform switches | 12 |
| | Nexus N9K-X9716D-GX line card | 12 |
| Redirect port lists per system | Nexus 9300-FX3 switches | 100 |
| | Nexus N9K-X9716D-GX line card | 12 |
| **NetFlow** | | |
| Flow monitors | Nexus 9300-EX switches and Nexus 9500 switches with 9700-EX and FM-E fabric line cards | 2 flow monitors per type (2 IPv4 flow monitors and 2 IPv6 flow monitors).<br>1 flow monitor for CE flows<br>2 exporters for each flow monitor. Hence, a total of 4 different exporters can be configured. |
| | Nexus 9300-FX/FX2/GX/GX2 switches and 9500 with FX/GX line cards | 30 IPv4 flow monitor and each flow monitor with two exporters<br>28 IPv6 flow monitor and each flow monitor with two exporters<br>32 Layer2 Flow monitor and each flow monitor with two exporters<br>Maximum number of exporters supported per flow monitor is 2 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Layer 3 interfaces (Layer 3 ports, port channels, and SVIs) to which IPv4 flow monitors can be applied | Nexus 9300-EX switches | 1024 (with members on just one ASIC slice): 922 for IPv4/IPv6 flow monitors, while 32 are reserved for the Layer 2 flow monitors.<br>Maximum number of SVIs supported:<br>• 492 with IPv4 flow monitors only<br>• 246 with IPv6 flow monitors only<br>• 165 with both IPv4 flow monitor and IPv6 flow monitors attached<br>Number of Layer 3 interfaces (Layer 3 ports, port channels, and SVIs) to which IPv4 flow monitors can be applied. You can use the **show interface hardware-mappings** command to check if the interface belongs to ASIC slice 0 or slice 1. |
| Maximum number of flows in the software table (IPv4 or IPv6 or CE flows) | Nexus 9000 switches | 100,000 flows using the **show flow cache** command on 9500 modular chassis per line card<br>1,000,000 flows (1 Million) using the **show flow cache** command on 9300 switches |
| Layer 3 interfaces (Layer 3 ports, port channels, and SVIs) to which IPv6 flow monitors can be applied | Nexus 9300-EX switches | 252 (with members on just one ASIC slice) or 126 (with members on both ASIC slices). You can use the **show interface hardware-mappings** command to check if the interface belongs to ASIC slice 0 or slice 1. |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Maximum number of concurrent flows supported (IPv4 or IPv6 or CE flows) | Nexus 9300-EX/FX/FX2 switches | 6000 traffic flows.<br>By increasing LCPU-PG-SIZE using the following command one can achieve Max 18000 concurrent flows, after modifying LCPU-PG-SIZE, the switch needs reboot after saving configuration<br>`switch(config)# hardware qos lcpu-pg-size ?`<br>`<200-10000>  Pool Group size`<br>`switch(config)# hard qos lcpu-pg-size 5000`<br>`Warning:Reload required for configured PG size to take effect. Save configuration and reload the system.`<br>`switch(config)# copy running-config startup-config`<br>In Cisco Nexus Release 9.3(3), the **hardware qos** command is not supported. |
| Netflow ingress VRF-id export support | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9300C and 9408 switches and Nexus 9500 switches with EX/FX/GX line cards | 500 different VRFs |
| **Flow visibility in Nexus Dashboard Insights and NetFlow** | | |
| Flow monitors | Nexus 9300-FX/FX2/GX/GX2, Nexus 9408 switches and 9500 with FX/GX line cards | 28 IPv4 flow monitor and each flow monitor with two exporters<br>26 IPv6 flow monitor and each flow monitor with two exporters |
| Maximum number of flows in the software table (IPv4 or IPv6 flows) | Nexus 9000 switches | 20,000 flows using the **show flow cache** command |

[17] A single forwarding engine instance supports four SPAN or ERSPAN sessions. For Cisco Nexus 9300 Series switches, if the first three sessions have bidirectional sources, the fourth session has hardware resources only for Rx sources. This limitation might also apply to Cisco Nexus 9500 Series switches, depending on the SPAN or ERSPAN source's forwarding engine instance mappings.

[18] The number of SPAN or ERSPAN sessions per line card reduces to two if the same interface is configured as the bidirectional source in more than one session.

*Table 18: NetFlow Scalability Support (Flows) for Cisco Nexus 9500 Family Switches*

| Feature | Platform | Scale Limitper Slice (Flows) |
|---|---|---|
| IP flow monitor | Nexus 9500-EX Line cards | 2 |
| IPv6 flow monitor | | 2 |
| Layer 2 Flow monitor | | 1 |
| Maximum number of exporters per each flow monitor | | 2 |
| Flow Scale | | 24,000 per ASIC slice |
| IP flow monitor | Nexus 9500-FX Line cards | 30 |
| IPv6 flow monitor | | 28 |
| Layer 2 Flow monitor | | 1 |
| Maximum number of exporters per each flow monitor | | 2 |
| Flow Scale | | 24,000 per ASIC slice |



**Note** NetFlow scale limits are determined based on the interfaces of the line cards where the NetFlow configurations are attached in the modular switches.

*Table 19: NetFlow SVI Verified Scalability Limits (Unidimensional)*

| Platform (VLAN Ports) | SVI | | | VLAN | | | SVI + VLAN | | |
|---|---|---|---|---|---|---|---|---|---|
| | IPv4 | IPv6 | IPv4 + IPv6 | IPv4 | IPv6 | IPv4 + IPv6 | IPv4 | IPv6 | IPv4 + IPv6 |
| Member ports from Cisco Nexus 9300-EX switches | 474 | 118 | 94 | 474 | 118 | 94 | 237 | 61 | 38 |
| Member ports from Cisco Nexus 9300-FX switches | Total interfaces supported in the system | | | | | | | | |

| Platform (VLAN Ports) | SVI | | | VLAN | | | SVI + VLAN | | |
|---|---|---|---|---|---|---|---|---|---|
| | IPv4 | IPv6 | IPv4 + IPv6 | IPv4 | IPv6 | IPv4 + IPv6 | IPv4 | IPv6 | IPv4 + IPv6 |
| Member ports from Cisco Nexus 9300-EX and Nexus 9300-FX switches (EOR chassis) | 474 | 118 | 94 | 474 | 118 | 94 | 237 | 61 | 38 |



**Note** The scale numbers are based on the TCAM space available on the Cisco Nexus 9300-EX and Nexus 9300-FX switches. A IPv4 flow monitor uses 2 and 4 TCAM space for the Cisco Nexus 9300-EX and Nexus 9300-FX switches respectively. Similarly, a IPv6 flow monitor uses 8 and 2 TCAM space for the Cisco Nexus 9300-EX and Cisco Nexus 9300-FX switches respectively.

For port channels, SVIs, and VLANs that have port from both 9300-EX and 9300-FX switches, the lower common denominator limit of the 9300-EX and 9300-FX switches is applied.

***Table 20: Table 20: Unicast Routing Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| **Unicast Routing** | | |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| BFD sessions (echo mode) | Nexus 9364C switches | 128 when the BFD intervals are set to default, which is 50 ms<br>2048 when the BFD intervals are relaxed to 300 ms |
| | Nexus 9300-EX/FX/FX2/GX/GX2, and Nexus 9408 switches | 128 when the BFD intervals are set to default, which is 50 ms<br>2048 sessions when the BFD intervals are relaxed to 300 ms |
| | Nexus 9300-FX3 switch | 512 |
| | Nexus 9700-EX/FX line cards | 128 when the BFD intervals are set to default, which is 50 ms<br>2048 sessions when the BFD intervals are relaxed to 300 ms<br>**Note**<br>On EoR, per line card session limit will be 256. |
| | N9K-X9716D-GX line card | 512 when the BFD intervals are set to default, which is 50 ms<br>1024 when the BFD intervals are relaxed to 300 ms<br>**Note**<br>On EoR, per line card session limit will be 256. |
| | Nexus 9600-R and 9600-RX line cards | 288 |
| | Nexus N9K-X9836DM-A line cards | 768 |
| | Nexus 9808 switch (single hop) | 128 when the BFD intervals are set to default, which is 50 ms<br>1000 (IPv4 and IPv6) sessions when the BFD intervals are relaxed to 300 ms<br>**Note**<br>For Nexus 9800 switches, the maximum session limit per L3 port channel and its subinterfaces is 128. |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| BGP neighbors | Nexus 92348GC-X switches | 141 |
| | Nexus 9364C, 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 1024 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 2000 |
| | Nexus 9600-R and 9600-RX line cards | 960 |
| | Nexus 9808 switches | 1000 (IPv4 and IPv6) |
| EIGRP routes | Nexus 9364C, 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, and 9808 switches | 20,000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 50,000 |
| EIGRP neighbors | Nexus 9364C, 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, and 9808 switches | 256 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 2000 |
| HSRP groups | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 1000 [19] |
| | Nexus 9700-EX/FX switches and N9K-X9716D-GX line cards | 1000 (virtual MAC address support) [20] |
| | Nexus 9600-R and 9600-RX line cards | 16 [21] |
| IPv4 ARP | Nexus 9364C switches | 32,000 |
| | Nexus 9600-R, 9600-RX, and 9700-EX/FX line cards | 48,000 |
| | Nexus 9300-EX/FX2 switches | 48,000 (without URPF)<br>32,000 (with URPF enabled) |
| | Nexus 9300-FX/GX/GX2 switches | 98,000 (Hash Table: Shared between IPv6 ND, IPv4 ARP) |
| | Nexus 9408 switches | 49,152 |
| | Nexus 9300-FX3 switches | 98,000 |
| | Nexus N9K-X9716D-GX line card | 98,304 |
| | Nexus 9808 switches | 4000 |

