



## Cisco Nexus 9000 Series NX-OS Verified Scalability Guide, Release 10.5(2)F

[List of Tables.....lxxviii](#)

|                                                |          |
|------------------------------------------------|----------|
| <b>Introduction</b>                            | <b>5</b> |
| Verified Scalability Limits - Unidimensional   | 5        |
| Verified Scalability Limits - Multidimensional | 69       |
| Deployment Case Studies                        | 75       |

[List of Tables.....lxxviii](#)

## LIST OF TABLES

Table 1: eBGP/IS-IS Profile Verified Scalability Limits (Multidimensional).....69

Table 2: iBGP/OSPF Profile Verified Scalability Limits (Multidimensional).....70

Table 3: iBGP/EIGRP Profile Verified Scalability Limits (Multidimensional).....71

Table 4: MPLS Verified Scalability Limits (Multidimensional).....72

Table 5: Layer 2/Layer 3 Boundary Verified Scalability Limits (Multidimensional).....73

Table 6: Segment Routing Verified Scalability Limits (Multidimensional).....74

Table 7: VXLAN Profile Verified Scalability Limits (Multidimensional).....74

Table 8: VXLAN BGP/eVPN iBGP Centric Topology.....75



# 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                                                                                                                                                                                                                 |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>bold</b>           | Bold text indicates the commands and keywords that you enter literally as shown.                                                                                                                                            |
| <i>Italic</i>         | 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. |
| <code>variable</code> | Indicates a variable for which you supply values, in context where italics cannot be used.                                                                                                                                  |
| 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.                                 |
| <b>boldface screen font</b> | Information you must enter is in boldface screen font.                                                    |
| <i>italic screen font</i>   | 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.

# 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 following tables in this section list the verified scalability limits of the Cisco Nexus 9000 Series switches for Cisco NX-OS Release 10.5(2)F.

- [Cisco Nexus 2000 Series Fabric Extenders \(FEX\) Straight Through Mode Verified Scalability Limits, on page 6](#)
- [ePBR Verified Scalability Limits, on page 6](#)
- [FC and FCoE Switch Level Configuration Limits, on page 7](#)
- [FC and FCoE Fabric Level Configuration Limits, on page 8](#)
- [Intelligent Traffic Director Verified Scalability Limits, on page 8](#)
- [Interfaces Verified Scalability Limits, on page 9](#)
- [Label Switching Verified Scalability Limits, on page 12](#)
- [Private VLANs \(PVLANS\) Verified Scalability Limits, on page 15](#)
- [Layer 2 Switching Verified Scalability Limits, on page 16](#)
- [Multicast Routing Verified Scalability Limits, on page 18](#)
- [IP Fabric for Media Solution Verified Scalability Limits, on page 22](#)
- [IP Fabric for Media Solution Policer Verified Scalability Limits, on page 23](#)
- [Programmability Verified Scalability Limits, on page 24](#)
- [QoS Verified Scalability Limits, on page 25](#)
- [Security Verified Scalability Limits, on page 26](#)
- [SRv6 Verified Scalability Limits, on page 31](#)
- [Egress NetFlow Verified Scalability Limits, on page 32](#)
- [System Management Verified Scalability Limits, on page 33](#)
- [NetFlow Scalability Support \(Flows\), on page 39](#)
- [NetFlow Scalability Support \(Flows\) for Cisco Nexus 9500 Family Switches, on page 39](#)
- [NetFlow SVI Verified Scalability Limits, on page 40](#)
- [Unicast Routing Verified Scalability Limits, on page 40](#)
- [RIPng Verified Scalability Limits, on page 56](#)

- [PVLAN VXLAN Verified Scalability Limits, on page 56](#)
- [VXLAN Verified Scalability Limits, on page 57](#)
- [Tetration Verified Scalability Limits, on page 69](#)

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

Each number is the absolute maximum 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.

#### Cisco Nexus 2000 Series Fabric Extenders (FEX) Straight Through Mode Verified Scalability Limits

| Feature                                                             | Supported Platforms                                   | Verified Limits |
|---------------------------------------------------------------------|-------------------------------------------------------|-----------------|
| Fabric Extenders <sup>1</sup> and Fabric Extender server interfaces | Nexus 9300-FX/FX2/FX3 <sup>2</sup> /GX switches       | 16 and 768      |
| VLANs across all Fabric Extenders                                   | Nexus 9300-FX/FX2/FX3 <sup>2</sup> /GX switches       | 562             |
| VLANs per Fabric Extender server interface <sup>3</sup>             | Nexus 9300-FX/FX2/FX3 <sup>2</sup> /GX switches       | 75              |
| Port channels                                                       | Nexus 9300-FX/FX2/FX3 <sup>2</sup> /GX switches + FEX | 511             |

<sup>1</sup> 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.

<sup>2</sup> FEX is not supported on Nexus 9348GC-FX3, and 9348GC-FX3PH, 93108TC-FX3, 9332D-H2R, 93400LD-H1, 9364C-H1, and 92348GC-FX3 switches.

<sup>3</sup> For FEX HIF port channels, Cisco recommends that you enable STP port type edge using the **spanning tree port type edge [trunk]** command.

#### ePBR Verified Scalability Limits

| Feature                     | Supported Platforms          | Verified Limits  |
|-----------------------------|------------------------------|------------------|
| Maximum services per switch | Nexus 9300 and 9500 switches | 150 <sup>4</sup> |

| Feature                  | Supported Platforms          | Verified Limits |
|--------------------------|------------------------------|-----------------|
| 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             |

<sup>4</sup> 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 [Nexus Switch Platform Support Matrix](#).
  2. For the ACL limitations, see the [Cisco Nexus 9000 Series NX-OS Security Configuration Guide](#).

#### FC and FCoE Switch Level Configuration Limits

| 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 <sup>5</sup>   |
| 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 <sup>6</sup>   |
| 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 <sup>7</sup> |

| Feature | Supported Platforms                                     | Verified Limits |
|---------|---------------------------------------------------------|-----------------|
| VSANs   | Nexus 93180YC-FX, 93360YC-FX2, and 9336C-FX2-E switches | 32              |

<sup>5</sup> The number of SAN port channels and virtual FC port channels, together, can be only 8 on the Cisco Nexus 9000 Series switch.

<sup>6</sup> Tested with FC NPV.

<sup>7</sup> This is applicable only for the NPV mode.

#### FC and FCoE Fabric Level Configuration Limits

| 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               |

#### Intelligent Traffic Director Verified Scalability Limits

| Feature                 | Supported Platforms                                            | Verified Limits  |
|-------------------------|----------------------------------------------------------------|------------------|
| Nodes per device group  | Nexus 9300-FX switches                                         | 64               |
|                         | Nexus X96136YC-R, X9636Q-R, X9636C-R, and X9636C-RX line cards | 16               |
| ITD services per switch | Nexus 9300-FX switches                                         | 150 <sup>8</sup> |
| Buckets per ITD service | Nexus X96136YC-R, X9636Q-R, X9636C-R, and X9636C-RX line cards | 64               |
|                         | Nexus 9300-FX switches                                         | 256              |

<sup>8</sup> 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**

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

### Interfaces Verified Scalability Limits

| Feature                                                  | Supported Platforms                                                                                                                                            | Verified Limits                                                                                                                                              |
|----------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|
| DHCP clients per switch                                  | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 and Nexus 9408 switches                                                                                                    | 10 (IPv4) + 10 (IPv6)                                                                                                                                        |
|                                                          | Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards                                                                                                            |                                                                                                                                                              |
| Flex link                                                | Nexus 9300-FX/FX2, and 9364C switches                                                                                                                          | 12 pairs<br><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-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 and Nexus 9808 switches                                                                                        | 32 (IPv4) + 32 (IPv6)                                                                                                                                        |
|                                                          | Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards                                                                                                            |                                                                                                                                                              |
| Generic routing encapsulation (GRE) tunnels              | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 and 9804 switches                                                                                                          | 16                                                                                                                                                           |
|                                                          | Nexus X9716D-GX, Nexus 9700-EX/FX/FX3, Nexus X9836DM-A and X98900CD-A line cards                                                                               |                                                                                                                                                              |
| LACP rate fast support during system switchover          | Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards                                                                                                            | 606 ports in total on Nexus 9516 with 16 line cards                                                                                                          |
| Port channel links                                       | Nexus 9300-FX/FX2/FX3 <sup>9</sup> /GX2/H2R/H1, Nexus 9408, 9804 switches and Nexus 9600-R, 9600-RX, 9700-EX/FX/FX3, Nexus X9836DM-A and X98900CD-A line cards | 32                                                                                                                                                           |

| Feature                                  | Supported Platforms                                              | Verified Limits                                                                                 |
|------------------------------------------|------------------------------------------------------------------|-------------------------------------------------------------------------------------------------|
| SVIs                                     | Nexus 9300-FX/FX2/GX/GX2/H2R/H1 switches and Nexus 9408 switches | 1000 (with HSRP)<br>1000 HSRP groups                                                            |
|                                          | Nexus 9300-FX3 switches                                          | 510                                                                                             |
|                                          | Nexus 92348GC-FX3 switches                                       | 128                                                                                             |
|                                          | Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards              | 1000 (with HSRP), 1500 (without HSRP)                                                           |
|                                          | Nexus 9600-R and 9600-RX line cards                              | 3967                                                                                            |
|                                          | Nexus X9636C-R, X9636Q-R, X9636C-RX and X96136YC-R line cards    | 350 (with HSRP), 3967 (without HSRP)                                                            |
| Selective Q-in-Q with Multiprovider tag  | Nexus 9300-FX/FX2/FX3/H2R/H1 switches                            | Per port: 4000 mappings, 10 provider VLANs;<br>System wide: 48,000 mappings, 512 Provider VLANs |
| SVI Unnumbered                           | Nexus 9300-FX/FX2/FX3/GX/GX2 switches                            | Primary (50); Secondary (450), 1 primary SVI can have a maximum of 50 secondary SVIs            |
|                                          | Nexus X9716D-GX and Nexus 9700-EX/FX line cards                  |                                                                                                 |
| vPCs                                     | Nexus 9300-FX/FX3 <sup>9</sup> switches                          | 80                                                                                              |
|                                          | Nexus 9300-FX2 switches                                          | 98                                                                                              |
|                                          | Nexus 92348GC-FX3 switches                                       | 48                                                                                              |
|                                          | Nexus 9300-GX2, Nexus 9408 switches                              | 128                                                                                             |
|                                          | Nexus 9300-GX switches                                           | 60 (for flat Layer 2 Network)                                                                   |
|                                          |                                                                  | 56 (for L2/L3 Network)                                                                          |
|                                          | Nexus X9716D-GX and Nexus 9700-EX/FX line cards                  | 300                                                                                             |
|                                          | Nexus 9600-R/RX line cards                                       | 255                                                                                             |
|                                          | Nexus X9636C-R, X9636Q-R, X9636C-RX and X96136YC-R line cards    | 110                                                                                             |
| Static Network Address Translation (NAT) | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 and Nexus 9408 switches      | Non-Atomic mode: 1023<br>Atomic mode: 60% of Non-Atomic scale number is supported.              |

| Feature                                         | Supported Platforms                                                       | Verified Limits                                                                                                        |
|-------------------------------------------------|---------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|
| Dynamic Network Address Translation (NAT)       | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 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-FX/FX2/FX3/GX/GX2/H2R/H1 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-FX/FX2/FX3/GX/GX2/H2R/H1 and Nexus 9408 switches               | Non-Atomic mode: 875<br>Atomic mode: 60% of Non-Atomic scale number is supported.                                      |
| Sub-interfaces                                  | Nexus 9808/9804 switches and Nexus X9836DM-A and X98900CD-A line cards    | 2000                                                                                                                   |
|                                                 | Nexus 92348GC-FX3 switches                                                | 128                                                                                                                    |
|                                                 | Nexus 9300-FX2/FX3/GX/GX2/H2R/H1 and Nexus 9408 switches                  | 3900<br><b>Note</b><br>It is recommended to configure 60% of the mentioned limits with higher route scale deployments. |
|                                                 | Nexus 9300-FX and 9300C switches                                          | 1900<br><b>Note</b><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/FX3 and Nexus X9716D-GX line cards                       | 100                                                                                                                    |
|                                                 | Nexus 9300-FX/FX2/FX3 <sup>9</sup> /GX/GX2/H2R/H1 and Nexus 9408 switches | 3967                                                                                                                   |
| Port VLAN translations in a switch              | Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards                       | 2000                                                                                                                   |
|                                                 | Nexus 9300-FX/FX2/FX3 <sup>9</sup> /GX/GX2/H2R/H1 and Nexus 9408 switches | 24,000                                                                                                                 |

<sup>9</sup> Nexus 9348GC-FX3PH switch has feature limitations due to Half Duplex only ports, see [Cisco Nexus 9000 Series NX-OS Interfaces Configuration Guide, Release 10.4\(x\)](#).

**Note**

- The scale for vPC convergence is tested with an LACP supported device connected to the vPC pair link.
- For **interface port-channel** configuration, LACP vPC convergence must be enabled. For more details, see the **Configuring vPCs** section of the *Cisco Nexus 9000 Series NX-OS Interfaces Configuration Guide*.
- For **vPC domain** configuration, the tested time for the delay restore is 150 seconds, the delay restore for interface VLAN is 150 seconds, and the delay restore for orphan ports is 140 seconds. For more details, see the **Configuring vPCs** section of the *Cisco Nexus 9000 Series NX-OS Interfaces Configuration Guide*.
- Above NAT scale numbers are supported provided that enough TCAM resources configured and allocated.