| Feature | Supported Platforms | Verified Limits |
| --- | --- | --- |
| IPv4 host routes [22] | Nexus 9364C switches | 96,000 (default system routing mode without system routing layer 3 scale)<br>128,000 (default system routing mode with system routing layer 3 scale) |
| | Nexus 9300-EX switches | 458,000 (default); 786,000 / 720,000 (with system routing template - lpm - heavy mode) |
| | Nexus 9300-FX2 switches | 524,000 / 471,000 (without / with urpf enabled) (default); 786,000 / 734,000 (without / with urpf enabled) (with system routing template - lpm -heavy mode) |
| | Nexus 9300-FX/GX/GX2 switches | 1,153,000 (default); 786,000 / 734,000 (without / with urpf enabled) (with system routing template - lpm -heavy mode) |
| | Nexus 9408 switches | 734,003 |
| | Nexus 9300-FX3 switches | 1,119,000 |
| | Nexus 9700-EX and N9K-X9716D-GX line cards | 1,000,000 (default); 786,000 (with system routing template - lpm -heavy mode)<br>589,000 (default); 786,000 (with system routing template - lpm -heavy mode) |
| | Nexus 9600-R/RX line cards | 1,000,000 (default routing template) |
| | Nexus 9808 switches | 256,000 |

| Feature | Supported Platforms | Verified Limits |
| --- | --- | --- |
| IPv6 host routes [23] | Nexus 9364C switches | 48,000 (default system routing mode without system routing layer 3 scale)<br>64,000 (default system routing mode with system routing layer 3 scale) |
| | Nexus 9300-EX switches | 24,000 / 16,000 (without/with urpf enabled) |
| | Nexus 9300-FX2 switches | 265,000 (default), 442,000 / 412,000 (without / with urpf enabled) (with system routing template -lpm - heavy mode) |
| | Nexus 9300-FX/GX/GX2 switches | 628,000 (default), 442,000 / 412,000 (without / with urpf enabled) (with system routing template -lpm - heavy mode) |
| | Nexus 9408 switches | 412,876 |
| | Nexus 9300-FX3 switches | 600,000<br>442,000 (LPM heavy mode) |
| | Nexus 9700-EX/FX line cards | FM-E: 32,000<br>FM-E2: 235,000<br>FM-G: 235,000 |
| | Nexus 9600-RX line cards | 256,000 (default routing template) |
| | Nexus N9K-X9716D-GX line card | 235,000 |
| | Nexus 9808 switches | 64,000 |
| IPv6 ND | Nexus 9364C, 9300-EX/FX2 switches | 32,000 (default), 16,000 (lpm heavy) |
| | Nexus 9300-FX/GX/GX2 switches | 98,000 (in default routing mode, Hash Table: Shared between IPv6 ND, IPv4 ARP) |
| | Nexus 9408 switches | 32,768 |
| | Nexus 9300-FX3 switches | 98,000 (default), 16,000 (lpm heavy) (Hash Table: Shared between IPv6 ND, IPv4 ARP) |
| | Nexus 9600-R, 9600-RX, and 9700-EX/FX line cards | 32,000 |
| | Nexus 9808 switches | 4000 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IPv4 unicast routes (LPM)* | Nexus 9364C switches | Default system routing mode without system routing layer 3 scale:<br>• Default values: 8000 (IPv4), 1900 (IPv6), and 2000 (multicast)<br>• With hardware profile multicast max-limit lpm-entries 0 configured: 10,000 (IPv4), 1900 (IPv6), and 0 (multicast)<br>• With hardware profile ipv6 lpm-entries maximum 0 configured: 14,000 (IPv4), 0 (IPv6), and 2000 (multicast)<br>• With hardware profile ipv6 lpm-entries maximum 4096 and hardware profile multicast max - limit lpm - entries 0 configured: 4000 (IPv4), 4096 (IPv6), and 0 (multicast)<br>• When you allocate the entire table for IPv4 or IPv6 LPM unicast routes, the other address family cannot be used.<br>128,000 (default system routing mode with system routing layer 3 scale) |
| | Nexus 9300-EX switches | 458,000 (default) |
| | Nexus 9300-FX switches | 1,153,000 / 996,000 (without / with urpf enabled) (default), 786,000 / 734,000 (without / with urpf enabled) (with system routing template - lpm - heavy - mode) |
| | Nexus 9300-FX2 switches | 524,000 / 471,000 (default); 786,000 / 734,000 (without / with urpf enabled) (with system routing template - lpm - heavy mode) |
| | Nexus 9300-GX/GX2 switches | 1,153,000 (default), 786,000 / 734,000 (without / with urpf enabled) (with system routing template - lpm - heavy mode) |
| | Nexus 9408 switches | 734,003 |
| | Nexus 9300-FX3 switches | 1,119,000 |
| | Nexus 9300 switches | 128,000 (default system routing mode)<br>16,000 (max-host routing mode) |
| | | 589,000 (default) |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | |
| | Nexus 9600-R line cards | 192,000 (Default system routing template) |
| | Nexus 9600-RX line cards | 1,000,000 (Default system routing template) |
| | Nexus 9808 switches | 400,000 (Default system routing template) |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IPv6 unicast routes (LPM)* | Nexus 9364C switches | Default system routing mode without system routing layer 3 scale:<br>• Default values: 8000 (IPv4), 1900 (IPv6), and 2000 (multicast)<br>• With hardware profile multicast max-limit lpm-entries 0 configured: 10,000 (IPv4), 1900 (IPv6), and 0 (multicast)<br>• With hardware profile ipv6 lpm-entries maximum 0 configured: 14,000 (IPv4), 0 (IPv6), and 2000 (multicast)<br>• With hardware profile ipv6 lpm-entries maximum 4096 and hardware profile multicast max - limit lpm - entries 0 configured: 4000 (IPv4), 4096 (IPv6), and 0 (multicast)<br>• When you allocate the entire table for IPv4 or IPv6 LPM unicast routes, the other address family cannot be used<br><br>64,000 (default system routing mode with system routing layer 3 scale) |
| | Nexus 9300-EX switches | 206,000 (/64 prefix length); 1900 (non /64 prefix length) |
| | Nexus 9300-FX switches | 628,000 / 560,000 (without / with urpf enabled) (default) ; 442,000 / 412,000 (without / with urpf enabled) (with system routing template - lpm - heavy mode) |
| | Nexus 9300-FX2 switches | 294,000 / 265,000 (without / with urpf enabled) (default) ; 442,000 / 412,000 (without / with urpf enabled) (with system routing template - lpm - heavy mode) |
| | Nexus 9300-GX/GX2 switches | 628,000 / 628,000 (without/with urpf enabled) (default) ; 442,000 / 412,000 (without / with urpf enabled) (with system routing template - lpm - heavy mode) |
| | Nexus 9408 switches | 412,876 |
| | Nexus 9300-FX3 switches | 600,000 |
| | Nexus 9500 switches | |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| | | 20,000 (default system routing mode)<br>4000 (max-host routing mode)<br>80,000 with no IPv4 routes (64-bit ALPM routing mode) |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | FM-E: 176,000 (/64 prefix length); 3900 (non /64 prefix length)<br>FM-E2: 235,000 (any prefix length)<br>FM-G: 235,000 |
| | Nexus 9600-R line cards | 62,000 (Default system routing template) |
| | Nexus 9600-RX line cards | 256,000 (Default system routing template) |
| | Nexus 9808 switches | 250,000 |
| IPv4 host routes (LPM heavy mode) | Nexus 9236C, 9272Q, and 92304QC switches | 262,000 |
| | Nexus 92160YC-X switches | 650,000 |
| | Nexus 9364C switches | 262,000 |
| | Nexus 9300-EX switches | 786,000 / 720,000 (without/with urpf enabled) |
| | Nexus 9300-FX switches | 786,000 / 734,000 (without/with urpf enabled) |
| | Nexus 9300-FX2/FX3/GX/GX2 switches | 786,000 / 734,000 (without/with urpf enabled) |
| | Nexus 9408 switches | 1,048,576 |