**Label Switching Verified Scalability Limits**

| Feature                                                                | Supported Platforms                                                                                 | Verified Limits                                     |
|------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|-----------------------------------------------------|
| Forwarding Equivalence Classes (FECs)<br>(Node/Prefix/Adj/Binding SID) | Nexus 9300-FX/FX2/FX3 <sup>10</sup> /GX/GX2 switches and Nexus 9700-EX/FX/GX/FX3 line cards         | MPLS Heavy Template: 4096<br>Default Template: 1024 |
|                                                                        | Nexus 9332D-H2R, 9300-H1 switches                                                                   | Default Template: 1024                              |
|                                                                        | Nexus 9600-R and 9600-RX line cards                                                                 | 1000                                                |
| Equal-cost multipaths (ECMPs)                                          | Nexus 9300-FX/FX2/FX3 <sup>10</sup> /GX/GX2/H2R/H1 switches, and Nexus 9700-EX/FX/GX/FX3 line cards | 32                                                  |
|                                                                        | Nexus 9600-R and 9600-RX line cards                                                                 | 8 - way                                             |

| Feature                                                              | Supported Platforms                                                                                          | Verified Limits                                                                                                                                                                                                              |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Equal-cost multipaths Groups (ECMPs)                                 | Nexus 9300-FX2/FX3 <sup>10</sup> , and 9364C switches                                                        | MPLS Heavy Template: 12,288 (with 4-way ECMP) and 4096 (with 8-way ECMP)<br><br>Default: 1024<br><br><b>Note</b><br>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: 12,288 (with a 4-way ECMP) and 4096 (with 8-way ECMP)<br><br><b>Note</b><br>After the ECMP objects are exhausted, there is a fallback to the adjacency for all further routes. |
|                                                                      | Nexus 9332D-H2R, 9300-H1 switches                                                                            | MPLS Heavy Template: 12,288 (with 4-way ECMP)                                                                                                                                                                                |
|                                                                      | Nexus 9600-RX line cards                                                                                     | 24,000 ECMP Groups 2 paths per ECMP<br><br><b>Note</b><br>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-FX/FX2/FX3 <sup>10</sup> /GX/GX2/H2R/H1 and 9300C switches and Nexus 9700-EX/FX/GX/FX3 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-FX/FX2/FX3 <sup>10</sup> /GX/GX2/H2R/H1 and 9300C switches and Nexus 9700-EX/FX/GX/FX3 line cards | Total ingress label stats: 48,000 (MPLS Heavy Template)                                                                                                                                                                      |
| Egress Peer Engineering                                              | Nexus 9300-FX/FX2/FX3 <sup>10</sup> /GX/GX2/H2R/H1 and 9300C switches and Nexus 9700-EX/FX/GX/FX3 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 <sup>11</sup> | Nexus 9300-FX/FX2/FX3 <sup>10</sup> /GX/GX2/H2R/H1 switches and Nexus 9700-EX/FX/GX/FX3 line cards           | 256 (with 32 - way ECMP and 5 label stack push)                                                                                                                                                                              |

| Feature                                           | Supported Platforms                                                                                 | Verified Limits                                              |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------|--------------------------------------------------------------|
| Layer 3 VPN routes                                | Nexus 9600-R and 9600-RX line cards                                                                 | 450,000                                                      |
|                                                   | Nexus 9332D-H2R, 9300-H1 switches                                                                   | 400,000 (IPv4 routes)<br>90,000 (IPv6 routes)                |
| Layer 3 EVPN Labels                               | Nexus 9300-FX/FX2/FX3 <sup>10</sup> /GX/GX2/H2R/H1 switches and Nexus 9700-EX/FX/GX/FX3 line cards  | 1000 (With MPLS Heavy Template)                              |
| LDP session                                       | Nexus 9600-R and 9600-RX line cards <sup>12</sup>                                                   | 200                                                          |
| Node Sid/Prefix SID                               | Nexus 9300-FX/FX2/FX3 <sup>10</sup> /GX/GX2/H2R/H1 switches and Nexus 9700-EX/FX/GX/FX3 line cards  | 4000                                                         |
| Adjacency SID                                     | Nexus 9300-FX/FX2/FX3 <sup>10</sup> /GX/GX2/H2R/H1 switches and Nexus 9700-EX/FX/GX/FX3 line cards  | 112                                                          |
| Binding SID                                       | Nexus 9300-FX/FX2/FX3 <sup>10</sup> /GX/GX2/H2R/H1 switches and Nexus 9700-EX/FX/GX/FX3 line cards  | 1000                                                         |
| <b>SRTE Policy</b>                                |                                                                                                     |                                                              |
| SRTE policy with PBR                              | Nexus 9300-FX/FX2/FX3 <sup>10</sup> /GX/GX2 and 9364C switches                                      | 512 per slice with 4 way ECMP/1024 per slice with 2 way ECMP |
|                                                   | Nexus 9332D-H2R, 9300-H1 switches and N9K-X9736C-FX3 line cards                                     | 512                                                          |
| Number of route-maps with SRTE policy (IPv4/IPv6) | Nexus 9300-FX/FX2/FX3 <sup>10</sup> /GX/GX2/H2R/H1 and 9364C switches and N9K-X9736C-FX3 line cards | 256 (IPv4) + 256 (IPv6) per slice with 4 way ECMP            |

<sup>10</sup> Nexus 9348GC-FX3PH switch has feature limitations due to Half Duplex only ports, see [Cisco Nexus 9000 Series NX-OS Label Switching Configuration Guide Release 10.4\(x\)](#).

<sup>11</sup> For Cisco Nexus 9300 and 9500 Series switches, LSPs \*ECMP\* label stack push cannot exceed 1500.

<sup>12</sup> Nexus X9636C-RX, X9636C-R, X9636Q-R, and 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.

ECMP group creation will be limited if the next-hop adjacency space is exhausted.

## Private VLANs (PVLANS) Verified Scalability Limits

| Feature                                                                                                                                                                      | Supported Platforms                                                                          | Verified Limits |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------|
| <b>Primary VLANs</b><br><br><b>Note</b><br>The 400 PVLAN-mapping scale per PVLAN port is only applicable when port is configured as promiscuous trunk port.                  | Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards                                          | 16              |
|                                                                                                                                                                              | Nexus 9300-FX/FX2/FX3/GX/H2R/H1 switches                                                     | 400             |
| <b>Secondary VLANs</b><br><br><b>Note</b><br>The 400 PVLAN-mapping scale per PVLAN port is only applicable when port is configured as promiscuous trunk port.                | Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards                                          | 20              |
|                                                                                                                                                                              | Nexus 9300-FX/FX2/FX3/GX/H2R/H1 switches                                                     | 400             |
| Ports in Community host mode                                                                                                                                                 | Nexus 9300-FX/FX2/FX3/GX/H2R/H1 switches                                                     | 40              |
|                                                                                                                                                                              | Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards                                          |                 |
| Ports in isolated host mode                                                                                                                                                  | Nexus 9300-FX/FX2/FX3/GX/H2R/H1 switches                                                     | 40              |
|                                                                                                                                                                              | Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards                                          |                 |
| Ports in isolated trunk host mode                                                                                                                                            | Nexus 9300-FX/FX2/FX3/GX/H2R/H1 switches                                                     | 40              |
|                                                                                                                                                                              | Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards                                          |                 |
| Ports in promiscuous mode                                                                                                                                                    | Nexus 9300-FX switches                                                                       | 10              |
|                                                                                                                                                                              | Nexus 9300-FX2/FX3/GX/H2R/H1 switches, Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards   | 5               |
| Ports in promiscuous trunk mode                                                                                                                                              | Nexus 9300-FX switches                                                                       | 10              |
|                                                                                                                                                                              | Nexus 9300-FX2/FX3/GX/H2R/H1 switches, Nexus -X9716D-GX, and Nexus 9700-EX/FX/FX3 line cards | 5               |
| <b>PVLANS allowed on a PVLAN port</b><br><br><b>Note</b><br>The 400 PVLAN-mapping scale per PVLAN port is only applicable when port is configured as promiscuous trunk port. | Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards                                          | 16              |
|                                                                                                                                                                              | Nexus 9300-FX/FX2/FX3/GX/H2R/H1 switches                                                     | 400             |

## Layer 2 Switching Verified Scalability Limits

| Feature                                         | Supported Platforms                                                                                                                                   | Verified Limits                                                                                                                                     |
|-------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| MAC addresses                                   | Nexus 9300-FX/FX2/FX3 <sup>13</sup> /GX/GX2/H2R/H1, Nexus 92348GC-FX3 and Nexus 9408 switches                                                         | 92,000 (default system routing mode)                                                                                                                |
|                                                 | Nexus 9300-FX/FX2/FX3 <sup>13</sup> /GX/GX2/H2R/H1 and Nexus 9408 switches                                                                            | 200,000 (system routing mode L2-heavy)<br><a href="#">14</a>                                                                                        |
|                                                 | 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 X9716D-GX and Nexus 9700-EX/FX/FX3 line cards                                                                                                   | 92,000                                                                                                                                              |
|                                                 | Nexus 9600-R and 9600-RX line cards                                                                                                                   | 192,000                                                                                                                                             |
| MST instances                                   | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3, Nexus 9408 switches and Nexus 9600-R, 9600-RX, Nexus X9716D-GX, and 9700-EX/FX/FX3 line cards | 64                                                                                                                                                  |
| MST PV count with single instances 0            | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches                                                                                              | 190,000                                                                                                                                             |
| MST virtual ports with more than 1 MST instance | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3, Nexus 9408 switches                                                                           | 48,000                                                                                                                                              |
|                                                 | Nexus X9716D-GX and 9700-EX/FX/FX3 line cards                                                                                                         | 85,000                                                                                                                                              |
|                                                 | Nexus 9600-R and 9600-RX line cards                                                                                                                   | 236,000                                                                                                                                             |
| RPVST virtual ports (physical ports * VLANs)    | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3, Nexus 9408 switches                                                                           | 48,000                                                                                                                                              |
|                                                 | Nexus X9716D-GX and 9700-EX/FX/FX3 line cards                                                                                                         | 65,000                                                                                                                                              |
|                                                 | Nexus 9600-R and 9600-RX line cards                                                                                                                   | 13,750                                                                                                                                              |

| Feature                                                                          | Supported Platforms                                                                                                                                  | Verified Limits                             |
|----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------|
| RPVST logical ports (logical ports * VLANs)                                      | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3, Nexus 9408 switches                                                                          | 22,000                                      |
|                                                                                  | Nexus X9716D-GX and 9700-EX/FX/FX3 line cards                                                                                                        | 45,000                                      |
|                                                                                  | Nexus 9600-R and 9600-RX line cards                                                                                                                  | 13,750                                      |
| VLANs in MST mode                                                                | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3, Nexus 9408 switches and Nexus X9716D-GX, 9600-R/RX, and 9700-EX/FX/FX3 line cards            | 3967 (the remaining 127 VLANs are reserved) |
|                                                                                  | Nexus 92348GC-X switches                                                                                                                             | 3967                                        |
| VLANs in RPVST mode                                                              | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3 and Nexus 9408 switches                                                                       | 3967                                        |
|                                                                                  | Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards                                                                                                  | 3967 <sup>15</sup>                          |
|                                                                                  | 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-FX/FX2/FX3 <sup>13</sup> /GX/GX2/H2R/H1, Nexus 92348GC-FX3, Nexus 9408 switches, and Nexus 9700-EX/FX/FX3, and Nexus X9716D-GX line cards | 190,000                                     |
| Total number of VLANs × ports with switch port isolated (3967 VLANs x 144 ports) | Nexus X9636C-R, X9636Q-R, X9636C-RX, and X96136YC-R line cards                                                                                       | 571,248                                     |

<sup>13</sup> Nexus 9348GC-FX3PH switch has feature limitations due to Half Duplex only ports, see [Cisco Nexus 9000 Series NX-OS Layer 2 Switching Configuration Guide, Release 10.4\(x\)](#).

<sup>14</sup> 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.

<sup>15</sup> 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.

<sup>16</sup> Nexus 9348GC-FX3PH switch has feature limitations due to Half Duplex only ports, see [Cisco Nexus 9000 Series NX-OS Layer 2 Switching Configuration Guide, Release 10.4\(x\)](#).

**Note**

- 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

**Multicast Routing Verified Scalability Limits**

| Feature                           | Supported Platforms                          | Verified Limits |
|-----------------------------------|----------------------------------------------|-----------------|
| Egress NAT                        | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches | 2000            |
| Ingress NAT                       | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches | 2000            |
| Egress and Ingress NAT            | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches | 2000            |
| Unicast to Multicast NAT (UM NAT) | Nexus 9300-FX/FX2 switches                   | 1760            |
|                                   | Nexus 9300-FX3/GX/GX2/H2R/H1 switches        | 2000            |

| Feature                                                                                                                                                                                                                                                                 | Supported Platforms              | Verified Limits                                                                                                                                                                                     |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>IPv4 multicast routes</b><br><br><b>Note</b><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 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 92348GC-FX3 switches       | 8192                                                                                                                                                                                                |
|                                                                                                                                                                                                                                                                         | 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/FX3 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) <a href="#">17</a> |
|                                                                                                                                                                                                                                                                         | 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) <a href="#">18</a> |
|                                                                                                                                                                                                                                                                         | Nexus 9300-FX/FX3/GX/GX2/H2R/H1  | 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 X9716D-GX line card        | 131,072 (65,536 *,G + 65,536 S,G)                                                                                                                                                                   |
|                                                                                                                                                                                                                                                                         | Nexus 9800 switches              | 32,768 (Layer 3)                                                                                                                                                                                    |

| Feature                    | Supported Platforms                                                                                   | Verified Limits                                                                                                                                                            |
|----------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IPv6 multicast routes      | Nexus 9300-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 Nexus X9716D-GX, N9K-X9736C-FX3 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/H2R/H1, Nexus 92348GC-FX3, Nexus 9408 switches                                      | 8192                                                                                                                                                                       |
|                            | Nexus 9800 switches                                                                                   | 8192 (Layer 3)                                                                                                                                                             |
| MLD snooping groups        | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches, and Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards | 8192                                                                                                                                                                       |
| Multicast FPF              | Nexus 9300-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/H2R/H1, and Nexus 9408 switches                                              | IPv4 32,000 (Layer 2 + Layer 3) multicast routes                                                                                                                           |
| Outgoing interfaces (OIFs) | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches, Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 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-FX2 switches and Nexus 9700-FX/FX3 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 92348GC-FX3 switches                                                  | 8000                                                                                                                                   |
|                                                           | Nexus X9716D-GX line card                                                   | 16,000                                                                                                                                 |
|                                                           | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches                                | 32,000 (with default template <a href="#">19</a> , multicast-heavy template, and multicast-ext-heavy template <a href="#">20</a> )     |
| PIM neighbors                                             | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3 switches             | 250                                                                                                                                    |
|                                                           | Nexus 9808 switches                                                         | 500                                                                                                                                    |
|                                                           | Nexus 9600-R, 9600-RX, and 9700-EX/FX/FX3 line cards                        | 500                                                                                                                                    |
| <b>MVPN - unidimensional</b>                              |                                                                             |                                                                                                                                        |
| Multicast VRFs                                            | Nexus 9600-R and 9600-RX line cards (except the Nexus X96136YC-R line card) | 300                                                                                                                                    |
| Default MDT groups                                        | Nexus 9600-R and 9600-RX line cards (except the Nexus X96136YC-R line card) | 300                                                                                                                                    |
| MVPN Peers (PIM neighbors) per device                     | Nexus 9600-R and 9600-RX line cards (except the Nexus X96136YC-R line card) | 900                                                                                                                                    |
| Maximum number of PEs per VRF                             | Nexus 9600-R and 9600-RX line cards (except the Nexus 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 Nexus 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 Nexus 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 Nexus 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 Nexus X96136YC-R line card) | 32,000                                                                                                                                 |

<sup>17</sup> All line cards must have the FX type.

<sup>18</sup> All line cards must have the FX type.

<sup>19</sup> On Cisco Nexus 9300-FX2 Series switches, the 32,000 IGMP snooping entries are not supported with default template.

<sup>20</sup> The 32,000 IGMPv3 (S,G) snooping entries are supported only with the multicast-ext-heavy template.