| | Nexus 9700-EX /FX and N9K-X9716D-GX line cards | 786,000 |
| | Nexus 9808 switches | 256,000 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IPv6 host routes (LPM heavy mode) | Nexus 9364 switches | 131,000 |
| | Nexus 9300-EX switches | 24,000 / 16,000 (without/with urpf enabled) (protocol learned host) |
| | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 442,000 / 412,000 (without/with urpf enabled) (protocol learned host) |
| | Nexus 9408 switches | 589,824 |
| | Nexus 9700-EX/FX line cards | FM-E: 32,000 (shared between IPv6 ND and protocol learned host)<br>FM-E2: 235,000<br>FM-G: 235,000 |
| | Nexus N9K-X9716D-GX line card | 235,000 |
| | Nexus 9808 switches | 64,000 |
| IPv4 LPM routes (LPM heavy mode) | Nexus 9236C, 9272Q, and 92304QC switches | 262,000 |
| | Nexus 92160YC-X switches | 650,000 |
| | Nexus 9364C switches | 262,000 |
| | Nexus 9300-EX switches | 786,000 / 720,000 (without/with urpf enabled) |
| | Nexus 9300-FX switches | 786,000 / 734,000 (without/with urpf enabled) |
| | Nexus 9300-FX2/GX/GX2 switches | 786,000 / 734,000 (without/with urpf enabled) |
| | Nexus 9408 switches | 1,048,576 |
| | Nexus 9300-FX3 switches | 786,000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 786,000 |
| | Nexus 9808 switches | 900,000 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IPv6 LPM routes (LPM heavy mode) | Nexus 9236C, 9272Q, and 92304QC switches | 131,000 (/64 prefix length); 1900 (non /64 LPM scale) |
| | Nexus 92160YC-X switches | 294,000 (/64 prefix length); 1900 (non /64 LPM scale) |
| | Nexus 9364C switches | 131,000 |
| | Nexus 9300-EX switches | 353,000 / 324,000 (without/with urpf enabled) (/64 prefix length)<br>1900 (non /64 prefix length) |
| | Nexus 9300-FX/FX2/GX/GX2 switches | 442,000 / 412,000 (without/with urpf enabled) |
| | Nexus 9408 switches | 589,824 |
| | Nexus 9300-FX3 switches | 442,000 / 412,000 (without / with urpf enabled) (protocol learned host) |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | FM-E: 235,000 (/64 prefix length); 3900 (non /64 prefix length)<br>FM-E2: 235,000 (any prefix len)<br>FM-G: 235,000 |
| | Nexus 9808 switches | 250,000 |
| IPv4 host routes (dual-host mode) | Nexus 9364C switches | 163,000 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 262,000 |
| | Nexus 9808 switches | 256,000 |
| IPv6 host routes (dual-host mode) | Nexus 9364C switches | 81,000 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 131,000 |
| | Nexus 9808 switches | 64,000 |
| IPv4 LPM routes (dual-host mode) | Nexus 9300-EX switches | 6000 |
| | Nexus 9300-FX and 9364C switches | 8000 |
| | Nexus 9300-FX2/GX/GX2, and Nexus 9408 switches | 10,000 |
| | Nexus 9300-FX3 switches | 7000 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IPv6 LPM routes (dual-host mode) | Nexus 9300-EX/FX/FX3, and Nexus 9364C switches | 1900 |
| | Nexus 9300-FX2/GX/GX2, and Nexus 9408 switches | 3900 |
| IPv4 LPM routes (l3-heavy mode) | Nexus 9600-RX line cards | 1,800,000 |
| IPv6 LPM routes (l3-heavy mode) | Nexus 9600-RX line cards | 750,000 |
| IPv4 ARP (dual-host mode) | Nexus 9364C and 9300-EX switches | 64,000 |
| | Nexus 9300-FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 98,000 |
| IPv6 ND (dual-host mode) | Nexus 9364C and 9300-EX switches | 64,000 |
| | Nexus 9300-FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 98,000 |
| IPv4 host routes (internet-peering mode)<br>**Note**<br>The combined IPv4 and IPv6 route prefixes of internet-peer which was working in the internet-peering routing mode may not work forever because the global internet tables are growing. This occurs as hardware resource to accommodate IPv4 and IPv6 route prefixes do not change once the hardware/software is shipped. | Nexus 9300-EX/FX2 switches | 1 Million (protocol learned host) |
| | Nexus 9300-FX/FX3 switches | 1,256,000 ( protocol learned host) |
| | Nexus 9300-GX/GX2 switches | 2 Million (protocol learned) |
| | Nexus 9408 switches | 1,468,006 |
| | Nexus 9700-EX/FX and 9700-GX line cards | 1 Million (protocol learned host) |
| IPv6 host routes (internet-peering mode)<br>**Note**<br>The combined IPv4 and IPv6 route prefixes of internet-peer which was working in the internet-peering routing mode may not work forever because the global internet tables are growing. This occurs as hardware resource to accommodate IPv4 and IPv6 route prefixes do not change once the hardware/software is shipped. | Nexus 9300-EX switches | 16,000 (Hash Table: Shared between IPv6 ND and protocol learned IPv6 host) |
| | Nexus 9300-EX/FX2 switches | 500,000 (protocol learned host) |
| | Nexus 9300-FX/FX3/GX/GX2 switches | 628,224 (protocol learned) |
| | Nexus 9408 switches | 412,876 |
| | Nexus 9700-EX line cards | 16,000 (Hash Table: Shared between IPv6 ND and protocol learned IPv6 host) |
| | Nexus 9700-FX/GX line cards | 500,000 (protocol learned) |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IPv4 LPM routes (internet-peering mode)<br>**Note**<br>The combined IPv4 and IPv6 route prefixes of internet-peer which was working in the internet-peering routing mode may not work forever because the global internet tables are growing. This occurs as hardware resource to accommodate IPv4 and IPv6 route prefixes do not change once the hardware/software is shipped. | Nexus 9300-EX/FX2 switches | 1 Million (protocol learned) |
| | Nexus 9300-FX switches | 1,256,000 ( protocol learned host) |
| | Nexus 9300-FX3 switches, and Nexus 9700 GX line cards | 1,800,000 (protocol learned)<br>**Note**<br>Nexus 9300-FX3 switches, and Nexus 9700 GX line cards also supports 200,000 IPv6 LPM routes along with 1,800,000 IPv4 LPM routes using 16-way ECMP. |
| | Nexus 9300-GX/GX2 switches | 2 Million (protocol learned) |
| | Nexus 9408 switches | 1,468,006 |
| | Nexus 9700-EX/FX line cards | 1 Million (protocol learned) |
| IPv6 LPM routes (internet-peering mode)<br>**Note**<br>The combined IPv4 and IPv6 route prefixes of internet-peer which was working in the internet-peering routing mode may not work forever because the global internet tables are growing. This occurs as hardware resource to accommodate IPv4 and IPv6 route prefixes do not change once the hardware/software is shipped. | Nexus 9300-EX switches | 500000 (Prefix length 0-83) protocol learned<br>1900 (Prefix length /84-127) |
| | Nexus 9300-FX2 switches | 500,000 (protocol learned) |
| | Nexus 9300-FX/FX3/GX/GX2 switches | 628,224 (protocol learned) |
| | Nexus 9408 switches | 412,876 |
| | Nexus 9700-EX line cards | 500,000 (Prefix length 48-83) protocol learned<br>1900 (Prefix length /84-127) |
| | Nexus 9700-FX/GX line cards | 500,000 (Prefix length 48-128) protocol learned |
| | Nexus 9500 switches with the FM-E2 fabric line cards | 176,000 (Prefix length 0–47 ) protocol learned host |
| | Nexus 9500 switches with the FM-G fabric line cards | 500,000 |
| Routes (internet-peering mode) | Nexus 9600-R and 9600-RX line cards | 1 Million[24] |
| IPv4 routes (internet-peering mode) | Nexus 9600-R and 9600-RX line cards | 852,000[25] |