**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.

## IP Fabric for Media Solution Verified Scalability Limits

| 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            |
| Ingress-NAT (I-NAT)                                                        | 2000                 | 2000                  | 1000           | 1000            |
| Multicast-Unicast NAT (MU-NAT)                                             | 2000                 | 2000                  | 1000           | 1000            |

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

#### IP Fabric for Media Solution Policer Verified Scalability Limits

| Feature                          | Supported Platforms                     | Verified Limits |
|----------------------------------|-----------------------------------------|-----------------|
| NBM Flow Policers (Slice/System) | 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 X9636C-R line cards               | 2048/12288      |
|                                  | Nexus X9636Q-R line cards               | 2048/6144       |
|                                  | Nexus X9636C-RX line cards              | 2048/8192       |
|                                  | Nexus X9624D-R2 line cards              | 2048/8192       |
|                                  | Nexus X9836DM-A line cards              | 700/6300        |
|                                  | Nexus 9332D-H2R switches                | 1536/6144       |
|                                  | Nexus 9348GC-FX3 switches               | 1536/1536       |
|                                  | Nexus X98900CD-A line cards             | 700/4200        |
|                                  | Nexus 93400LD-H1, and 9364C-H1 switches | 1536/3072       |



**Note** When storm control is enabled on Nexus 9300-FX3/GX/GX2/H2R/H1 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](#).

### Programmability Verified Scalability Limits

| Feature                                                                                                                                                          | Supported Platforms                                                    | Verified Limits                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| <b>gNMI</b>                                                                                                                                                      |                                                                        |                                                                                                                           |
| VRF - Default                                                                                                                                                    | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R switches and Nexus 9700-FX line cards | 16 concurrent subscriptions                                                                                               |
| VRF - Management                                                                                                                                                 | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R switches and Nexus 9700-FX line cards | 16 concurrent subscriptions                                                                                               |
| VRF - Default and Management                                                                                                                                     | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R switches and Nexus 9700-FX line cards | 32 concurrent subscriptions                                                                                               |
| Paths                                                                                                                                                            | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R switches and Nexus 9700-FX line cards | 48 paths in a single subscription                                                                                         |
| Message size                                                                                                                                                     | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R switches and Nexus 9700-FX line cards | Less than 12 MB                                                                                                           |
| Aggregate MO's                                                                                                                                                   | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R switches and Nexus 9700-FX line cards | 150,000                                                                                                                   |
| <b>NX-API</b>                                                                                                                                                    |                                                                        |                                                                                                                           |
| See <a href="#">Guidelines and Limitations</a> 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 <a href="#">Configuring the Message Format and Command Type</a> 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. |

| Feature                                                                                                                                                                                                           | Supported Platforms      | Verified Limits                                   |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|---------------------------------------------------|
| <b>DME</b>                                                                                                                                                                                                        |                          |                                                   |
| <b>Note</b> <ul style="list-style-type: none"> <li>• If all the DME features are configured together, it may cause performance issues.</li> <li>• Model to CLI Conversion of payload is not supported.</li> </ul> |                          |                                                   |
| Telemetry                                                                                                                                                                                                         | Nexus 92348GC-X switches | 4 telemetry receivers can be streamed in parallel |
| NETCONF                                                                                                                                                                                                           | Nexus 92348GC-X switches | 2 parallel NETCONF sessions                       |
| gNMI/gNOI                                                                                                                                                                                                         | Nexus 92348GC-X switches | 2 concurrent gNMI/gNOI subscriptions              |

### QoS Verified Scalability Limits

| Feature                   | Supported Platforms                                                                                                                      | Verified Limits                                                                                                                                           |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Class maps per policy map | Nexus 9300-GX/GX2/FX2/FX3 <sup>21</sup> /H2R/H1, Nexus 9408, and Nexus 9808/9804 switches                                                | 128                                                                                                                                                       |
| AFD                       | Nexus 9300-GX/GX2/FX2/FX3 <sup>21</sup> /H2R/H1, and Nexus 9408 switches                                                                 | 30 profiles                                                                                                                                               |
| WRED                      | Nexus 9300-GX/GX2/FX2/FX3 <sup>21</sup> /H2R/H1, and Nexus 9408 switches                                                                 | 30 profiles                                                                                                                                               |
|                           | Nexus 9808/9804 switches                                                                                                                 | 14 Profiles                                                                                                                                               |
| Ingress 1R2C              | Nexus 9300-GX/GX2/FX2/FX3 <sup>21</sup> /H2R/H1, Nexus 9408, and Nexus 9808/9804 switches, and Nexus X9836DM-A and X98900CD-A line cards | 1280 per ASIC                                                                                                                                             |
| Ingress                   | Nexus 9808/9804 switches, and Nexus X9836DM-A and X98900CD-A line cards                                                                  | <ul style="list-style-type: none"> <li>• 6300 Policer / LC – PMN use case</li> <li>• QoS on physical or SI – Limited by 128 unique ACLs / ASIC</li> </ul> |
| Egress 1R2C               | Nexus 9300-GX/GX2/FX2/FX3 <sup>21</sup> /H2R/H1, and Nexus 9408 switches                                                                 | 256                                                                                                                                                       |
| Ingress 2R3C              | Nexus 9300-GX/GX2/FX2/FX3 <sup>21</sup> /H2R/H1, and Nexus 9408 switches                                                                 | 766                                                                                                                                                       |
| Total policy maps         | Nexus 9300-GX/GX2/FX2/FX3 <sup>21</sup> /H2R/H1, Nexus 9408, Nexus 9808/9804 switches                                                    | 4000                                                                                                                                                      |
| QoS unique burst profiles | Nexus 9808/9804 switches, and Nexus X9836DM-A and X98900CD-A line cards                                                                  | 4/ASIC                                                                                                                                                    |

| Feature    | Supported Platforms          | Verified Limits |
|------------|------------------------------|-----------------|
| TCAM label | Nexus 9300-FX3 <sup>21</sup> | 64              |

<sup>21</sup> Nexus 9348GC-FX3PH switch has feature limitations due to Half Duplex only ports, see [Cisco Nexus 9000 Series NX-OS Quality of Service Configuration Guide, Release 10.4\(x\)](#).

#### Security Verified Scalability Limits

| 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-FX/FX2/FX3/GX/GX2 switches  | IPv4 Ingress - 3584<br>IPv6 Ingress - 1792                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|         | Nexus 9332D-H2R switches               | Total TCAM region size is 14,336 (Default TCAM carving: 10,240 Ingress and 4096 Egress) <ul style="list-style-type: none"> <li>• 4 slice with 8 interface</li> <li>• 510 Ingress - RACL per slice</li> <li>• 254 Egress - RACL per slice</li> <li>• 30 PACL and Egress PACL per slice</li> </ul> <b>Note</b><br>The maximum TCAM region size that can be carved as ingress or egress is 13056, as ing-sup/egr-sup cannot be carved size=0.                                              |
|         | Nexus 93400LD-H1 and 9364C-H1 switches | Total TCAM region size is 14,336 (Default TCAM carving: 10,240 Ingress and 4096 Egress)<br>2 Slices 0 and 1<br>interface 1-32 -> slice 1<br>interface 33-52 -> slice 0 <ul style="list-style-type: none"> <li>• 510 Ingress - RACL per slice</li> <li>• 254 Egress - RACL per slice</li> <li>• 30 PACL and Egress PACL per slice</li> </ul> Optionally, you can carve a flexible TCAM region. However, you can carve it as either ingress or egress only, with a maximum size of 13568. |
|         | Nexus N9K-X9736C-FX3 line card         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Feature                   | Supported Platforms          | Verified Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|---------------------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                           |                              | <p>Line card has 4 instances with 9 port per instance</p> <ul style="list-style-type: none"> <li>• Default TCAM carving: 4096 ingress and 2048 Egress</li> <li>• 62 Unique labels Ingress RACL per instance</li> <li>• 254 Unique labels Egress RACL per instance</li> <li>• 30 Unique labels Ingress PACL per instance</li> <li>• Egress PACL : Not supported</li> </ul>                                                                                                                 |
|                           | Nexus 9808/9804 switches     | <ul style="list-style-type: none"> <li>• IPv4 Ingress 14,000 per slice</li> <li>• RACL on physical or sub-interfaces – Limited by 128 unique ACLs / ASIC</li> <li>• 126 Unique labels Ingress IPv4 per ASIC</li> <li>• 126 Unique labels Ingress IPv6 per ASIC</li> <li>• 14 Unique labels for Egress IPv4 per ASIC</li> <li>• 14 Unique labels for Egress IPv6 per ASIC</li> <li>• Ingress ACL Group (QOS + RACL) 252 per ASIC</li> <li>• Egress ACL Group (RACL) 60 per ASIC</li> </ul> |
| RACL Labels (maximum)     | Nexus 9504 and 9508 switches | 4000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| ACL LOU Threshold Support | Nexus 9500-R line cards      | 24 LOUs per line card                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Feature                                    | Supported Platforms                                                                                   | Verified Limits                                                                                                                                                                                                                                                                                                                                                                                    |
|--------------------------------------------|-------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IPv4 ingress access control entries (ACEs) | Nexus 9600-R and 9600-RX line cards                                                                   | <ul style="list-style-type: none"> <li>• RACL on LC Nexus X9636C-RX: 100,000</li> <li>• PACL on LC Nexus X9636C-RX: 12,000</li> <li>• RACL-2048, PACL-1024 (without TCAM Carving) IPv4 52,640 ACEs per system</li> <li>• PACL IPv4: 1024 TCAM entries in internal TCAM</li> <li>• PACL MAC: 2048 TCAM entries in internal TCAM</li> <li>• RACL IPv4: 2048 TCAM entries in internal TCAM</li> </ul> |
| IPv6 ingress access control entries (ACEs) | Nexus 9600-R and 9600-RX line cards                                                                   | <ul style="list-style-type: none"> <li>• RACL-1024, PACL-1024 (without TCAM Carving) IPv6 25,200 ACEs per system</li> <li>• PACL IPv6: 1024 TCAM entries in internal TCAM</li> <li>• RACL IPv6: 1024 TCAM entries in internal TCAM</li> </ul>                                                                                                                                                      |
| IPv4 ingress TCAM entries                  | Nexus 9300-FX/FX2/FX3 <sup>22</sup> switches, Nexus 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-FX/FX2/FX3 <sup>22</sup> /GX/GX2 switches, Nexus 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-FX/FX2/FX3 <sup>22</sup> /GX/GX2 switches, Nexus X9716D-GX and Nexus 9700-EX/FX line cards | 1792 (per slice of the forwarding engine)                                                                                                                                                                                                                                                                                                                                                          |
| IPv6 egress TCAM entries                   | Nexus 9300-FX/FX2/FX3 <sup>22</sup> /GX/GX2 switches, Nexus 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                                                                                                                                                                                                                                                                                                                                                                     |

| Feature                | Supported Platforms                                                | Verified Limits                                                                                              |
|------------------------|--------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Ingress RACLv4         | Nexus 9808 switches                                                | 9216 per slice                                                                                               |
|                        | Nexus 9804 switches, and Nexus X9836DM-A and X98900CD-A line cards | <ul style="list-style-type: none"> <li>• Physical: 14,000 per slice</li> <li>• Port-Channel: 5000</li> </ul> |
| Ingress QoSv4          | Nexus 9808 switches                                                | 9216                                                                                                         |
|                        | Nexus 9804 switches, and Nexus X9836DM-A and X98900CD-A line cards | <ul style="list-style-type: none"> <li>• Physical: 9000 per slice</li> <li>• Port-Channel: 5000</li> </ul>   |
| Ingress SPAN filter v4 | Nexus 9808 switches                                                | 9216                                                                                                         |
|                        | Nexus 9804 switches, and Nexus X9836DM-A and X98900CD-A line cards | Physical: 14,000 per slice                                                                                   |
| Egress RACLv4          | Nexus 9808 switches                                                | 9216                                                                                                         |
|                        | Nexus 9804 switches, and Nexus X9836DM-A and X98900CD-A line cards | <ul style="list-style-type: none"> <li>• Physical: 9000 per slice</li> <li>• Port-Channel: 5000</li> </ul>   |
| Ingress RACLv6         | Nexus 9808 switches                                                | 4608 <sup>23</sup>                                                                                           |
|                        | Nexus 9804 switches, and Nexus X9836DM-A and X98900CD-A line cards | <ul style="list-style-type: none"> <li>• Physical: 7000 per slice</li> <li>• Port-Channel: 2500</li> </ul>   |
| Ingress QoSv6          | Nexus 9808 switches                                                | 4608 <sup>23</sup>                                                                                           |
|                        | Nexus 9804 switches, and Nexus X9836DM-A and X98900CD-A line cards | <ul style="list-style-type: none"> <li>• Physical: 7000 per slice</li> <li>• Port-Channel: 2500</li> </ul>   |
| Ingress SPAN filter v6 | Nexus 9808 switches                                                | 4608 <sup>23</sup>                                                                                           |
|                        | Nexus 9804 switches, and Nexus X9836DM-A and X98900CD-A line cards | Physical: 7000 per slice                                                                                     |
| Egress RACL v6         | Nexus 9808 switches                                                | 4608 <sup>23</sup>                                                                                           |
|                        | Nexus 9804 switches, and Nexus X9836DM-A and X98900CD-A line cards | <ul style="list-style-type: none"> <li>• Physical: 4500 per slice</li> <li>• Port-Channel: 2500</li> </ul>   |

| Feature                                                            | Supported Platforms                                                                               | Verified Limits                                                                                                                                           |
|--------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Number of unique ACLs each for RACLv4, RACLv6, QoS, ACL SPAN       | Nexus 9808/9804 switches, and Nexus X9836DM-A and X98900CD-A line cards                           | <ul style="list-style-type: none"> <li>• 127 (per unit) each for ingress and QoS</li> <li>• 15 (per unit) each for egress (IPv4 and IPv6 RACL)</li> </ul> |
| Number of unique ACL combinations                                  | Nexus 9808/9804 switches, and Nexus X9836DM-A and X98900CD-A line cards                           | <ul style="list-style-type: none"> <li>• 252 (per unit) for ingress</li> <li>• 60 (per unit) for egress</li> </ul>                                        |
| DHCP snooping bindings                                             | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches, Nexus X9716D-GX and Nexus 9700-EX/FX/FX3 line cards | 2048                                                                                                                                                      |
| 802.1x                                                             | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches                                                      | 1024 hosts                                                                                                                                                |
| <b>Key Chain Keys Verified Scalability Limits (Unidimensional)</b> |                                                                                                   |                                                                                                                                                           |
| Type-6 Keys                                                        | Nexus 9000 Series switches                                                                        | 5000                                                                                                                                                      |
| Type 7 keys                                                        | Nexus 9000 Series switches                                                                        | 20,000                                                                                                                                                    |

<sup>22</sup> Nexus 9348GC-FX3PH switch has feature limitations due to Half Duplex only ports, see [Cisco Nexus 9000 Series NX-OS Security Configuration Guide, Release 10.4\(x\)](#).

<sup>23</sup> 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.

### SRv6 Verified Scalability Limits

| Feature                  | Supported Platforms                               | Verified Limits |
|--------------------------|---------------------------------------------------|-----------------|
| ARP                      | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 48,000          |
| Host and LPM IPv4 routes | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 470,000         |
| Host and LPM IPv6 routes | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 256,000         |

| Feature                                                                       | Supported Platforms                               | Verified Limits |
|-------------------------------------------------------------------------------|---------------------------------------------------|-----------------|
| Leaf                                                                          | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 256             |
| SID DB                                                                        | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 2000            |
| SRv6 and VXLAN Peer                                                           | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 256             |
| VRF                                                                           | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 1000            |
| ND                                                                            | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 24,000          |
| SRv6 Traffic Engineering policies                                             | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 1000            |
| Number of prefixes (IPv4 and IPv6) that use SRv6 Traffic Engineering policies | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 50,000          |
| Maximum number of preferences per policy                                      | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 3               |
| Maximum number of segment lists                                               | Nexus 9300-GX/GX2/H2R/H1, and Nexus 9408 switches | 3000            |

#### Egress NetFlow Verified Scalability Limits

| Feature                                                          | Supported Platforms                                                          | Verified Limits                                                                                                                                                                                                                                                                      |
|------------------------------------------------------------------|------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flow monitors                                                    | Nexus 9300-FX/FX2/GX/GX2/H2R/H1 switches and 9500 with 9700-FX/GX line cards | <p>30 IPv4 flow monitor and each flow monitor with two exporters</p> <p>28 IPv6 flow monitor and each flow monitor with two exporters</p> <p>32 Layer 2 Flow monitor and each flow monitor with two exporters</p> <p>Maximum number of exporters supported per flow monitor is 2</p> |
| Maximum number of flows in the software table (IPv4 or CE flows) | Nexus 9000 switches                                                          | <p>100,000 flows using the <b>show flow cache</b> command on 9500 modular chassis per line card</p> <p>1,000,000 flows (1 Million) using the <b>show flow cache</b> command on 9300 switches</p>                                                                                     |

**System Management Verified Scalability Limits**

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

| Feature   | Supported Platforms                            | Verified Limits                                                                                                                                                    |
|-----------|------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| PTP ports | Nexus 9300-FX/GX, and 9364C-H1 switches        | 64 per system                                                                                                                                                      |
|           | Nexus 93180YC-FX3 and 93180YC-FX3S switches    | 68 per system<br><b>Note</b><br>Speed: Mixed Speed: 10G/25G/40G/100G<br>- includes soft/physical break-out                                                         |
|           | Nexus 93108TC-FX3                              | 48 per system<br><b>Note</b><br>Speed: All 1G ports                                                                                                                |
|           | Nexus 93108TC-FX3P switches                    | 48 per system<br><b>Note</b><br>Speed: All 1G ports                                                                                                                |
|           | Nexus 9348GC-FX3 switches                      | 48 per system<br><b>Note</b><br>Speed: All 1G ports                                                                                                                |
|           | Nexus 9332D-H2R switches                       | 128 per system<br><b>Note</b><br>Speed: 4x100G - Only Soft break-out                                                                                               |
|           | 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><b>Note</b><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><b>Note</b><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                                                                                                                               |

| Feature                                                              | Supported Platforms                                                                                                                        | Verified Limits                                                                                                       |
|----------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------|
|                                                                      | Nexus 93400LD-H1 switches                                                                                                                  | 60 per system<br><b>Note</b><br>Speed: 10G/25G/40G/100G - includes soft/physical break-out ; 50G - Only Soft-breakout |
|                                                                      | Nexus 9808 switches                                                                                                                        | 64 per line card<br>512 per chassis                                                                                   |
| PTP clients per port                                                 | Nexus 9300-FX/FX2/FX3 <sup>24</sup> /GX/GX2, 9408 and 9808 switches and Nexus 9500 switches with 9700-EX/FX, 9508-R and 9600-RX line cards | 4                                                                                                                     |
| <b>sFlow</b>                                                         |                                                                                                                                            |                                                                                                                       |
| sFlow ports                                                          | Nexus 9300-FX/FX2/GX/H1 switches                                                                                                           | 64                                                                                                                    |
|                                                                      | Nexus 9300-FX3 <sup>24</sup> switches                                                                                                      | 30                                                                                                                    |
|                                                                      | Nexus 9700-EX/FX line cards                                                                                                                | 256                                                                                                                   |
|                                                                      | Nexus X9716D-GX line card                                                                                                                  | 16                                                                                                                    |
| <b>SPAN and ERSPAN</b>                                               |                                                                                                                                            |                                                                                                                       |
| Configurable SPAN or ERSPAN sessions                                 | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches, Nexus 9600-R, 9600-RX, and Nexus X9716D-GX/FX/FX3 line cards                                 | 32                                                                                                                    |
|                                                                      | Nexus 9808/9804 switches, and Nexus X9836DM-A and X98900CD-A line cards                                                                    | 10                                                                                                                    |
| Active SPAN or ERSPAN sessions <sup>25</sup>                         | Nexus 9300-FX/FX2/FX3/GX/H2R/H1 switches, and Nexus 9600-R, 9600-RX, and 9700-EX/FX/GX/FX3 line cards                                      | 4 sessions (per chassis/ToR or based on the number of the line cards in the EoR. <sup>26</sup>                        |
|                                                                      | Nexus 9808/9804 switches, and Nexus X9836DM-A and X98900CD-A line cards                                                                    | 10                                                                                                                    |
| Active localized SPAN or ERSPAN sessions per line card <sup>27</sup> | Nexus 9300-FX/FX2/FX3 <sup>24</sup> switches, and Nexus 9700-EX/FX/GX/FX3 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                                                                           |

| Feature                                                                                                                          | Supported Platforms                                                                                                                        | Verified Limits                                                                                                             |
|----------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|
| Source interfaces per SPAN or ERSPAN session (Rx and Tx, Rx, or Tx)                                                              | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 and Nexus 9808/9804 switches, and Nexus 9700-EX/FX/FX3, X9716D-GX, X9836DM-A and X98900CD-A line cards | 48                                                                                                                          |
| Destination interfaces per SPAN session                                                                                          | Nexus 9300-FX/FX2/FX3 <sup>24</sup> /GX/GX2 switches, and Nexus 9600-R, 9600-RX, X9716D-GX, and 9700-EX/FX/FX3 line cards                  | 1 (physical/PO interface)<br><br><b>Note</b><br>Destination as PO interface is not supported for Nexus X9716D-GX line card. |
|                                                                                                                                  | Nexus 9808/9804 switches, and Nexus X9836DM-A and X98900CD-A line cards                                                                    | 1 Physical only (no PO support).                                                                                            |
| Source VLANs per SPAN or ERSPAN session                                                                                          | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches, and Nexus 9600-R, 9600-RX, X9716D-GX, and 9700-EX/FX/FX3 line cards                          | 32                                                                                                                          |
| <b>Tap Aggregation</b>                                                                                                           |                                                                                                                                            |                                                                                                                             |
| Redirect interfaces in the redirect port list                                                                                    | Nexus 9300-FX/FX2/FX3/GX/H2R                                                                                                               | 32                                                                                                                          |
|                                                                                                                                  | Nexus 93400LD-H1, and 9364C-H1 switches                                                                                                    | 12                                                                                                                          |
|                                                                                                                                  | Nexus 9500 Merchant Silicon platform switches                                                                                              | 12                                                                                                                          |
|                                                                                                                                  | Nexus X9716D-GX/N9K-X9736C-FX3 line card                                                                                                   | 12                                                                                                                          |
| Redirect port lists per system<br><br><b>Note</b><br>This denotes every unique redirect port list across ACLs/ACEs in the system | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches, Nexus X9716D-GX and N9K-X9736C-FX3 line cards                                                | 100                                                                                                                         |
| Deduplication                                                                                                                    | Nexus 9300-GX/GX2B/FX3/H1                                                                                                                  | 240,000 (maximum supported flows)                                                                                           |
|                                                                                                                                  | Nexus 9300-FX2/GX2A                                                                                                                        | 120,000 (maximum supported flows)                                                                                           |
| <b>NetFlow</b>                                                                                                                   |                                                                                                                                            |                                                                                                                             |

| Feature                                                                  | Supported Platforms                                                                       | Verified Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|--------------------------------------------------------------------------|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Flow monitors <a href="#">28</a>                                         | Nexus 9500 switches with 9700-EX and FM-E fabric line cards                               | <p>2 flow monitors per type (2 IPv4 flow monitors and 2 IPv6 flow monitors).</p> <p>1 flow monitor for CE flows</p> <p>2 exporters for each flow monitor. Hence, a total of 4 different exporters can be configured.</p>                                                                                                                                                                                                                                                                                                                                                                                             |
|                                                                          | Nexus 9300-FX/FX2/GX/GX2/FX3/H2R/H1 switches and 9500 switches with 9700-FX/GX line cards | <p>30 IPv4 flow monitor and each flow monitor with two exporters</p> <p>28 IPv6 flow monitor and each flow monitor with two exporters</p> <p>32 Layer 2 Flow monitor and each flow monitor with two exporters</p> <p>Maximum number of exporters supported per flow monitor is 2</p>                                                                                                                                                                                                                                                                                                                                 |
| Maximum number of flows in the software table (IPv4 or IPv6 or CE flows) | Nexus 9000 switches                                                                       | <p>100,000 flows using the <b>show flow cache</b> command on 9500 modular chassis per line card</p> <p>1,000,000 flows (1 Million) using the <b>show flow cache</b> command on 9300 switches</p>                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Maximum number of concurrent flows supported (IPv4 or IPv6 or CE flows)  | Nexus 9300-FX/FX2 switches                                                                | <p>6000 traffic flows.</p> <p>By increasing LCPUG-SIZE using the following command one can achieve Max 18000 concurrent flows, after modifying LCPUG-SIZE, the switch needs reboot after saving configuration</p> <pre>switch(config)# hardware qos lcpu-pg-size ? &lt;200-10000&gt; Pool Group size</pre> <pre>switch(config)# hard qos lcpu-pg-size 5000 Warning:Reload required for configured PG size to take effect. Save configuration and reload the system. switch(config)# copy running-config startup-config</pre> <p>In Cisco Nexus Release 9.3(3), the <b>hardware qos</b> command is not supported.</p> |
|                                                                          | Nexus 9300-GX/GX2/FX3/H2R/H1 switches                                                     | 100,000 traffic flows                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |

| Feature                                                            | Supported Platforms                                                                                                                | Verified Limits                                                                                                                |
|--------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Netflow ingress VRF-id export support                              | Nexus 9300-FX/FX2/FX3 <sup>24</sup> /GX/GX2/H1/H2R, Nexus 9300C and 9408 switches and Nexus 9500 switches with EX/FX/GX line cards | 500 different VRFs                                                                                                             |
| <b>Flow visibility in Nexus Dashboard Insights and NetFlow</b>     |                                                                                                                                    |                                                                                                                                |
| 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 <b>show flow cache</b> command                                                                          |
| <b>Traffic Analytics</b>                                           |                                                                                                                                    |                                                                                                                                |
| Netflow Monitor                                                    | Cisco Nexus 9300-FX/FX2/FX3/GX/GX2/H1 switches                                                                                     | 30 IPv4 flow monitor and each flow monitor with two exporters<br>28 IPv6 flow monitor and each flow monitor with two exporters |
| Interface Filter                                                   | Cisco Nexus 9300-FX/FX2/FX3/GX/GX2/H1 switches                                                                                     | 32                                                                                                                             |
| VRF Filter                                                         | Cisco Nexus 9300-FX/FX2/FX3/GX/GX2/H1 switches                                                                                     | 100                                                                                                                            |
| Maximum number of flows in the software table (IPv4 or IPv6 flows) | Cisco Nexus 9300-FX/FX2/FX3/GX/GX2/H1 switches                                                                                     | 400,000                                                                                                                        |

<sup>24</sup> Nexus 9348GC-FX3PH switch has feature limitations due to Half Duplex only ports, see [Cisco Nexus 9000 Series NX-OS System Management Configuration Guide, Release 10.4\(x\)](#).

<sup>25</sup> 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.

<sup>26</sup> 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.

<sup>27</sup> 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.

<sup>28</sup> When configuring a NetFlow flow monitor on a range of VLAN interfaces, the process can be time-consuming (approximately 30 minutes) depending on the range of VLANs specified in the command. To reduce wait time, limit the number of VLANs or specify the VLANs in chunks. Note: On a 9500 modular chassis with 9700-FX or 9700-GX modules, the configuration takes significantly longer time compared to other switches.

### NetFlow Scalability Support (Flows)

| Feature                     | Platform                                         | Port Speed | Scale Limit per Slice (Flows) | Export Interval (seconds) | Packets / Flow |
|-----------------------------|--------------------------------------------------|------------|-------------------------------|---------------------------|----------------|
| Layer 2 Flow monitor        | Nexus 9300-FX2/FX3 <sup>24</sup> /GX/HI switches | 10G        | 6000                          | 60                        | 89,000         |
|                             |                                                  | 40G        | 6000                          | 60                        | 356,000        |
|                             |                                                  | 100G       | 6000                          | 60                        | 885,000        |
| Layer 3 Flow monitor (IPv4) | Nexus 9300-FX2/FX3 <sup>24</sup> /GX/HI switches | 10G        | 24,000                        | 60                        | 12,000         |
|                             |                                                  | 40G        | 24,000                        | 60                        | 54,000         |
|                             |                                                  | 100G       | 24,000                        | 60                        | 160,000        |
| Layer 3 Flow monitor (IPv6) | Nexus 9300-FX2/FX3 <sup>24</sup> /GX/HI switches | 10G        | 11,000                        | 60                        | 12,000         |
|                             |                                                  | 40G        | 11,000                        | 60                        | 54,000         |
|                             |                                                  | 100G       | 11,000                        | 60                        | 160,000        |

### NetFlow Scalability Support (Flows) for Cisco Nexus 9500 Family Switches

| Feature                                           | Platform                 | Scale Limit per 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.

## NetFlow SVI Verified Scalability Limits

| Platform<br>(VLAN<br>Ports)                            | SVI                                      |      |                | VLAN |      |                | SVI + VLAN |      |                |
|--------------------------------------------------------|------------------------------------------|------|----------------|------|------|----------------|------------|------|----------------|
|                                                        | IPv4                                     | IPv6 | IPv4 +<br>IPv6 | IPv4 | IPv6 | IPv4 +<br>IPv6 | IPv4       | IPv6 | IPv4 +<br>IPv6 |
| Member ports from Cisco Nexus 9300-FX switches         | Total interfaces supported in the system |      |                |      |      |                |            |      |                |
| Member ports from 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-FX switches. A IPv4 flow monitor uses 4 TCAM space for the Cisco Nexus 9300-FX switches. Similarly, a IPv6 flow monitor uses 2 TCAM space for the Cisco Nexus 9300-FX switches.