| IPv6 routes (internet-peering mode) | Nexus 9600-R line cards | 175,000[26] |
| Routes (internet-peering mode) | Nexus 9600-R line cards | 852,000 |
| IPv4 routes (internet-peering mode) | Nexus 9600-R line cards | 750,000 |
| IPv6 routes (internet-peering mode) | Nexus 9600-R line cards | 71,000 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IPv4 ARP (internet peering mode) | Nexus 9300-EX switches and Nexus 9700-EX/FX/GX line cards | 32,000 (Hash Table: Shared between IPv6 ND, IPv4 ARP, and protocol learned IPv6 host) |
| | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 32,000 (Hash Table: Shared between IPv6 ND, IPv4 ARP, and protocol learned IPv6 host) over L3 interface and 16,000 over a SVI/VLAN (as the upper limit of the dynamic learnt MAC address in the "internet Peering" mode is 16,000 |
| | Nexus 9408 switches | 32768 |
| IPv6 ND (internet-peering mode) | Nexus 9300-EX switches and Nexus 9700-EX/FX line cards | 16,000 (Hash Table: Shared between IPv6 ND, IPv4 ARP, and protocol learned IPv6 host) |
| | Nexus 9300-FX2 switches | 16,000 (Hash Table: Shared between IPv6 ND, IPv4 ARP, and protocol learned IPv6 host) |
| | Nexus 9300-FX/GX/GX2 switches | 32,000 (Hash Table: Shared between IPv6 ND, IPv4 ARP, and protocol learned IPv6 host) over L3 interface and 16,000 over a SVI/VLAN (as the upper limit of the dynamic learnt MAC address in the "internet Peering" mode is 16,000 |
| | Nexus 9408 switches | 16384 |
| | Nexus 9300-FX3 switches and N9K-X9716D-GX line cards | 32,000 over an L3 interface and 16,384 over an SVI / VLAN (as the upper limit of the dynamically learned MAC address upper limit in "Internet Peering" mode is 16,384) |
| IS-ISv4 adjacencies (either L1, L2, or sum of L1 and L2 with default timers) | Nexus 9364C, and 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 255 |
| IS-ISv4 BFD sessions (with default timers) | Nexus 9364C, 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 255 |
| IS-ISv4 routes | Nexus 9364C, 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, and Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 10,000 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IS-ISv4 network type | Nexus 9364C, and 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, and Nexus 9700-EX/FX line cards | Point to point, broadcast |
| Groups with default timers (3s/10s) and multiple group optimizations. [There are 2 primary, one for IPv4 and the other for IPv6, and 7926 secondary] | X9636C-R/RX and X9636Q-R line cards | 7928 |
| 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][27] | X9636C-R/RX and X9636Q-R line cards | 7928 |
| Groups per interface or I/ module | X9636C-R/RX and X9636Q-R line cards | Maximum 16 (Because 16 is the unique virtual MAC address limit) |
| OSPF/OSPFv3 LSA/LSDB size | Nexus 9600-R and 9600-RX line cards | 250,000 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches | 100,000 |
| OSPF/OSPFv3 areas | Nexus 9600-R and 9600-RX line cards | 15 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and N9K-X9716D-GX line card | 100 |
| OSPFv2 neighbors | Nexus 9600-R, 9600-RX, N9K-X9716D-GX, and 9700-EX/FX line cards | 1000 |
| | Nexus 9364C, and 9300-EX/FX/FX2/FX3/GX/GX2, and 9808 switches | 256<br>**Note**<br>Beginning with 10.3(2)F, 650 neighbors are supported on Nexus 9300-FX, 9300-FX2, and 9300-GX switches. |
| OSPFv3 neighbors | Nexus 9600-R, 9600-RX, N9K-X9716D-GX, and 9700-EX/FX line cards | 1000 |
| | Nexus 9364C, and 9300-EX/FX/FX2/FX3/GX/GX2, and 9808 switches | 256<br>**Note**<br>Beginning with 10.3(2)F, 650 neighbors are supported on Nexus 9300-FX, 9300-FX2, and 9300-GX switches. |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| OSPF/OSPFv3 LSA/LSDB size | Nexus 9364C, 9300-EX/FX/FX2/FX3/GX/GX2, and 9808 switches, and Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 100,000 |
| OSPF/OSPFv3 areas | Nexus 9364C, 9300-EX/FX/FX2/FX3/GX/GX2, and 9808 switches, and Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 100 |
| Static routes | Nexus 9364C, 9300-EX/FX/FX2/FX3/GX/GX2, and 9808 switches, and Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 8000 |
| VRFs | Nexus 9364C, and 9300-EX/FX/FX2/FX3/GX/GX2 switches, and Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 1000 |
| | Nexus 9600-R and 9600-RX line cards | 3967 |
| | Nexus 9808 switches | 1000 |
| VRRP groups per interface or I/O module | Nexus 9364C, and 9300-EX/FX/FX2/FX3/GX/GX2 switches, and Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 250 |
| **Policy-based routing (PBR)** | | |
| Configured sequences per policy | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and 9408 switches, and Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 128 |
| Next-hop addresses per policy | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and 9408 switches, and Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 32 |
| IPv4 ACEs (unidimensional) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and 9408 switches, and Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 3582 (per network forwarding engine) |
| IPv6 ACEs (unidimensional) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and 9408 switches | 1792 (per network forwarding engine) |
| IPv4 and IPv6 ACEs | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and 9408 switches | 1024 IPv4 + 128 IPv6 |
| | Nexus 9700-EX/FX/GX line cards | 1024 IPv4 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Interfaces with PBR policy | Nexus 9300-EX, 9300-FX/FX2/FX3/GX/GX2 and 9408 switches and Nexus 9700-EX/FX line cards | 512 |
| | Nexus N9K-X9716D-GX line card | 256 |
| **VRRPv3** | | |
| VRRPv3 groups per interface | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-EX/FX line cards | 255 |
| | Nexus N9K-X9716D-GX line card | 250 |
| VRRPv3 groups with default timers (1 s) | Nexus 9300-EX switches and Nexus 9700-EX/FX line cards | 490 |
| | Nexus 9300-FX/FX2/FX3 switches | 255 |
| | Nexus 9300-GX/GX2 switches and Nexus 9700-GX line cards | 250 |
| VRRPv3 groups with relaxed timers (3 s) | Nexus 9300-EX switches and Nexus 9700-EX/FX line cards | 490 |
| | Nexus 9300-FX/FX2/FX3 switches | 255 |
| | Nexus 9300-GX/GX2 switches and Nexus 9700-GX line cards | 250 |
| Pathways with one VRRPv3 group with default timer (1 s) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-EX/FX line cards | 489 |
| VRRPv3 groups and pathways combined | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches and Nexus 9700-EX/FX line cards | 490 |
| | Nexus N9K-X9716D-GX line card | 250 |
| **ECMP** | | |
| ECMP Paths - IPv4 (internet-peering mode) | Nexus 9300-FX/FX3/GX/GX2, and Nexus 9408 switches | 16 |
| ECMP Paths - IPv6 (internet-peering mode) | Nexus 9300-FX/FX3/GX/GX2, and Nexus 9408 switches | 16 |
| ECMP Paths (IPv4 and IPv6 Unicast Address-family) | Nexus 9300-EX/FX/FX2/FX3/FXP/GX/GX2, 9408, and 9808 switches and N9K-X9716D-GX line cards | 128[28] |
| | Nexus 9504/9508 switches with -R/RX line cards | 64 |
| ECMP Groups | Nexus 9808 switches | 4000 |

[19] If you have more than 490 groups, then only one group per SVI. SVIs cannot have a user defined MAC or any VRRP group with it.

[20] If you have more than 490 groups, then only one group per SVI. SVIs cannot have a user defined MAC or any VRRP group with it.

[21] For vPC configuration, HSRP maximum scale is 16 groups, 15 groups with vPC peer-gateway configured.

[22] The hash table is subject to collisions. Depending on the host route pattern, collisions might occur.

[23] The hash table is subject to collisions. Depending on the host route pattern, collisions might occur.

[24] Contains internet peering profile with additional IPv4 and IPv6 routes.

[25] Internet profile with additional IPv4 routes (total of 914K routes consisting of IPv4 and 62K of IPv6)

[26] Internet profile with additional IPv6 routes (total of 871K routes consisting of IPv6 and 696K of IPv4)

[27] If the user has Multi-protocol configuration, user should configure appropriate CoPP policies to avoid any control plane traffic drops.

[28] 128-way ECMP paths are not supported for MPLS, VXLAN, and L3 tunnels.Resilient hashing is not supported on Cisco Nexus 9808 switch for routing, PBR and Port-channel.



**Note** With IPv6 scale, traffic loss could be there for a few seconds during switchover.



**Note** The maximum number of PBR next-hops based on 4 FM-E supported is 192 per slice of the forwarding engine

- The IPv4/IPv6 host routes and the IPv4 multicast routes share the same hardware table. Limits are provided for both the default line card mode and the max host line card mode.
- The IPv4 and IPv6 unicast routes share the same hardware table. Limits are provided for both the default line card mode and the max host line card mode.
- High availability (graceful restart and stateful switchover) is not supported when unicast or multicast aggressive timers are configured at any scale.

Guidelines and Limitations for OSPF Verified Scalability Limits

- To achieve the highest scale, we recommend that you use a single OSPF instance instead of multiple instances.
- Each OSPFv2 and OSPFv3 scale value might vary when combined with other parameters.
- The graceful restart timeout value might be increased in multidimensional scenarios.

***Table 21: PVLAN VXLAN Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Primary VLANs | Nexus 9300-EX/FX/FX2/FX3 switches | 16 |
| Secondary VLANs | Nexus 9300-EX/FX/FX2/FX3 switches | 20 |
| Ports in community host mode | Nexus 9300-EX/FX/FX2/FX3 switches | 40 |
| Port in Isolated host mode | Nexus 9300-EX/FX/FX2/FX3 switches | 40 |
| Ports in isolated trunk mode | Nexus 9300-EX/FX/FX2/FX3 switches | 40 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Ports in promiscuous mode | Nexus 9300-EX/FX/FX2/FX3 switches | 5 |
| PVLANs allowed on a PVLAN port | Nexus 9300-EX/FX/FX2/FX3 switches | 16 |



**Note** The above scale numbers are applicable for both IPv4 and IPv6 Underlay.

***Table 22: VXLAN Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| VTEP Peers[29] | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9600-R, 9600-RX, 9700-EX/FX, and N9K-X9716D-GX line cards | 512 |
| Underlay multicast groups | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 512 |
| Maximum policy scale or number of VNIs to which a policy can be applied | Nexus 9300-FX2/FX3/GX/GX2 switches, and Nexus 9408 switches | 510<br>**Note**<br>The default scale for Nexus 9300-FX/FX2 ToR switches is 60. To increase the scale to 510, use the `hardware access-list tcam label ing-racl 9` command. This command is supported only on Nexus 9300-FX/FX2 ToR switches. |
| | Nexus 9300-FX platform switches and Nexus 9700-FX and 9700-GX line cards | 60 |
| **IGMP snooping over VXLAN** | | |
| VXLAN VLANs | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 1000 |
| **Multi-Site**<br>[30] | | |
| Asymmetric VNIs per peer | Nexus 9332C, 9364C, 9300-EX/FX/FX2/FX3/FXP/GX/GX2, Nexus 9408 switches and Nexus 9700-EX/FX/GX line cards | 3900 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Number of Tunnel Encryption sessions | Nexus 9300, 9336C-FX2, 93240YC-FX2, 93360YC-FX2, 93216TC-FX2, 93180YC-FX3, and 93108TC-FX3P | 128[31] |
| Number of BGWs per site for Secure VXLAN EVPN Multi-Site using CloudSec | Nexus 9336C-FX2/FX3, 93240YC-FX2/FX3, 93360YC-FX2/FX3, and 93216TC-FX2/FX3 switches | 6 per 10 sites |
| Number of sites | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408, 9332C, 9364C, 9500 switches and Nexus 9700-EX/FX/GX line cards | 128 |
| Number of sites for Secure VXLAN EVPN Multi-Site using CloudSec | Nexus 9300-FX2/FX3, and Nexus 9408 switches | 10 sites |
| Number of sites for TRM | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408, 9332C, 9364C switches and Nexus 9700-EX/FX/GX line cards | 16 sites |
| Number of BGWs per site[32] | Nexus 9332C and 9364C switches and Nexus 9700-EX/FX/GX line cards | 4 (Anycast), 2(vPC) |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 6 (Anycast), 2 (vPC) |
| Number of BGWs per site with TRM enabled | Nexus 9332C, 9364C, 9500 switches and Nexus 9700-EX/FX/GX line cards | 2 (Anycast), 2 (vPC) |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 6 (Anycast), 2 (vPC) |
| Number of Cloudsec Security Associations for Secure VXLAN EVPN Multi-Site using CloudSec sessions | Nexus 9300-FX2/FX3, and Nexus 9408 switches | 128 [33] |
| Multisite-PIP ECMP | Nexus 9300-FX2/FX3/GX/GX2 switches | 1000[34] |
| VTEPs per Site | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches and Nexus 9700-EX/FX/GX line cards | 512 |
| **Tenant Route Multicast Layer 3 Mode with VXLAN BGP eVPN** | | |
| VXLAN Layer 2 VNI | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches and Nexus 9700-EX/FX/GX line cards | 1000 |
| VXLAN Layer 3 VNI/VRFs | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches and Nexus 9700-EX/FX/GX line cards | 250 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| VTEP Peers | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches and Nexus 9700-EX/FX/GX line cards | 254 |
| Underlay Multicast Group (PIM ASM Underlay) | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches and Nexus 9700-EX/FX/GX line cards | 512[35] |
| Total Multicast routes (PIM ASM & PIM SSM) | Nexus 9300-FX/FX2/FX3/GX/GX2, Nexus 9408 switches and Nexus 9700-FX/GX line cards | 31,200 |
| | Nexus 9300-EX and Nexus 9700-EX line card | 7200 |
| **VXLAN Flood and Learn** | | |
| Virtual network identifiers (VNIs) or VXLAN-mapped VLANs | Nexus 9600-R and 9600-RX line cards | 2000 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408, Nexus 9700-EX/FX switches, and N9K-X9716D-GX line cards | 3900 |
| Underlay multicast groups | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 512 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | |
| Overlay MAC addresses | Nexus 9300-EX/FX switches | 90,000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | |
| | Nexus 9300-FX2/FX3/GX/GX2, and Nexus 9408 switches | 60,000 |
| Ingress replication peers [36] | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 512 |
| | Nexus 9700-EX/FX and Nexus N9K-X9716D-GX line card | |
| Ingress replication Layer 2 VNIs | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 1000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| MAC addresses for ingress replication | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 90,000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 1000 |
| Port VLAN translations under an interface | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 100 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 3967 |
| Port VLAN translations in a switch | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 2000 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 24,000 |
| Static MAC addresses pointing to a remote VTEP | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 switches | 1000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 2000 |
| VXLAN VLANs per FEX port (host interface) | Nexus 9300-FX2/FX3/GX/GX2, and Nexus 9408 switches | 75 |
| | Nexus 93180YC-EX | 75[37] |
| Layer 2 routed VNIs for vPC-centralized gateway | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 450 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | |
| IGMP groups | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 8192 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | |
| Port Multi-VLAN Mapping[38] | Nexus 9300-FX2/GX/GX2 switches | 510[39] |
| | Nexus 9300-EX/FX switches | 368[40] |
| **VXLAN BGP eVPN** | | |
| Layer 2 VNIs | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 3900 [41], [42] |
| | Nexus 9600-R and 9600-RX line cards | 2000 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Xconnect VLANs | Nexus 9332C, 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 40 |
| SVI with Distributed Anycast Gateway; Layer 2 VNI extended | Nexus 9300-EX switches | 3900[43] |
| | Nexus 9300-FX/FX2/FX3/GX/GX2, Nexus 9408 switches, and N9K-X9716D-GX line cards | 3900 |
| | Nexus 9700-EX/FX switches | 1000 |
| Layer 3 VNIs / VRFs[44] | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches and N9K-X9716D-GX line cards | 2000 [45] |
| | Nexus 9600-R and 9600-RX line cards | 900 |
| | Nexus 9700-EX/FX line cards | 750 |
| Underlay multicast groups | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 512 |
| VTEPs | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9600-R, 9600-RX, 9700-EX/FX and N9K-X9716D-GX line cards | 512 |
| ARP | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 96,000<br>**Note**<br>To scale ARP, use **system routing template-dual-stack-host-scale** command and reload the switch. |
| ND | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 96,000<br>**Note**<br>To scale ND, use **system routing template-dual-stack-host-scale** command and reload the switch. |
| MAC addresses | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 96,000<br>**Note**<br>To scale MAC addresses, use **system routing template-dual-stack-host-scale** command and reload the switch. |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Port VLAN translations under an interface (IPv4 and IPv6 Underlay) | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 100 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 3967 |
| Port VLAN translations in a switch (IPv4 and IPv6 Underlay) | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 2000 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 24,000 |
| IPv4 host routes | Nexus 9300-EX switches | 458,000 |
| | Nexus 9300-FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 471,000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 656,000 |
| | Nexus 9600-R and 9600-RX line cards | 128,000 |
| IPv6 host routes | Nexus 9300-EX switches | 24,000 |
| | Nexus 9300-FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 265,000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 34,000 |
| | Nexus 9600-R and 9600-RX line cards | 32,000 |
| Overlay IPv4 LPM routes | Nexus 9300-EX switches | 458,000 |
| | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 471,000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 656,000 |
| Overlay IPv6 LPM routes | Nexus 9300-EX switches | 206,000[46] |
| | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 265,000[47] |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 174,000[48] |
| Overlay IPv6 ND Suppression cache | Nexus 9300-X Cloud Scale switches | 64,000 |
| VXLAN VLANs per FEX port (host interface) | Nexus 9300-FX3/GX/GX2, and Nexus 9408 switches | 75 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| IGMP groups | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 8192 |
| BGP sessions over VRF peer at BGW/BL | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 4000 |
| **VXLAN BGP eVPN Ingress Replication** | | |
| Layer 2 VNIs | Nexus 9600-R and 9600-RX line cards | 2000 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408, 9700-EX/FX switches and N9K-X9716D-GX line cards | 3900 |
| Xconnect VLANs | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 40 |
| Selective Qinvni with multiprovider tag (IPv4 and IPv6 Underlay) | Nexus 93180YC-EX, 93180YC-FX, 9336C-FX2, Nexus 9300-FX3/GX/GX2, and Nexus 9408 switches | Port level: 4000 mappings, 512 provider VLANs<br>System wide: 48,000 mappings, 512 provider VLANs |
| SVI with Distributed Anycast Gateway; Layer 2 VNI extended | Nexus 9300-EX switches | 2000[49] |
| | Nexus 9300-FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 3900 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 1000 |
| Layer 3 VNIs / VRFs[50] | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, and N9K-X9716D-GX line cards | 2000 |
| | Nexus 9600-R and 9600-RX line cards | 900 |
| | Nexus 9700-EX/FX line cards | 750 |
| VTEPs | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 512 |
| MAC addresses | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 90,000 |
| Port VLAN translations under an interface | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 100 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 3967 |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| Port VLAN translations in a switch | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 2000 |
| | Nexus 9300-EX/FX/FX2/FX3/GX/GX2 and Nexus 9408 switches | 24,000 |
| IPv4 host routes | Nexus 9300-EX switches | 458,000 |
| | Nexus 9300-FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 471,000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 656,000 |
| IPv6 host routes | Nexus 9300-EX switches | 24,000 |
| | Nexus 9300-FX/FX2/GX/GX2, and Nexus 9408 switches | 265,000 |
| | Nexus 9300-FX3 switches | 500,000 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 34,000 |
| Overlay IPv4 LPM routes | Nexus 9300-EX switches | 458,000 |
| | Nexus 9300-FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 471,500 |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 656,000 |
| Overlay IPv6 LPM routes | Nexus 9300-EX switches | 206,000[51] |
| | Nexus 9300-FX/FX2/FX3/GX/GX2, and Nexus 9408 switches | 265,000[52] |
| | Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 174,000[53] |
| VXLAN VLANs per FEX port (host interface) | Nexus 9300-FX2/FX3/GX/GX2, and Nexus 9408 switches | 75 |
| IGMP groups | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408 switches, Nexus 9700-EX/FX and N9K-X9716D-GX line cards | 8192 |
| **VXLAN and IP-in-IP Tunneling** | | |
| IP-in-IP tunnels | Nexus 9300-FX2 switches | 16 |
| **VXLAN Static Tunnels** | | |