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.

## Unicast Routing Verified Scalability Limits

| Feature                             | Supported Platforms                                                                       | Verified Limits                                       |
|-------------------------------------|-------------------------------------------------------------------------------------------|-------------------------------------------------------|
| <b>IPv4 ARP and IPv6 ND</b>         |                                                                                           |                                                       |
| IPv4 ARP (Default routing template) | Nexus 9364C, Nexus 92348GC-FX3 switches                                                   | 32,000                                                |
|                                     | Nexus 9600-R, 9600-RX, and 9700-EX/FX/FX3 line cards                                      | 48,000                                                |
|                                     | Nexus 9300-FX2 switches                                                                   | 48,000 (without URPF)<br>32,000 (with URPF enabled)   |
|                                     | Nexus 9300-FX/FX3/GX/GX2/H2R/H1 switches and Nexus X9716D-GX and N9K-X9736C-FX3 line card | 98,000 (Hash Table: Shared between IPv6 ND, IPv4 ARP) |
|                                     | Nexus 9408 switches                                                                       | 49,152                                                |
|                                     | Nexus 9808 switches                                                                       | 4000                                                  |

| Feature                            | Supported Platforms                                                                 | Verified Limits                                                                                                                                                                                                                     |
|------------------------------------|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IPv6 ND (Default routing template) | Nexus 9364C, 9300-FX2 switches                                                      | 32,000 (default), 16,000 (lpm heavy)                                                                                                                                                                                                |
|                                    | Nexus 92348GC-FX3 switches                                                          | 32,000                                                                                                                                                                                                                              |
|                                    | Nexus 9300-FX/FX3/GX/GX2/H2R/H1 switches                                            | 98,000 (in default routing mode, Hash Table: Shared between IPv6 ND, IPv4 ARP)                                                                                                                                                      |
|                                    | Nexus 9408 switches                                                                 | 32,768                                                                                                                                                                                                                              |
|                                    | Nexus 9600-R, 9600-RX, and 9700-EX/FX/FX3 line cards                                | 32,000                                                                                                                                                                                                                              |
|                                    | Nexus 9808 switches                                                                 | 4000                                                                                                                                                                                                                                |
| IPv4 ARP (Internet peering mode)   | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches and Nexus 9700-EX/FX/GX/FX3 line cards | 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 learned MAC address in the "internet peering" mode is 16,000) |
|                                    | Nexus 9408 switches                                                                 | 32,768                                                                                                                                                                                                                              |
| IPv6 ND (Internet-peering mode)    | Nexus 9300-FX2 switches and Nexus 9700-EX/FX/FX3 line cards                         | 16,000 (Hash Table: Shared between IPv6 ND, IPv4 ARP, and protocol learned IPv6 host)                                                                                                                                               |
|                                    | Nexus 9300-FX/FX3/GX/GX2/H2R/H1 switches and Nexus X9716D-GX line cards             | 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 learned MAC address in the "internet Peering" mode is 16,000) |
|                                    | Nexus 9408 switches                                                                 | 16,384                                                                                                                                                                                                                              |
| IPv4 ARP (Dual-host mode)          | Nexus 9364C switches                                                                | 64,000                                                                                                                                                                                                                              |
|                                    | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                        | 98,000                                                                                                                                                                                                                              |
| IPv6 ND (Dual-host mode)           | Nexus 9364C switches                                                                | 64,000                                                                                                                                                                                                                              |
|                                    | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                        | 98,000                                                                                                                                                                                                                              |
| <b>IPv4 and IPv6 Routes</b>        |                                                                                     |                                                                                                                                                                                                                                     |
| <b>Default Routing Template</b>    |                                                                                     |                                                                                                                                                                                                                                     |

| Feature                             | Supported Platforms                            | Verified Limits                                                                                                                                      |
|-------------------------------------|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| IPv4 host routes <a href="#">29</a> | 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 92348GC-FX3 switches                     | 96,000                                                                                                                                               |
|                                     | Nexus 9300-FX2 switches                        | 524,000 / 471,000 (without / with URPF enabled)                                                                                                      |
|                                     | Nexus 9300-FX/FX3/GX/GX2/H2R/H1 switches       | 1,153,000                                                                                                                                            |
|                                     | Nexus 9408 switches                            | 734,003                                                                                                                                              |
|                                     | Nexus 9700-EX/FX/FX3 line cards                | FM-E: 589,000<br>FM-E2: 589,000<br>FM-G: 1,000,000                                                                                                   |
|                                     | Nexus 9600-R/RX and Nexus X9716D-GX line cards | 1,000,000 (default routing template)                                                                                                                 |
|                                     | Nexus 9808 switches                            | 256,000                                                                                                                                              |
| IPv6 host routes <a href="#">30</a> | 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 92348GC-FX3 switches                     | 48,000                                                                                                                                               |
|                                     | Nexus 9300-FX2 switches                        | 265,000                                                                                                                                              |
|                                     | Nexus 9300-FX/FX3/GX/GX2/H2R/H1 switches       | 628,000                                                                                                                                              |
|                                     | Nexus 9408 switches                            | 412,876                                                                                                                                              |
|                                     | Nexus 9700-EX/FX/FX3 line cards                | FM-E: 32,000<br>FM-E2: 235,000<br>FM-G: 235,000                                                                                                      |
|                                     | Nexus 9600-RX line cards                       | 256,000                                                                                                                                              |
|                                     | Nexus X9716D-GX line card                      | 235,000                                                                                                                                              |
|                                     | Nexus 9808 switches                            | 64,000                                                                                                                                               |

| Feature         | Supported Platforms                                 | Verified Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------|-----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IPv4 LPM routes | Nexus 9364C switches                                | <p>Default system routing mode without system routing Layer 3 scale:</p> <ul style="list-style-type: none"> <li>• Default values: 8000 (IPv4), 1900 (IPv6), and 2000 (multicast)</li> <li>• With hardware profile multicast max-limit lpm-entries 0 configured: 10,000 (IPv4), 1900 (IPv6), and 0 (multicast)</li> <li>• With hardware profile ipv6 lpm-entries maximum 0 configured: 14,000 (IPv4), 0 (IPv6), and 2000 (multicast)</li> <li>• 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)</li> <li>• When you allocate the entire table for IPv4 or IPv6 LPM unicast routes, the other address family cannot be used.</li> </ul> <p>128,000 (default system routing mode with system routing Layer 3 scale)</p> |
|                 | Nexus 92348GC-FX3 switches                          | 6000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|                 | Nexus 9300-FX switches                              | 1,153,000 / 996,000 (without / with URPF enabled)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
|                 | Nexus 9300-FX2 switches                             | 524,000 / 471,000 (without / with URPF enabled)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                 | Nexus 9300-FX3/GX/GX2/H2R/H1 switches               | 1,153,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                 | Nexus 9408 switches                                 | 734,003                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                 | Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | 589,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                 | Nexus 9600-R line cards                             | 192,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|                 | Nexus 9600-RX line cards                            | 1,000,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|                 | Nexus 9808 switches                                 | 400,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |

| Feature         | Supported Platforms                                 | Verified Limits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|-----------------|-----------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| IPv6 LPM routes | Nexus 9364C switches                                | <p>Default system routing mode without system routing Layer 3 scale</p> <ul style="list-style-type: none"> <li>• Default values: 8000 (IPv4), 1900 (IPv6), and 2000 (multicast)</li> <li>• With hardware profile multicast max-limit lpm-entries 0 configured: 10,000 (IPv4), 1900 (IPv6), and 0 (multicast)</li> <li>• With hardware profile ipv6 lpm-entries maximum 0 configured: 14,000 (IPv4), 0 (IPv6), and 2000 (multicast)</li> <li>• 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)</li> <li>• When you allocate the entire table for IPv4 or IPv6 LPM unicast routes, the other address family cannot be used</li> </ul> <p>64,000 (default system routing mode with system routing Layer 3 scale)</p> |
|                 | Nexus 9300-FX switches                              | 628,000 / 560,000 (without / with URPF enabled)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                 | Nexus 9300-FX2 switches                             | 294,000 / 265,000 (without / with URPF enabled)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|                 | Nexus 9300-FX3/GX/GX2/H2R/H1 switches               | 628,000 / 628,000 (without/with URPF enabled)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|                 | Nexus 9408 switches                                 | 412,876                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|                 | Nexus 9500 switches                                 | <p>20,000 (default system routing mode)</p> <p>4000 (max-host routing mode)</p> <p>80,000 with no IPv4 routes (64-bit ALPM routing mode)</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|                 | Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | <p>FM-E: 176,000 (/64 prefix length); 3900 (non /64 prefix length)</p> <p>FM-E2: 235,000 (any prefix length)</p> <p>FM-G: 235,000</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                 | Nexus 9600-R line cards                             | 62,000                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |

| Feature               | Supported Platforms                                 | Verified Limits                                                                                    |
|-----------------------|-----------------------------------------------------|----------------------------------------------------------------------------------------------------|
|                       | Nexus 9600-RX line cards                            | 256,000                                                                                            |
| <b>LPM Heavy Mode</b> |                                                     |                                                                                                    |
| IPv4 host routes      | Nexus 9364C switches                                | 262,000                                                                                            |
|                       | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches        | 786,000 / 734,000 (with out/with URPF enabled)                                                     |
|                       | Nexus 9408 switches                                 | 1,048,576                                                                                          |
|                       | Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | 786,000                                                                                            |
|                       | Nexus 9808 switches                                 | 256,000                                                                                            |
| IPv6 host routes      | Nexus 9364C switches                                | 131,000                                                                                            |
|                       | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches        | 442,000 / 412,000 (with out/with URPF enabled)                                                     |
|                       | Nexus 9408 switches                                 | 589,824                                                                                            |
|                       | Nexus 9700-EX/FX/FX3 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 X9716D-GX line card                           | 235,000                                                                                            |
|                       | Nexus 9808 switches                                 | 64,000                                                                                             |
| IPv4 LPM routes       | Nexus 9364C switches                                | 262,000                                                                                            |
|                       | Nexus 9300-FX/FX3/FX2/GX/GX2/H2R/H1 switches        | 786,000 / 734,000 (with out/with URPF enabled)                                                     |
|                       | Nexus 9408 switches                                 | 1,048,576                                                                                          |
|                       | Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | 786,000                                                                                            |
|                       | Nexus 9808 switches                                 | 900,000                                                                                            |

| Feature                      | Supported Platforms                                          | Verified Limits                                                                                                     |
|------------------------------|--------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|
| IPv6 LPM routes              | Nexus 9364C switches                                         | 131,000                                                                                                             |
|                              | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches                 | 442,000 / 412,000 (with out/with URPF enabled)                                                                      |
|                              | Nexus 9408 switches                                          | 589,824                                                                                                             |
|                              | Nexus 9700-EX/FX/FX3 and Nexus 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                                                                                                             |
| <b>Dual Host Mode</b>        |                                                              |                                                                                                                     |
| IPv4 host routes             | Nexus 9364C switches                                         | 163,000                                                                                                             |
|                              | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches | 262,000                                                                                                             |
|                              | Nexus 9808 switches                                          | 256,000                                                                                                             |
| IPv6 host routes             | Nexus 9364C switches                                         | 81,000                                                                                                              |
|                              | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches | 131,000                                                                                                             |
|                              | Nexus 9808 switches                                          | 64,000                                                                                                              |
| IPv4 LPM routes              | Nexus 9300-FX and 9364C switches                             | 8000                                                                                                                |
|                              | Nexus 9300-FX2/GX/GX2/H2R/H1, and Nexus 9408 switches        | 10,000                                                                                                              |
|                              | Nexus 9300-FX3 switches                                      | 7000                                                                                                                |
| IPv6 LPM routes              | Nexus 9300-FX/FX3, and Nexus 9364C switches                  | 1900                                                                                                                |
|                              | Nexus 9300-FX2/GX/GX2/H2R/H1, and Nexus 9408 switches        | 3900                                                                                                                |
| <b>Internet Peering Mode</b> |                                                              |                                                                                                                     |

| Feature          | Supported Platforms                                                     | Verified Limits                                                                |
|------------------|-------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| IPv4 host routes | Nexus 9300-FX2 switches and Nexus 9700-EX/FX/FX3 and 9700-GX line cards | 1,000,000                                                                      |
|                  | Nexus 9300-FX switches                                                  | 1,256,000                                                                      |
|                  | Nexus 9300-FX3/H2R/H1/GX/GX2 switches                                   | 2,000,000                                                                      |
|                  | Nexus 9408 switches                                                     | 1,468,006                                                                      |
| IPv6 host routes | Nexus 9300-FX2 switches and Nexus 9700-FX/GX/FX3 line cards             | 500,000                                                                        |
|                  | Nexus 9300-FX/FX3/GX/GX2/H2R/H1 switches                                | 628,224                                                                        |
|                  | Nexus 9408 switches                                                     | 412,876                                                                        |
|                  | Nexus 9700-EX line cards                                                | 16,000 (Hash Table: Shared between IPv6 ND and protocol learned IPv6 host)     |
| IPv4 LPM routes  | Nexus 9300-FX2 switches                                                 | 1,000,000                                                                      |
|                  | Nexus 9300-FX switches                                                  | 1,256,000                                                                      |
|                  | Nexus 9300-FX3/GX/GX2/H2R/H1 switches and Nexus 9700 GX line cards      | 2,000,000                                                                      |
|                  | Nexus 9408 switches                                                     | 1,468,006                                                                      |
|                  | Nexus 9700-EX/FX/FX3 line cards                                         | 1,000,000                                                                      |
| IPv6 LPM routes  | Nexus 9300-FX2 switches                                                 | 500,000                                                                        |
|                  | Nexus 9300-FX/FX3/GX/GX2/H2R/H1 switches                                | 628,224                                                                        |
|                  | 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/FX3 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           | Nexus 9600-R and 9600-RX line cards                                     | 1 Million <sup>31</sup>                                                        |

| Feature                                         | Supported Platforms                 | Verified Limits       |
|-------------------------------------------------|-------------------------------------|-----------------------|
| IPv4 routes                                     | Nexus 9600-R and 9600-RX line cards | 852,000 <sup>32</sup> |
| IPv6 routes                                     | Nexus 9600-R line cards             | 175,000 <sup>33</sup> |
| Routes                                          | Nexus 9600-R line cards             | 852,000               |
| IPv4 routes                                     | Nexus 9600-R line cards             | 750,000               |
| IPv6 routes                                     | Nexus 9600-R line cards             | 71,000                |
| <b>L3 Heavy Mode</b>                            |                                     |                       |
| IPv4 LPM routes                                 | Nexus 9600-RX line cards            | 1,800,000             |
| IPv6 LPM routes (l3-heavy mode)                 | Nexus 9600-RX line cards            | 750,000               |
| <b>Unicast Protocols</b>                        |                                     |                       |
| <b>Bidirectional Forwarding Detection (BFD)</b> |                                     |                       |