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| VNIs | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408, and 9364C switches | 100 |
| VRFs | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408, and 9364C switches | 100 |
| VTEP peers | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408, and 9364C switches | 254 |
| V4 routes | Nexus 9300-EX/FX/FX2/FX3/GX/GX2, Nexus 9408, and 9364C switches | 10,000 |

[29] In case of IR, each VNI can have a max of 64 peers.

[30] All the other BGW numbers (number of supported L2VNIs, L3VNIs, MAC addresses, IP addresses, and so on) match the values supported on a generic VXLAN EVPN VTEP node.

[31] Total number of Cloudsec Security Associations in hardware = 128 (M *N*L) where (M = no. of Cloudsec peers, N = no. of uplinks on each Cloudsec endpoint, L is number of border gateway nodes)

[32] Multi-Site enabled with TRM supported number of L2VNIs –1000 and L3VNIs –100. Maximum supported multicast underlay and overlay route is 8000. From Cisco NX-OS Release 10.2(3), Multi-Site enabled with TRM supported number of L3VNIs –250. Maximum supported multicast underlay and overlay route is 32000 for Nexus 9700-FX/FX3/GX/GX2 and 8000 for Nexus 9700-EX/FX2 and N9K-C9508.

[33] Total number of Cloudsec Security Associations in hardware = 128 (M *N*L) where (M = no. of Cloudsec peers, N = no. of uplinks on each Cloudsec endpoint, L is number of border gateway nodes)

[34] Number of vrfs * number of sites = 1000

[35] VXLAN underlay and overlay multicast routes shares the same hardware table. Maximum Multicast routes is 8000 in the default mode. If you want more overlay route scale, reduce the underlay multicast control group.

[36] In case of IR, each VNI can have a maximum number of 64 peers; 512 peers supported on 100 VNIs only.

[37] This is the limit for the Cisco Nexus 93180YC-EX and other fiber based switches. All copper based 9300-EX switches are not applicable.

[38] Only one provider VLAN is supported.

[39] The maximum number of Layer-2 subinterfaces is based on the available entries allocated for ing-pacl-sb tcam region.

[40] Since Nexus 9300-EX and 9300-FX have only one slice, the maximum number of Layer-2 subinterfaces that can be created is lower than the limit for NExus 9300-FX2.

[41] The full scale of 3900 L3VNI is only supported on the platforms with >24G memory. Nexus 93240YC-FX2, 93360YC-FX2, 93216TC-FX2, 93108TC-FX3P, 93180YC-FX3 would require add-on memory to support extended 3900 L3VNI scale. Nexus N9K-C9358GY-FXP and N9K-C92348GC-X can not support extended scale.

[42] Switches running scaled deployment, including scaled BGP EVPN VxLAN VNI, the memory alert may be seen during Non-Disruptive ISSU as the default system memory threshold has been lowered beginning with Cisco NX-OS Release 10.3(3)F release. To avoid system reacting to critical memory alert, before upgrade configure higher value for system memory thresholds. For example: Set system memory thresholds as 90 for minor, 94 for severe, and 95 for critical.

[43] Only 1900 SVI are supported if dual stack is used/IPv6 is used.

[44] ECMP objects are not shared across multiple VRFs.

[45] The full scale of 2000 L3VNI is only supported on the platforms with >24G memory. Nexus 93240YC-FX2, 93360YC-FX2, 93216TC-FX2, 93108TC-FX3P, 93180YC-FX3 would require add-on memory to support extended 2000 L3VNI scale. Nexus N9K-C9358GY-FXP and N9K-C92348GC-X can not support extended scale.Switches with <24G memory supports 2000 L2VNIs and 900 L3VNIs.

[46] All /64 routes + 4000 for non /64 routes.

[47] All /64 routes + 4000 for non /64 routes.

[48] All /64 routes + 4000 for non /64 routes.

[49] Only 1900 SVI are supported if dual stack is used/IPv6 is used.
[50] ECMP objects are not shared across multiple VRFs.
[51] All /64 routes + 4000 for non /64 routes.
[52] All /64 routes + 4000 for non /64 routes.
[53] All /64 routes + 4000 for non /64 routes.