| 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><br>2048 when the BFD intervals are relaxed to 300 ms                                                                                                                                                     |
|                                | Nexus 92348GC-FX3 switches                                   | 256                                                                                                                                                                                                                                                                        |
|                                | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches | 128 when the BFD intervals are set to default, which is 50 ms<br><br>2048 sessions when the BFD intervals are relaxed to 300 ms                                                                                                                                            |
|                                | Nexus 9700-EX/FX/FX3 line cards                              | 128 when the BFD intervals are set to default, which is 50 ms<br><br>2048 sessions when the BFD intervals are relaxed to 300 ms<br><br><b>Note</b><br>On EoR, per line card session limit will be 256.                                                                     |
|                                | Nexus X9716D-GX line card                                    | 512 when the BFD intervals are set to default, which is 50 ms<br><br>1024 when the BFD intervals are relaxed to 300 ms<br><br><b>Note</b><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 N9K-X98900CD-A line cards                              | 512                                                                                                                                                                                                                                                                        |
|                                | Nexus 9800 switches (single hop)                             | 128 when the BFD intervals are set to default, which is 50 ms<br><br>1000 (IPv4 and IPv6) sessions when the BFD intervals are relaxed to 300 ms<br><br><b>Note</b><br>For Nexus 9800 switches, the maximum session limit per L3 port channel and its subinterfaces is 128. |
| <b>Border Gateway Protocol</b> |                                                              |                                                                                                                                                                                                                                                                            |

| Feature                                | Supported Platforms                                                                               | Verified Limits                                       |
|----------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------|
| BGP neighbors (IPv4 and IPv6 combined) | Nexus 92348GC-X switches                                                                          | 141                                                   |
|                                        | Nexus 92348GC-FX3 switches                                                                        | 256                                                   |
|                                        | Nexus 9364C,<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1, and<br>Nexus 9408 switches                         | 1024                                                  |
|                                        | Nexus 9700-EX/FX and Nexus<br>X9716D-GX line cards                                                | 2000                                                  |
|                                        | Nexus 9600-R, 9600-RX and 9600-R2 line<br>cards                                                   | 1024                                                  |
|                                        | Nexus 9808 switches                                                                               | 1000 (IPv4 and IPv6)                                  |
| <b>HSRP</b>                            |                                                                                                   |                                                       |
| HSRP groups                            | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1, and<br>Nexus 9408 switches                                | 1000 <a href="#">34</a>                               |
|                                        | Nexus 92348GC-FX3 switches                                                                        | 255                                                   |
|                                        | Nexus 9700-EX/FX/FX3 switches and<br>Nexus X9716D-GX line cards                                   | 1000 (virtual MAC address support) <a href="#">35</a> |
|                                        | Nexus 9600-R and 9600-RX line cards                                                               | 16 <a href="#">36</a>                                 |
| <b>EIGRP</b>                           |                                                                                                   |                                                       |
| EIGRP routes                           | Nexus 9364C,<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408, 9808 switches                       | 20,000                                                |
|                                        | Nexus 92348GC-FX3 switches                                                                        | 20,000                                                |
|                                        | Nexus 9700-EX/FX/FX3 and Nexus<br>X9716D-GX line cards                                            | 50,000                                                |
| EIGRP neighbors                        | Nexus 9364C,<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408, 9808, Nexus 92348GC-FX3<br>switches | 256                                                   |
|                                        | Nexus 9700-EX/FX/FX3 and Nexus<br>X9716D-GX line cards                                            | 2000                                                  |
| <b>IS-IS</b>                           |                                                                                                   |                                                       |

| Feature                                                                                                                                                              | Supported Platforms                                                                                                                         | Verified Limits                                                 |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| IS-ISv4 adjacencies (either L1, L2, or sum of L1 and L2 with default timers)                                                                                         | Nexus 9364C, and 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408, Nexus 92348GC-FX3 switches, Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | 255                                                             |
| IS-ISv4 BFD sessions (with default timers)                                                                                                                           | Nexus 9364C, 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408, Nexus 92348GC-FX3 switches, Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards     | 255                                                             |
| IS-ISv4 routes                                                                                                                                                       | Nexus 9364C, 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408, Nexus 92348GC-FX3 switches, and Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | 10,000                                                          |
| <b>Groups</b>                                                                                                                                                        |                                                                                                                                             |                                                                 |
| 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]                 | Nexus 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] <sup>37</sup> | Nexus X9636C-R/RX and X9636Q-R line cards                                                                                                   | 7928                                                            |
| Groups per interface or I/ module                                                                                                                                    | Nexus X9636C-R/RX and X9636Q-R line cards                                                                                                   | Maximum 16 (Because 16 is the unique virtual MAC address limit) |
| <b>OSPFv2 and OSPFv3</b>                                                                                                                                             |                                                                                                                                             |                                                                 |
| OSPFv2/OSPFv3 LSA/LSDB size                                                                                                                                          | Nexus 9600-R and 9600-RX line cards                                                                                                         | 250,000                                                         |
|                                                                                                                                                                      | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3, Nexus 9364C, and 9808 switches, Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | 100,000                                                         |
| OSPFv2/OSPFv3 areas                                                                                                                                                  | Nexus 9600-R and 9600-RX line cards                                                                                                         | 200                                                             |
|                                                                                                                                                                      | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3, Nexus 9364C, and 9808 switches, Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | 100                                                             |

| Feature                               | Supported Platforms                                                                                                                  | Verified Limits |
|---------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| OSPFv2/OSPFv3 neighbors               | Nexus 9600-R, 9600-RX, Nexus X9716D-GX, and 9700-EX/FX/FX3 line cards                                                                | 1000            |
|                                       | Nexus 9364C, 9300-FX3/GX2/H2R/H1, Nexus 92348GC-FX3, and 9808 switches                                                               | 256             |
|                                       | Nexus 9300-FX/FX2/GX                                                                                                                 | 650             |
| <b>Static Routes</b>                  |                                                                                                                                      |                 |
| IPv4 Static routes                    | Nexus 9364C, 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and 9808 switches, and Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards               | 8000            |
| IPv6 Static routes                    | Nexus 9364C, 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and 9808 switches, and Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards               | 8000            |
| <b>Virtual Routing and Forwarding</b> |                                                                                                                                      |                 |
| VRFs                                  | Nexus 9364C, and 9300-FX/FX2/FX3/GX/GX2/H2R/H1 and 9808 switches, and Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards            | 1000            |
|                                       | Nexus 92348GC-FX3 switches                                                                                                           | 256             |
|                                       | Nexus 9600-R and 9600-RX line cards                                                                                                  | 3967            |
| <b>Policy Based Routing</b>           |                                                                                                                                      |                 |
| Configured sequences per policy       | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, 9408, 9800, Nexus 92348GC-FX3 switches, and Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | 128             |
| Next-hop addresses per policy         | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, 9408, 9800, Nexus 92348GC-FX3 switches, and Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | 32              |

| Feature                                       | Supported Platforms                                                                                                                 | Verified Limits                      |
|-----------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------|
| IPv4 ACEs (unidimensional)                    | Nexus 9300-FX/FX2/FX3/GX/GX2/H1, 9408, Nexus 92348GC-FX3 switches, and Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards          | 3582 (per network forwarding engine) |
|                                               | Nexus 9800 switches                                                                                                                 | 14,000                               |
| IPv6 ACEs (unidimensional)                    | Nexus 9300-FX/FX2/FX3/GX/GX2/H1, Nexus 92348GC-FX3 and 9408 switches                                                                | 1792 (per network forwarding engine) |
| IPv4 and IPv6 ACEs                            | Nexus 9300-FX/FX2/FX3/GX/GX2/H1 and 9408 switches                                                                                   | 1024 IPv4 + 128 IPv6                 |
|                                               | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                  | 1024 IPv4                            |
| Interfaces with PBR policy <a href="#">38</a> | Nexus 9300-FX3/GX/GX2/H2R/H1 switches                                                                                               | 510                                  |
|                                               | Nexus 9300-FX/FX2, 9408, 9800 switches and Nexus 9700-EX/FX/FX3 line cards                                                          | 512                                  |
|                                               | Nexus 92348GC-FX3 switches                                                                                                          | 256                                  |
|                                               | Nexus X9716D-GX line card                                                                                                           | 256                                  |
| <b>VRRP</b>                                   |                                                                                                                                     |                                      |
| VRRP groups per interface or I/O module       | Nexus 9364C, and 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3 switches, and Nexus 9700-EX/FX/FX3 and Nexus X9716D-GX line cards | 250                                  |
| VRRPv3 groups per interface                   | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3 switches and Nexus 9700-EX/FX/FX3 line cards                                 | 255                                  |
|                                               | Nexus X9716D-GX line card                                                                                                           | 250                                  |
| VRRPv3 groups with default timers (1 s)       | Nexus 9700-EX/FX/FX3 line cards                                                                                                     | 490                                  |
|                                               | Nexus 9300-FX/FX2/FX3 switches                                                                                                      | 255                                  |
|                                               | Nexus 9300-GX/GX2/H2R/H1, Nexus 92348GC-FX3 switches and Nexus 9700-GX line cards                                                   | 250                                  |

| Feature                                                 | Supported Platforms                                                                                                 | Verified Limits   |
|---------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------|-------------------|
| VRRPv3 groups with relaxed timers (3 s)                 | Nexus 9700-EX/FX/FX3 line cards                                                                                     | 490               |
|                                                         | Nexus 9300-FX/FX2/FX3 switches                                                                                      | 255               |
|                                                         | Nexus 9300-GX/GX2/H2R/H1, Nexus 92348GC-FX3 switches and Nexus 9700-GX line cards                                   | 250               |
| Pathways with one VRRPv3 group with default timer (1 s) | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3 switches and Nexus 9700-EX/FX line cards                     | 489               |
| VRRPv3 groups and pathways combined                     | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 92348GC-FX3 switches and Nexus 9700-EX/FX/FX3 line cards                 | 490               |
|                                                         | Nexus X9716D-GX line card                                                                                           | 250               |
| <b>ECMP Scale</b>                                       |                                                                                                                     |                   |
| 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-FX/FX2/FX3/FXP/GX/GX2/H2R/H1, 9408, and 9808 switches, and Nexus X9716D-GX and N9K-X9736C-FX3 line cards | 128 <sup>39</sup> |
|                                                         | Nexus 9504/9508 switches with -R/RX line cards and                                                                  | 64                |
| ECMP Groups                                             | Nexus 9808 switches                                                                                                 | 4000              |
| <b>Dynamic Load Balancing Enabled ECMP</b>              |                                                                                                                     |                   |
| Maximum DLB Enabled ECMP Groups                         | Nexus 9300-FX3/GX/GX2/H2R/H1                                                                                        | 128               |
| <b>Internet Peering ECMP</b>                            |                                                                                                                     |                   |

| Feature                                                                            | Supported Platforms                                                             | Verified Limits                                                                             |
|------------------------------------------------------------------------------------|---------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
| Maximum ECMP paths (Route scale: 1,800,000 million IPv4 + 200,000 IPv6 LPM routes) | Nexus 9300-GX/GX2/H2R/H1<br><b>Note</b><br>Required RAM 64 GB                   | 32                                                                                          |
|                                                                                    | Nexus 9300-FX3/GX/GX2/H2R/H1<br><b>Note</b><br>Required RAM 32 GB               | 16                                                                                          |
| <b>Mixed path</b>                                                                  |                                                                                 |                                                                                             |
| Total VRFs                                                                         | Nexus 9300-FX/FX2/FX3/GX/GX2 switches and 9500 switches with 9700-FX line cards | 250 (125 Internal/External VRFs)<br>2 Service VRFs that all VRFs leak into                  |
| Total VM routes <a href="#">40</a>                                                 | Nexus 9300-FX/FX2/FX3/GX/GX2 switches and 9500 switches with 9700-FX line cards | 10000 IPv4 (5000 Internal and 5000 External)<br>5000 IPv6 (2500 Internal and 2500 External) |
| Max number of VNF per VM route                                                     | Nexus 9300-FX/FX2/FX3/GX/GX2 switches and 9500 switches with 9700-FX line cards | 32                                                                                          |

<sup>29</sup> The hash table is subject to collisions. Depending on the host route pattern, collisions might occur.

<sup>30</sup> The hash table is subject to collisions. Depending on the host route pattern, collisions might occur.

<sup>31</sup> Contains internet peering profile with additional IPv4 and IPv6 routes.

<sup>32</sup> Internet profile with additional IPv4 routes (total of 914K routes consisting of IPv4 and 62K of IPv6)

<sup>33</sup> Internet profile with additional IPv6 routes (total of 871K routes consisting of IPv6 and 696K of IPv4)

<sup>34</sup> 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.

<sup>35</sup> 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.

<sup>36</sup> For vPC configuration, HSRP maximum scale is 16 groups, 15 groups with vPC peer-gateway configured.

<sup>37</sup> If the user has Multi-protocol configuration, user should configure appropriate CoPP policies to avoid any control plane traffic drops.

<sup>38</sup> When using PBR with the "set vrf" option, if the user attempts to shut down the recircular port, it will trigger a modify PPF session from RPM. If the maximum labels (510) have already been consumed and atomic update is enabled, a "label allocation failure" will occur. To avoid this, the user needs to disable atomic update.

<sup>39</sup> 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.

<sup>40</sup> VM Routes are service routes which are recursively resolved over its Gateway IP/VNF.

**Note**

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

**RIPng Verified Scalability Limits**

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

**PVLAN VXLAN Verified Scalability Limits**

| Feature                        | Supported Platforms                | Verified Limits |
|--------------------------------|------------------------------------|-----------------|
| Primary VLANs                  | Nexus 9300-FX/FX2/FX3/H2R switches | 16              |
| Secondary VLANs                | Nexus 9300-FX/FX2/FX3/H2R switches | 20              |
| Ports in community host mode   | Nexus 9300-FX/FX2/FX3/H2R switches | 40              |
| Port in Isolated host mode     | Nexus 9300-FX/FX2/FX3/H2R switches | 40              |
| Ports in isolated trunk mode   | Nexus 9300-FX/FX2/FX3/H2R switches | 40              |
| Ports in promiscuous mode      | Nexus 9300-FX/FX2/FX3/H2R switches | 5               |
| PVLANS allowed on a PVLAN port | Nexus 9300-FX/FX2/FX3/H2R switches | 16              |

**Note**

The above scale numbers are applicable for both IPv4 and IPv6 Underlay. However, for Nexus 9300-H2R switches the above scale is applicable only for IPv4 Underlay.