***Table 23: Tetration Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limit |
|---|---|---|
| TCAM size | Nexus 92160YC-X, 9300-EX/FX switches | 1024 entries |
| | Nexus 92160YC-X switches | IPv4 –4 entries per rule (TCP, UDP, ICMP, and IP) |
| | Nexus 9300-EX/FX switches | IPv4 –2 entries per rule (ICMP and IP) |
| | Nexus 92160YC-X switches | IPv6 –8 entries per rule (4 entries per ICMP and IPv6 for a total of 8 entries) |
| | Nexus 9300-EX/FX switches | IPv6 –8 entries per rule (4 entries per ICMP and IPv6 for a total of 8 entries) |
| | Nexus 92160YC-X, 9300-EX/FX switches | 24 entries out of 1000 is consumed for default. |
| TCAM | Nexus 92160YC-X switches | 250 (IPv4) or 62 (IPv6) |
| | Nexus 9300-EX/FX switches | 500 (IPv4) or 125 (IPv6) |

The entire Cisco Tetration Analytics documentation set is available at the following URL:
https://www.cisco.com/c/en/us/support/data-center-analytics/tetration-analytics/tsd-products-support-series-home.html

***Table 24: RIPng Verified Scalability Limits (Unidimensional)***

| Feature | Supported Platforms | Verified Limits |
|---|---|---|
| RIPng Neighbors | Nexus 9300 and 9500 switches | 250 |
| RIPng Routes | Nexus 9300 and 9500 switches | 1500 |

## Spanning Tree Protocol scale considerations

Spanning Tree Protocol (STP) scalability is assessed using two main metrics, each representing a different dimension of scale:

1. **STP Virtual Port Scale**

   **Definition**: Represents the total number of STP entities managed, considering both internal STP data structures and port-level MAC programming/VLAN allow lists.

   **Calculation**: Virtual Port Scale = (Number of physical STP-managed ports) × (Number of VLANs carried by those ports)

   **Example (RPVST)**:

   - 100 VLANs

- 4 individual L2 interfaces
- 2 L2 port-channels (each with 8 member interfaces)
- Calculation:

  (4 individual interfaces + 2 port-channels × 8 members each) × 100 VLANs

  = (4 + 16) × 100 = 2000 Virtual Ports



**Note** All port-channel members are included in this calculation.

**MST Scenario**:

For Multiple Spanning Tree (MST), multiply the number of physical interfaces by the number of VLANs in the carried MST instances. If all 100 VLANs are in the same instance, the result is the same (2000 Virtual Ports).

2. **STP Logical Port Scale**

   **Definition**: Measures the maximum STP BPDU load per hello interval, especially relevant for RPVST, which generates a BPDU per VLAN. This metric helps evaluate control plane scalability. Hence, MST is recommended for large-scale environments, as it reduces Logical Port Scale concerns.

   **Calculation**: Logical Port Scale = (Number of individual L2 interfaces + Number of port-channels) × (Number of VLANs carried)

   **Example**:

   - 100 VLANs
   - 4 individual L2 interfaces
   - 2 L2 port-channels
   - Calculation:

     (4 interfaces + 2 port-channels) × 100 VLANs

     = 6 × 100 = 600 Logical Ports



**Note** Port-channel members are not included in this calculation.



**Note**

- All computation will vary if interfaces have unique VLAN pruning lists or have different MST instances with unique VLAN counts. Always review STP scalability against actual hardware/software limits.
- For large deployments, prefer MST to minimize BPDU processing overhead.

# Verified Scalability Limits - Multidimensional - 9500 R-Series

The tables in this section list the verified scalability limits for the Cisco Nexus 9508 switch with an X9636C-R, X9636C-RX, or X9636Q-R line card or a C9508-FM-R fabric module and Cisco Nexus 9504 with -R line cards. These limits are validated with a multidimensional configuration. The values provided in these tables focus on the scalability of all listed features at the same time.

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

***Table 25: eBGP/IS-IS Profile Verified Scalability Limits (Multidimensional)***

| Feature | Verified Limits |
|---|---|
| Number of 100G ports | 288 |
| ECMP | 16-way (Upstream) |
| BGP neighbors | 960 |
| BGP IPv4 /32 unicast routes | 30,000 |
| BGP IPv4 VLSM unicast routes | 18,000 |
| BGP IPv6 /128 unicast routes | 16,000 |
| BGP IPv6 VLSM unicast routes | 1000 |
| IS-IS v2 neighbors | 255 |
| IS-IS v3 neighbors | 255 |
| IS-IS Layer 2 adjacency | 16 |
| IS-IS IPv4 /32 unicast routes | 20,000 |
| IS-IS IPv4 VLSM unicast routes | 1000 |
| IS-IS IPv6 /128 unicast routes | 20,000 |
| IS-IS IPv6 VLSM unicast routes | 1000 |
| BFD sessions | 272 |
| PIM neighbors | 256 |
| ACL ACEs | 15,000<br>500 |
| Sub-interfaces | 712 |
| SPAN sessions | 1 local SPAN session |

| Feature | Verified Limits |
|---|---|
| Multicast SSM | 20,000 |

*Table 26: iBGP/OSPF Profile Verified Scalability Limits (Multidimensional)*

| Feature | Verified Limits |
|---|---|
| Number of 100G ports | 180 |
| Number of 40G ports | 108 |
| ECMP | 8-way (Upstream) |
| BGP neighbors | 8 |
| BGP IPv4 VLSM unicast routes | 40,000 |
| BGP IPv6 VLSM unicast routes | 10,000 |
| OSPFv2 neighbors | 108 |
| OSPFv3 neighbors | 30 |
| OSPF IPv4 /32 unicast routes | 100,000 |
| OSPF IPv4 VLSM unicast routes | 155,000 |
| OSPFv3 IPv6 /128 unicast routes | 1000 |
| OSPFv3 IPv6 VLSM unicast routes | 9000 |
| BFD sessions | 108 |
| VRF | 250 |
| PIM neighbors | 108 |
| IPv4 (*,G) multicast routes | 2000 |
| IPv4 (S,G) multicast routes | 10,000 |
| ACL ACEs | 500 (IPv4)<br>500 (IPv6) |
| SPAN sessions | 1 local SPAN session |

*Table 27: iBGP/EIGRP Profile Verified Scalability Limits (Multidimensional)*

| Feature | Verified Limits |
|---|---|
| Number of 100G ports | 180 |
| Number of 40G ports | 108 |

| Feature | Verified Limits |
|---|---|
| ECMP | 16-way (Upstream) |
| BGP neighbors | 8 |
| BGP IPv4 VLSM unicast routes | 40,000 |
| BGP IPv6 VLSM unicast routes | 10,000 |
| EIGRP v4 neighbors | 276 |
| EIGRP v6 neighbors | 276 |
| EIGRP IPv4 /32 unicast routes | 30,000 |
| EIGRP IPv4 VLSM unicast routes | 1000 |
| EIGRP IPv6 /128 unicast routes | 30,000 |
| EIGRP IPv6 VLSM unicast routes | 1000 |
| BFD sessions | 276 |
| VRF | 250 |
| PIM neighbors | 276 |
| IPv4 (*,G) multicast routes | 6000 |
| IPv4 (S,G) multicast routes | 16,000 |
| ACL ACEs | 500 (IPv4)<br>500 (IPv6) |
| SPAN sessions | 1 local SPAN session |

***Table 28: MPLS Verified Scalability Limits (Multidimensional)***

| Feature | Verified Limits |
|---|---|
| MPLS L3VPN | 3967 |
| VPE | 3967 |
| PE nodes | 3 |
| PE routes | 20,000 |
| X9636C-RX line card: ACL scale-IPv4 | 95,000 |
| X9636C-RX line card: ACL scale-IPv6 | 20,000 |
| HSRP, HSRP VIP | 3967 each for v4 and v6 |

| Feature | Verified Limits |
|---|---|
| vPC uRPF | 3967 |
| Strict uRPF | Yes |
| VRF | 3967 |
| SVI | 3967 |
| Layer 3 VPN routes IP ECMP | 2000 |
| MPLS LSR ECMP | 2000 |
| VPNv4 routes | 400,000 |
| VPNv6 routes | 90,000 |
| EBGP neighbors | 750 |

***Table 29: Layer 2/Layer 3 Boundary Verified Scalability Limits (Multidimensional)***

| Feature | Verified Limits |
|---|---|
| MAC addresses | 19,000 |
| vPC Port channels | 46 |
| ECMP | 16-way (Upstream) |
| OSPFv2 neighbors | 47 |
| OSPFv3 neighbors | 47 |
| OSPF IPv4 /32 unicast routes | 45,000 |
| OSPF IPv4 VLSM unicast routes | 1000 |
| OSPF IPv6 /128 unicast routes | 20,000 |
| OSPF IPv6 VLSM unicast routes | 1000 |
| BFD sessions | 49 |
| VRF | 250 |
| VLAN | 3750 |
| SVI | 3750 |
| VRRP v4 groups | 1996 VRRS / 4 VRRPv3 |
| VRRP v6 groups | 1996 VRRS / 4 VRRPv3 |
| HSRP IPv4 | 1743 Secondary groups / 7 Primary groups |

| Feature | Verified Limits |
|---|---|
| HSRP IPv6 | 1743 Secondary groups / 7 Primary groups |
| PIM neighbors | 396 |
| IPv4 (*,G) multicast routes | 3080 |
| IPv4 (S,G) multicast routes | 26,600 |
| IGMP snooping database entries | 6400 |
| sFlow enabled interfaces | 83 |
| UDLD enabled interfaces | 93 |
| SPAN sessions | 1 local SPAN session |