## VXLAN Verified Scalability Limits

| Feature                                                                 | Supported Platforms                                                                                                                                                   | Verified Limits                                                                                                                                                                                                                                                |
|-------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| VTEP Peers <sup>41</sup>                                                | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches, 9700-EX/FX/GX/FX3 line cards<br><br>Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards       | 350 vPC pairs or 1000 standalone VTEPs with IR <sup>42</sup><br><br>512 standalone VTEPs with multicast underlay                                                                                                                                               |
|                                                                         | Nexus 9600-R, 9600-RX line cards                                                                                                                                      | 256                                                                                                                                                                                                                                                            |
| Underlay multicast groups                                               | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches, Nexus 9700-EX/FX/GX/FX3 line cards<br><br>Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards | 512                                                                                                                                                                                                                                                            |
| Maximum policy scale or number of VNIs to which a policy can be applied | Nexus 9300-FX2/FX3/GX/GX2/H2R/H1 switches, and Nexus 9408 switches                                                                                                    | 510<br><br><b>Note</b><br>The default scale for Nexus 9300-FX/FX2 ToR switches is 60. To increase the scale to 510, use the <code>hardware access-list tcam label ing-racl 9</code> command. This command is supported only on Nexus 9300-FX/FX2 ToR switches. |
|                                                                         | Nexus 9300-FX platform switches and Nexus 9700-FX/GX/FX3 line cards                                                                                                   | 60                                                                                                                                                                                                                                                             |
| <b>IGMP snooping over VXLAN</b>                                         |                                                                                                                                                                       |                                                                                                                                                                                                                                                                |
| VXLAN VLANs                                                             | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches, Nexus 9700-EX/FX/GX/FX3 line cards                                                                          | 1000                                                                                                                                                                                                                                                           |
| <b>Multi-Site</b> <sup>43</sup>                                         |                                                                                                                                                                       |                                                                                                                                                                                                                                                                |
| Asymmetric VNIs per peer                                                | Nexus 9332C, 9364C, 9300-FX/FX2/FX3/FXP/GX/GX2/H2R/H1, Nexus 9408 switches and Nexus 9700-EX/FX/GX/FX3 line cards                                                     | 3900                                                                                                                                                                                                                                                           |
| Number of Tunnel Encryption sessions                                    | Nexus 9300, 9336C-FX2, 93240YC-FX2, 93360YC-FX2, 93216TC-FX2, 93180YC-FX3, and 93108TC-FX3P switches <sup>45</sup>                                                    | 128 <sup>44</sup>                                                                                                                                                                                                                                              |

| Feature                                                                                           | Supported Platforms                                                                                                                                                      | Verified Limits           |
|---------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Number of BGWs per site for Secure VXLAN EVPN Multi-Site using CloudSec                           | Nexus 9336C-FX2/FX3, 93240YC-FX2/FX3, 93360YC-FX2/FX3, 93216TC-FX2/FX3, 9332D-GX2B switches <sup>45</sup>                                                                | 6 per 10 sites            |
| Number of sites                                                                                   | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408, 9332C, 9364C, 9500 switches, and Nexus 9700-EX/FX/GX/FX3 line cards                                                     | 128                       |
| Number of sites for Secure VXLAN EVPN Multi-Site using CloudSec                                   | Nexus 9300-FX2/FX3 <sup>45</sup> /GX2, and Nexus 9408 switches                                                                                                           | 10 sites                  |
| Number of sites for TRM                                                                           | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408, 9332C, 9364C switches and Nexus 9700-EX/FX/GX/FX3 line cards                                                            | 16 sites                  |
| Number of BGWs per site <sup>46</sup>                                                             | Nexus 9332C and 9364C switches and Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                    | 4 (Anycast), 2(vPC)       |
|                                                                                                   | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, 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/FX3 line cards                                                                                                 | 2 (Anycast), 2 (vPC)      |
|                                                                                                   | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, 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 <sup>45</sup> /GX2, and Nexus 9408 switches                                                                                                           | 128 <sup>47</sup>         |
| Multisite-PIP ECMP                                                                                | Nexus 9300-FX2/FX3 <sup>45</sup> /GX/GX2 switches                                                                                                                        | 1000 <sup>48</sup>        |
| VTEPs per Site                                                                                    | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches and Nexus 9700-EX/FX/GX/FX3 line cards<br><br>Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards | 512                       |
| Multi-Site with PIP (Anycast BGWs)                                                                | Nexus 9300-EX/FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches and Nexus 9700-EX/FX/FX3/GX line cards                                                                       | L2VNI: 2000<br>L3VNI: 900 |

| Feature                                                        | Supported Platforms                                                                                                                                                                                      | Verified Limits           |
|----------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| Multi-Site with PIP (vPC BGWs)                                 | Nexus 9300-FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408 switches and Nexus 9700-GX/FX3 <sup>49</sup> line cards                                                                                                  | L2VNI: 2000<br>L3VNI: 900 |
| <b>Tenant Route Multicast Layer 3 Mode with VXLAN BGP eVPN</b> |                                                                                                                                                                                                          |                           |
| VXLAN Layer 2 VNI                                              | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408 switches and Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                       | 1000                      |
| VXLAN Layer 3 VNI/VRFs                                         | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408 switches and Nexus 9700-EX/FX/GX/FX3 and X9836DM-A and X98900CD-A line cards<br><br>Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards | 250                       |
| VTEP Peers                                                     | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408 switches and Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                       | 254                       |
| Underlay Multicast Group (PIM ASM Underlay)                    | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408 switches and Nexus 9700-EX/FX/GX/FX3 line cards<br><br>Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards                              | 512 <sup>50</sup>         |
| Total Multicast routes (PIM ASM & PIM SSM)                     | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408 switches and Nexus 9700-FX/GX/FX3 line cards<br><br>Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards                                 | 32,000                    |
|                                                                | Nexus 9300-FX2 switches and Nexus 9700-EX line card                                                                                                                                                      | 8000                      |
| <b>VXLAN Flood and Learn</b>                                   |                                                                                                                                                                                                          |                           |
| Virtual network identifiers (VNIs) or VXLAN-mapped VLANs       | Nexus 9600-R and 9600-RX line cards                                                                                                                                                                      | 2000                      |
|                                                                | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408, Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                   | 3900                      |

| Feature                                        | Supported Platforms                                               | Verified Limits |
|------------------------------------------------|-------------------------------------------------------------------|-----------------|
| Underlay multicast groups                      | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches      | 512             |
|                                                | Nexus 9700-EX/FX/GX/FX3 line cards                                |                 |
| Overlay MAC addresses                          | Nexus 9300-FX switches                                            | 90,000          |
|                                                | Nexus 9700-EX/FX/GX/FX3 line cards                                |                 |
|                                                | Nexus 9300-FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches         | 60,000          |
| Ingress replication peers <a href="#">51</a>   | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches      | 512             |
|                                                | Nexus 9700-EX/FX/GX/FX3 line cards                                |                 |
| Ingress replication Layer 2 VNIs               | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches      | 1000            |
|                                                | Nexus 9700-EX/FX/GX/FX3 line cards                                |                 |
| MAC addresses for ingress replication          | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches      | 90,000          |
|                                                | Nexus 9700-EX/FX/GX/FX3 line cards                                | 1000            |
| Port VLAN translations under an interface      | Nexus 9700-EX/FX/GX/FX3 line cards                                | 100             |
|                                                | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 and Nexus 9408 switches       | 3967            |
| Port VLAN translations in a switch             | Nexus 9700-EX/FX/GX/FX3 line cards                                | 2000            |
|                                                | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 and Nexus 9408 switches       | 24,000          |
| Static MAC addresses pointing to a remote VTEP | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches                      | 1000            |
|                                                | Nexus 9700-EX/FX/GX/FX3 line cards                                | 2000            |
| VXLAN VLANs per FEX port (host interface)      | Nexus 9300-FX2/FX3 <sup>45</sup> /GX/GX2, and Nexus 9408 switches | 75              |

| Feature                                                    | Supported Platforms                                                                                                                                                                 | Verified Limits    |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|
| Layer 2 routed VNIs for vPC-centralized gateway            | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                                                                                                                        | 450                |
|                                                            | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                                                  |                    |
| IGMP groups                                                | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                                                                                                                        | 8192               |
|                                                            | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                                                  |                    |
| Port Multi-VLAN Mapping <sup>52</sup>                      | Nexus 9300-FX2/GX/GX2/H2R/H1 switches                                                                                                                                               | 510 <sup>53</sup>  |
|                                                            | Nexus 9300-FX switches                                                                                                                                                              | 368 <sup>54</sup>  |
| <b>VXLAN BGP eVPN</b>                                      |                                                                                                                                                                                     |                    |
| Layer 2 VNIs                                               | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches, Nexus 9700-EX/FX/GX/FX3 line cards<br><br>Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards <sup>55</sup> | 3900 <sup>56</sup> |
|                                                            | Nexus 9600-R and 9600-RX line cards                                                                                                                                                 | 2000               |
| Xconnect VLANs                                             | Nexus 9332C, 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                                                                                                                 | 40                 |
| SVI with Distributed Anycast Gateway; Layer 2 VNI extended | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches, and Nexus X9716D-GX line cards                                                                                            | 3900               |
|                                                            | Nexus 9700-EX/FX/FX3 line cards                                                                                                                                                     | 1000               |
| Layer 3 VNIs / VRFs <sup>57</sup>                          | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches and Nexus X9716D-GX line cards, Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards <sup>58</sup>            | 2000 <sup>59</sup> |
|                                                            | Nexus 9600-R and 9600-RX line cards                                                                                                                                                 | 900                |
|                                                            | Nexus 9700-EX/FX/FX3 line cards                                                                                                                                                     | 750                |

| Feature                                                               | Supported Platforms                                                                                                                                                                                | Verified Limits                                                                                                                                     |
|-----------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------|
| Underlay multicast groups                                             | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408 switches, Nexus<br>9700-EX/FX/GX/FX3 line cards<br><br>Nexus 9808/9804 switches with<br>X9836DM-A and X98900CD-A line cards                  | 512                                                                                                                                                 |
| VTEPs                                                                 | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408 switches, Nexus 9600-R,<br>9600-RX, 9700-EX/FX/GX/FX3 line cards<br><br>Nexus 9808/9804 switches with<br>X9836DM-A and X98900CD-A line cards | 350 vPC pairs or 1000 standalone VTEPs<br>with IR <sup>42</sup><br><br>512 standalone VTEPs with multicast<br>underlay                              |
| ARP                                                                   | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1 and<br>Nexus 9408 switches                                                                                                                                  | 96,000<br><br><b>Note</b><br>To scale ARP, use <b>system routing<br/>template-dual-stack-host-scale</b> command<br>and reload the switch.           |
| ND                                                                    | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1 and<br>Nexus 9408 switches                                                                                                                                  | 96,000<br><br><b>Note</b><br>To scale ND, use <b>system routing<br/>template-dual-stack-host-scale</b> command<br>and reload the switch.            |
| MAC addresses                                                         | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408 switches, Nexus<br>9700-EX/FX/GX/FX3 line cards                                                                                              | 96,000<br><br><b>Note</b><br>To scale MAC addresses, use <b>system<br/>routing template-dual-stack-host-scale</b><br>command and reload the switch. |
|                                                                       | Nexus 9808/9804 switches with<br>X9836DM-A and X98900CD-A line cards                                                                                                                               | 90,000                                                                                                                                              |
| Port VLAN translations under an interface<br>(IPv4 and IPv6 Underlay) | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                                                                 | 100                                                                                                                                                 |
|                                                                       | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1 and<br>Nexus 9408 switches                                                                                                                                  | 3967                                                                                                                                                |
| Port VLAN translations in a switch (IPv4<br>and IPv6 Underlay)        | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                                                                 | 2000                                                                                                                                                |
|                                                                       | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1 and<br>Nexus 9408 switches                                                                                                                                  | 24,000                                                                                                                                              |

| Feature                           | Supported Platforms                                                                          | Verified Limits       |
|-----------------------------------|----------------------------------------------------------------------------------------------|-----------------------|
| IPv4 host routes                  | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                                 | 471,000               |
|                                   | Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards                            | 128,000               |
|                                   | Nexus 9700-EX/FX/GX/FX3 line cards                                                           | 656,000               |
|                                   | Nexus 9600-R and 9600-RX line cards                                                          | 128,000               |
| IPv6 host routes                  | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                                 | 265,000               |
|                                   | Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards                            | 64,000                |
|                                   | Nexus 9700-EX/FX/GX/FX3 line cards                                                           | 34,000                |
|                                   | Nexus 9600-R and 9600-RX line cards                                                          | 32,000                |
| Overlay IPv4 LPM routes           | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches                                                 | 471,000               |
|                                   | Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards                            | 440,000               |
|                                   | Nexus 9700-EX/FX/GX/FX3 line cards                                                           | 656,000               |
| Overlay IPv6 LPM routes           | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches                                                 | 265,000 <sup>60</sup> |
|                                   | Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards                            | 206,000               |
|                                   | Nexus 9700-EX/FX/GX/FX3 line cards                                                           | 174,000 <sup>61</sup> |
| Overlay IPv6 ND Suppression cache | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches                                                 | 64,000                |
| IGMP groups                       | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches, Nexus 9700-EX/FX/GX/FX3 line cards | 8192                  |
| BGP sessions at BGW               | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                                 | 4000                  |

| Feature                                                        | Supported Platforms                                                                                                                                                   | Verified Limits                                                                                       |
|----------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------|
| <b>VXLAN BGP eVPN Ingress Replication</b>                      |                                                                                                                                                                       |                                                                                                       |
| Layer 2 VNIs                                                   | Nexus 9600-R and 9600-RX line cards                                                                                                                                   | 2000                                                                                                  |
|                                                                | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408, 9700-EX/FX/GX/FX3 line cards                                                                                         | 3900                                                                                                  |
|                                                                | Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards                                                                                                     |                                                                                                       |
| Xconnect VLANs                                                 | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                                                                                                          | 40                                                                                                    |
| Selective Qinq with multiprovider tag (IPv4 and IPv6 Underlay) | Nexus 93180YC-FX, 9336C-FX2, Nexus 9300-FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                                                                                    | Port level: 4000 mappings, 512 provider VLANs<br><br>System wide: 48,000 mappings, 512 provider VLANs |
| SVI with Distributed Anycast Gateway; Layer 2 VNI extended     | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                                                                                                          | 3900                                                                                                  |
|                                                                | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                                    | 1000                                                                                                  |
| Layer 3 VNIs / VRFs <sup>62</sup>                              | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches, and Nexus X9716D-GX line cards                                                                              | 2000                                                                                                  |
|                                                                | Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards                                                                                                     |                                                                                                       |
|                                                                | Nexus 9600-R and 9600-RX line cards                                                                                                                                   | 900                                                                                                   |
|                                                                | Nexus 9700-EX/FX/FX3 line cards                                                                                                                                       | 750                                                                                                   |
| VTEPs                                                          | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches, Nexus 9700-EX/FX/GX/FX3 line cards<br><br>Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards | 350 vPC pairs or 1000 standalone VTEPs with IR <sup>42</sup>                                          |