***Table 30: Segment Routing Verified Scalability Limits (Multidimensional)***

| Feature | Verified Limits |
|---|---|
| VLAN | 100 |
| SVI | 100 |
| MAC entries | 10,000 |
| ARP entries | 70 |
| HSRPv4 VIPs | 100 |
| HSRpv6 VIPs | 100 |
| LACP | 11 |
| LACP members | 4 |
| eBGP IPv6 neighbors | 9 |
| eBGP IPv4 LU neighbors | 9 |
| IPv4 (LU) routes | 6888 |
| IPv4 (LU) paths | 17580 |
| IPv6 routes | 6663 |
| 6PE routes | 17,338 |
| SR ECMP | 18 (dual-homed) |
| MPLS HW entries | 11,957 |

*Table 31: VXLAN Profile Verified Scalability Limits (Multidimensional)*

| Feature | Verified Limits |
|---|---|
| Ports | 16 |
| ECMP | 8-way (Upstream) |
| BGP neighbors | 200 |
| BGP EVPN Layer 2 VPN host routes | 64,000 |
| BGP IPv4 VLSM unicast routes or OSPF | 10,000 |
| BGP IPv6 VLSM unicast routes or OSPF | 6000 |
| BFD sessions | 20 |
| PIM neighbors | 20 |
| IPv4 (*, G) multicast routes (co-existing) | 4000 |
| IPv4 (S,G) multicast routes (co-existing) | 2000 |
| Layer 3 VNI | 900 |
| Layer 2 VNI | 2000 |
| Local VTEP | 1 |
| Remote VTEPs | 256 |
| VLAN | 3600 |
| SVI | 900 |
| MAC | 90,000 |

# Deployment Case Studies

This section provides sample topologies for some common deployments. For each topology, the scalability numbers are the limits with all of the listed features enabled at the same time.



**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.

## VXLAN BGP/eVPN iBGP Centric Topology

This VXLAN BGP/eVPN iBGP centric topology consists of Cisco Nexus 9300 and 9500 Platform switches acting as VXLAN vPC tunnel endpoints (VTEPs) and VXLAN non-vPC VTEPs. VXLAN VTEPs establish iBGP sessions to a Cisco Nexus 9508 switch

(route reflector) acting as a spine node. VXLAN-distributed anycast gateway SVIs are configured for dual stack, and the traffic is dual stack.

The focus of this topology is to test VXLAN overlay network scale and underlay Layer 2 switching and other routing, multicast, and Layer 4 through Layer 7 features for management and operations. Underlay PIM neighbors and IS-IS adjacency were tested with the default timer and Bidirectional Forwarding Detection (BFD) enabled on all links.

In the following table, the Verified Limit column lists the verified scaling capabilities with all listed features enabled at the same time. These numbers are not the maximum verified values if each feature is viewed in isolation.

***Table 32: VXLAN BGP/eVPN iBGP Centric Topology***

| Feature | Supported Platform | Verified Limit |
|---|---|---|
| System Routing Template | Nexus 9200, 9300, 9300-EX, 9300-FX, and 9500 switches and the X9700-EX/FX line cards | default |
| | Nexus 9364C switches | Not applicable |
| VXLAN VTEPs | Nexus 9200, 9300, 9300-EX, 9300-FX, 9364C and 9500 switches and the X9700-EX/FX line cards | 128 |
| VXLAN Layer 2 VNIs | Nexus 9200, 9300, 9300-EX, 9300-FX, 9364C and 9500 switches and the X9700-EX/FX line cards | 2000 |
| VXLAN Layer 3 VNIs/VRFs | Nexus 9200, 9300, 9300-EX, 9300-FX, 9364C and 9500 switches and the X9700-EX/FX line cards | 500 |
| VXLAN multicast groups | Nexus 9200, 9300, 9300-EX, 9300-FX, 9364C and 9500 switches and the X9700-EX/FX line cards | 128 |
| VXLAN overlay MAC addresses | Nexus 9200, 9300, 9300-EX, 9300-FX, 9364C and 9500 switches and the X9700-EX/FX line cards | 64,000 |
| VXLAN overlay IPv4 host routes | Nexus 9200, 9300, 9300-EX, 9300-FX, 9364C and 9500 switches and the X9700-EX/FX line cards | 60,000 |
| VXLAN overlay IPv6 host routes | Nexus 9200, 9300, 9300-EX, 9300-FX, and 9500 switches and the X9700-EX/FX line cards | 16,000 |
| | Nexus 9364C switches | Not applicable |
| VXLAN overlay IGMP Snooping groups | Nexus 9200, 9300, 9300-EX, 9300-FX, 9364C and 9500 switches and the X9700-EX/FX line cards | 1000 |

| Feature | Supported Platform | Verified Limit |
|---|---|---|
| VXLAN IPv4 LPM routes | Nexus 9200, 9300-EX, 9300-FX, and 9364C switches and the X9700-EX/FX line cards | 5120 |
| VXLAN IPv6 LPM routes | Nexus 9200, 9300-EX, and 9300-FX switches and the X9700-EX/FX line cards | 1500 |
| | Nexus 9364C switches | Not applicable |
| VXLAN VLAN logical port VP count | Nexus 9364C switches | Not applicable |
| VLANs on VTEP node | Nexus 9200, 9300, 9300-EX, 9300-FX, 9364C, and 9500 switches and the X9700-EX/FX line cards | 1700 (total VLANs)<br>1500 (VXLAN VLANs)<br>200 (non-VXLAN VLANs) |
| MST instances | Nexus 9200, 9300, 9300-EX, 9300-FX, and 9500 switches and the X9700-EX/FX line cards | 20 |
| | Nexus 9364C switches | Not applicable |
| STP logical ports<br>For more information on STP scale considerations, see Spanning Tree Protocol scale considerations, on page 59 section. | Nexus 9200, 9300, 9300-EX, 9300-FX, and 9500 switches and the X9700-EX/FX line cards | 3500 |
| | Nexus 9364C switches | Not applicable |
| vPC port channels | Nexus 9200, 9300, 9300-EX, and 9300-FX switches and the X9700-EX/FX line cards | 40 |
| | Nexus 9364C switches | Not applicable |
| Underlay IS-IS neighbors | Nexus 9200, 9300, 9300-EX, and 9300-FX switches and the X9700-EX/FX line cards | 32 |
| | Nexus 9364C switches | Not applicable |
| Underlay PIM neighbors | Nexus 9200, 9300, 9300-EX, 9300-FX, and 9500 switches and the X9700-EX/FX line cards | 12 |
| | Nexus 9364C switches | Not applicable |
| Underlay HSRP groups for regular VLANs | Nexus 9364C switches | Not applicable |
| Underlay vPC SVIs | Nexus 9200, 9300, 9300-EX, 9300-FX, and 9500 switches and the X9700-EX/FX line cards | 200 |
| | Nexus 9364C switches | Not applicable |

## FEX System Topology

The FEX 9300 multi-dimensional scale topology consists of two Cisco Nexus N9K-C93180YC-FX and another pair has N9K-C9336C-FX2 switches used in vPC mode along with 12 FEX uplinks connected to each switch.

- Multiple FEXs of type Nexus 2248TP-E, C2348TQ, C2332TQ are used.
- The switches are used at the Layer 2 and Layer 3 boundary and are also configured as VXLAN VTEPs. The FEX host ports are operating as Layer 2 ports. The switches are configured as gateways with the use of SVI interfaces.
- In the following table, the Platform Verified Limit column lists the verified scaling capabilities with all listed features enabled at the same time. The scale numbers listed here exceed those used by most customers in their topologies. These numbers are not the maximum verified values if each feature is viewed in isolation.

***Table 33: FEX System Topology***

| **Feature** | **9300 Platform Verified Limit** |
|---|---|
| Fabric Extenders | 12 |
| Port channels | 372 |
| vPC members | 360 |
| VLANs | 624 |
| MAC addresses | 14515 |
| HSRP | 365 |
| ARP | 9727 |
| Neighbor discovery (ND) | 10911 |
| Multicast (*,G) | 2250 |
| Multicast (S,G) | 2250 |

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