| Feature                                   | Supported Platforms                                                                                                                                                               | Verified Limits |
|-------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|
| MAC addresses                             | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1,<br>Nexus 9408 switches, Nexus<br>9700-EX/FX/GX/FX3 line cards<br><br>Nexus 9808/9804 switches with<br>X9836DM-A and X98900CD-A line cards | 90,000          |
| Port VLAN translations under an interface | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                                                | 100             |
|                                           | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1 and<br>Nexus 9408 switches                                                                                                                 | 3967            |
| Port VLAN translations in a switch        | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                                                | 2000            |
|                                           | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1 and<br>Nexus 9408 switches                                                                                                                 | 24,000          |
| IPv4 host routes                          | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1, and<br>Nexus 9408 switches                                                                                                                | 471,000         |
|                                           | Nexus 9808/9804 switches with<br>X9836DM-A and X98900CD-A line cards                                                                                                              | 128,000         |
|                                           | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                                                | 656,000         |
| IPv6 host routes                          | Nexus 9300-FX/FX2/GX/GX2/H2R/H1,<br>and Nexus 9408 switches                                                                                                                       | 265,000         |
|                                           | Nexus 9300-FX3 switches                                                                                                                                                           | 500,000         |
|                                           | Nexus 9808/9804 switches with<br>X9836DM-A and X98900CD-A line cards                                                                                                              | 64,000          |
|                                           | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                                                | 34,000          |
| Overlay IPv4 LPM routes                   | Nexus<br>9300-FX/FX2/FX3/GX/GX2/H2R/H1, and<br>Nexus 9408 switches                                                                                                                | 471,500         |
|                                           | Nexus 9808/9804 switches with<br>X9836DM-A and X98900CD-A line cards                                                                                                              | 440,000         |
|                                           | Nexus 9700-EX/FX/GX/FX3 line cards                                                                                                                                                | 656,000         |

| Feature                                                                             | Supported Platforms                                                                          | Verified Limits       |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------|-----------------------|
| Overlay IPv6 LPM routes                                                             | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, and Nexus 9408 switches                                 | 265,000 <sup>63</sup> |
|                                                                                     | Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards                            | 206,000               |
|                                                                                     | Nexus 9700-EX/FX/GX/FX3 line cards                                                           | 174,000 <sup>64</sup> |
| IGMP groups                                                                         | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408 switches, Nexus 9700-EX/FX/GX/FX3 line cards | 8192                  |
| <b>VXLAN and IP-in-IP Tunneling</b>                                                 |                                                                                              |                       |
| IP-in-IP tunnels                                                                    | Nexus 9300-FX2 switches                                                                      | 16                    |
| <b>VXLAN Static Tunnels</b>                                                         |                                                                                              |                       |
| VNI                                                                                 | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408, and 9364C switches                          | 100                   |
| VRFs                                                                                | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408, and 9364C switches                          | 100                   |
| VTEP peers                                                                          | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408, and 9364C switches                          | 254                   |
| V4 routes                                                                           | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1, Nexus 9408, and 9364C switches                          | 10,000                |
| <b>First Hop Security</b>                                                           |                                                                                              |                       |
| DHCP snooping bindings                                                              | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches, and Nexus 9700-EX/FX/GX/FX3 line cards         | 2048                  |
| <b>Security Groups (Micro-Segmentation with VXLAN GPO)</b>                          |                                                                                              |                       |
| <b>Note</b><br>This feature is supported only with <b>security-groups</b> template. |                                                                                              |                       |
| Endpoint Security Group (ESG) selectors                                             | Nexus 9300-FX/FX2/FX3/GX/GX2/H2R/H1 switches                                                 | 8000                  |

| Feature                          | Supported Platforms                                      | Verified Limits |
|----------------------------------|----------------------------------------------------------|-----------------|
| Total Security Group ACL Entries | Nexus 9300-FX <sup>65</sup> /FX3/GX/GX2B/H2R/H1 switches | 64,000          |
|                                  | Nexus 9300-FX2/GX2A, 9408 switches                       | 32,000          |
| IPv4/IPv6 Trie (Shared)          | Nexus 9300-FX/FX3/GX switches                            | 160,000         |
|                                  | Nexus N9K-9332D-GX2B switches                            | 224,000         |
|                                  | Nexus 9300-GX2A switches                                 | 110,000         |
|                                  | Nexus 9300-FX2 switches                                  | 60,000          |
| IPv4 host routes                 | Nexus 9300-FX/FX3/GX switches                            | 56,000          |
|                                  | Nexus N9K-9332D-GX2B switches                            | 67,000          |
|                                  | Nexus 9300-GX2A switches                                 | 33,000          |
|                                  | Nexus 9300-FX2 switches                                  | 32,000          |
| IPv6 host routes                 | Nexus 9300-FX/FX3/GX switches                            | 24,000          |
|                                  | Nexus N9K-9332D-GX2B switches                            | 28,000          |
|                                  | Nexus 9300-GX2A/FX2 switches                             | 12,000          |
| MAC addresses                    | Nexus 9300-FX/FX3/GX switches                            | 56,000          |
|                                  | Nexus N9K-9332D-GX2B switches                            | 44,000          |
|                                  | Nexus 9300-FX2/GX2A switches                             | 22,000          |
| IPv4 Multicast                   | Nexus 9300-FX/FX2/FX3/GX/GX2 switches                    | 32,000          |
| IPv6 Multicast                   | Nexus 9300-FX/FX2/FX3/GX/GX2 switches                    | 8000            |
| MPLS Labels                      | Nexus 9300-FX/FX3/GX/GX2 switches                        | 16,000          |
| ECMP Groups                      | Nexus 9300-FX/FX2/FX3/GX/GX2 switches                    | 24,000          |
| ECMP Members                     | Nexus 9300-FX/FX3/GX/GX2B switches                       | 128,000         |
|                                  | Nexus 9300-FX2/GX2A switches                             | 64,000          |
| Next Hops                        | Nexus 9300-FX/FX3/GX/GX2B switches                       | 96,000          |
|                                  | Nexus 9300-FX2/GX2A switches                             | 48,000          |
| Multicast RPF                    | Nexus 9300-FX/FX2/FX3/GX/GX2 switches                    | 32,000          |

| Feature                                           | Supported Platforms                   | Verified Limits |
|---------------------------------------------------|---------------------------------------|-----------------|
| Policy                                            | Nexus 9300-FX/FX3/GX/GX2B switches    | 64,000          |
|                                                   | Nexus 9300-FX2/GX2A switches          | 32,000          |
| Services per switch                               | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 150             |
| Service-chains per switch                         | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 150             |
| Service end-points across all services per switch | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 466             |
| Services per service-chain                        | Nexus 9300-FX/FX2/FX3/GX/GX2 switches | 5               |

<sup>41</sup> In case of IR, each VNI can have a max of 64 peers.

<sup>42</sup> Beginning with Cisco NX-OS Release 10.4(3)F, 1000 VTEP Scale is supported. However, a minimum of 32 GB of memory is required on the device to support this scale.

<sup>43</sup> 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.

<sup>44</sup> 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)

<sup>45</sup> This feature is not supported on Nexus 9348GC-FX3, 9348GC-FX3PH, 9332D-H2R and 93108TC-FX3 switches.

<sup>46</sup> 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 Nexus 9508.

<sup>47</sup> 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)

<sup>48</sup> Number of vrfs \* number of sites = 1000

<sup>49</sup> IPv6 unicast traffic is supported only with 9500-FM-G Fabric Modules.

<sup>50</sup> 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.

<sup>51</sup> In case of IR, each VNI can have a maximum number of 64 peers; 512 peers supported on 100 VNIs only.

<sup>52</sup> Only one provider VLAN is supported.

<sup>53</sup> The maximum number of Layer-2 subinterfaces is based on the available entries allocated for ing-pacl-sb team region.

<sup>54</sup> Since Nexus 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.

<sup>55</sup> 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.

<sup>56</sup> 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.

<sup>57</sup> ECMP objects are not shared across multiple VRFs.

<sup>58</sup> 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.

- <sup>59</sup> Only 26,000 (peer, L3VNI) adjacencies are supported for Nexus 9808/9804 switches with X9836DM-A and X98900CD-A line cards.
- <sup>60</sup> All /64 routes + 4000 for non /64 routes.
- <sup>61</sup> All /64 routes + 4000 for non /64 routes.
- <sup>62</sup> ECMP objects are not shared across multiple VRFs.
- <sup>63</sup> All /64 routes + 4000 for non /64 routes.
- <sup>64</sup> All /64 routes + 4000 for non /64 routes.
- <sup>65</sup> ACL TCAM region for ing-sup should be carved to a minimum of 768 using 'hardware access-list team region ing-sup <size>' on Cisco Nexus 9300-FX switches.

### Tetration Verified Scalability Limits

| Feature   | Supported Platforms    | Verified Limit                                                                                                                                                                                           |
|-----------|------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| TCAM size | 9300-FX switches       | 1024 entries<br><br>IPv4 –2 entries per rule (ICMP and IP)<br><br>IPv6 –8 entries per rule (4 entries per ICMP and IPv6 for a total of 8 entries)<br><br>24 entries out of 1000 is consumed for default. |
| TCAM      | Nexus 9300-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>

## Verified Scalability Limits - Multidimensional

The tables in this section list the verified scalability limits for the Cisco Nexus 9000 Series platform switches. 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.

For each corresponding feature, the number given is the absolute maximum currently supported in this release. If the hardware is capable of a higher scale, future software releases might increase this verified maximum limit. Results might differ from the values listed here when trying to achieve maximum scalability with multiple features enabled.



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

| Feature              | Verified Limits   |
|----------------------|-------------------|
| Number of 100G ports | 288               |
| ECMP                 | 16-way (Upstream) |

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

**Table 2: 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           |

| Feature                         | Verified Limits          |
|---------------------------------|--------------------------|
| 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 3: iBGP/EIGRP Profile Verified Scalability Limits (Multidimensional)**

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

| Feature                        | Verified Limits          |
|--------------------------------|--------------------------|
| 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 4: 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 |
| 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 5: Layer 2/Layer 3 Boundary Verified Scalability Limits (Multidimensional)**

| <b>Feature</b>                 | <b>Verified Limits</b>                   |
|--------------------------------|------------------------------------------|
| 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 |
| 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 6: 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 7: 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               |

| Feature                                    | Verified Limits |
|--------------------------------------------|-----------------|
| 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 8: VXLAN BGP/eVPN iBGP Centric Topology**

| Feature                 | Supported Platform                                                                           | Verified Limit |
|-------------------------|----------------------------------------------------------------------------------------------|----------------|
| System Routing Template | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408 switches, and 9500 switches with 9700-EX/FX/GX line cards | default        |
|                         | Nexus 9364C switches                                                                         | Not applicable |

| Feature                            | Supported Platform                                                                                  | Verified Limit                                                    |
|------------------------------------|-----------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| VXLAN VTEPs                        | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408, 9364C switches, and 9500 switches with 9700-EX/FX/GX line cards | 128                                                               |
| VXLAN Layer 2 VNIs                 | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408, 9364C switches, and 9500 switches with 9700-EX/FX/GX line cards | 2000                                                              |
| VXLAN Layer 3 VNIs/VRFs            | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408, 9364C switches, and 9500 switches with 9700-EX/FX line cards    | 500                                                               |
| VXLAN multicast groups             | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408, 9364C switches, and 9500 switches with 9700-EX/FX/GX line cards | 128                                                               |
| VXLAN overlay MAC addresses        | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408, 9364C switches, and 9500 switches with 9700-EX/FX line cards    | 64,000                                                            |
| VXLAN overlay IPv4 host routes     | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408, 9364C switches, and 9500 switches with 9700-EX/FX/GX line cards | 60,000                                                            |
| VXLAN overlay IPv6 host routes     | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408 switches, and 9500 switches with 9700-EX/FX/GX line cards        | 16,000                                                            |
|                                    | Nexus 9364C switches                                                                                | Not applicable                                                    |
| VXLAN overlay IGMP Snooping groups | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408, 9364C switches, and 9500 switches with 9700-EX/FX/GX line cards | 1000                                                              |
| VXLAN IPv4 LPM routes              | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408, 9364C switches, and 9500 switches with 9700-EX/FX/GX line cards | 5120                                                              |
| VXLAN IPv6 LPM routes              | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408 switches, and 9500 switches with 9700-EX/FX/GX line cards        | 1500                                                              |
|                                    | Nexus 9364C switches                                                                                | Not applicable                                                    |
| VXLAN VLAN logical port VP count   | Nexus 9364C switches                                                                                | Not applicable                                                    |
| VLANs on VTEP node                 | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408, 9364C switches, and 9500 switches with 9700-EX/FX/GX line cards | 1700 (total VLANs)<br>1500 (VXLAN VLANs)<br>200 (non-VXLAN VLANs) |

| Feature                                | Supported Platform                                                                           | Verified Limit |
|----------------------------------------|----------------------------------------------------------------------------------------------|----------------|
| MST instances                          | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408 switches, and 9500 switches with 9700-EX/FX/GX line cards | 20             |
|                                        | Nexus 9364C switches                                                                         | Not applicable |
| STP logical ports                      | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408 switches, and 9500 switches with 9700-EX/FX/GX line cards | 3500           |
|                                        | Nexus 9364C switches                                                                         | Not applicable |
| vPC port channels                      | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408 switches, and 9500 switches with 9700-EX/FX/GX line cards | 40             |
|                                        | Nexus 9364C switches                                                                         | Not applicable |
| Underlay IS-IS neighbors               | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408 switches, and 9500 switches with 9700-EX/FX/GX line cards | 32             |
|                                        | Nexus 9364C switches                                                                         | Not applicable |
| Underlay PIM neighbors                 | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408 switches, and 9500 switches with 9700-EX/FX/GX line cards | 12             |
|                                        | Nexus 9364C switches                                                                         | Not applicable |
| Underlay HSRP groups for regular VLANs | Nexus 9364C switches                                                                         | Not applicable |
| Underlay vPC SVIs                      | Nexus 9300-FX/FX2/FX3/GX/GX2, 9408 switches, and 9500 switches with 9700-EX/FX/GX line cards | 200            |
|                                        | Nexus 9364C switches                                                                         | Not applicable |

LIST OF TABLES

Table 1: eBGP/IS-IS Profile Verified Scalability Limits (Multidimensional).....69

Table 2: iBGP/OSPF Profile Verified Scalability Limits (Multidimensional).....70

Table 3: iBGP/EIGRP Profile Verified Scalability Limits (Multidimensional).....71

Table 4: MPLS Verified Scalability Limits (Multidimensional).....72

Table 5: Layer 2/Layer 3 Boundary Verified Scalability Limits (Multidimensional).....73

Table 6: Segment Routing Verified Scalability Limits (Multidimensional).....74

Table 7: VXLAN Profile Verified Scalability Limits (Multidimensional).....74

Table 8: VXLAN BGP/eVPN iBGP Centric Topology.....75

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