Revised: September 8, 2026

N9000 NX-OS Verified Scalability

Introduction

This article outlines the verified scalability limits for N9324C-SE1U and N9348Y2C6D-SE1U Smart switches. It groups the validated values by the operating mode in which the switch provides the feature. In NPU network mode, the switch provides the networking feature set. In DPU security mode, the switch provides service and security acceleration.

A verified scalability limit is a maximum value obtained from validation testing for a supported feature and platform. The values in this article are derived by testing one feature at a time, which is known as unidimensional scale.

The values are validated limits, not theoretical hardware or software capacities. When you combine features, shared resources can change the resulting scale. Do not add values from different feature tables to determine a combined deployment limit.

Verified scalability limits - Unidimensional

Use these tables to find the maximum value that Cisco validates for a supported Smart switch feature in a unidimensional configuration.

Smart Switch verified scalability limits in NPU network mode

The following feature tables list the verified limits for N9324C-SE1U and N9348Y2C6D-SE1U Smart switches in NPU network mode.

Table 1: Interfaces verified scalability limits in NPU network mode

Feature	Supported platforms	Verified limits
IP DHCP relay addresses (helper addresses) per interface	N9324C-SE1U and N9348Y2C6D-SE1U switches	32 IPv4 and 32 IPv6
Port channel links	N9324C-SE1U and N9348Y2C6D-SE1U switches	32
SVIs	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000 with HSRP; 1000 HSRP groups
vPCs	N9324C-SE1U switch	96
	N9348Y2C6D-SE1U switch	80
Subinterfaces	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000
Port VLAN translations under an interface	N9324C-SE1U and N9348Y2C6D-SE1U switches	3967

Note

For vPC scale, the convergence is tested with an LACP-supported device connected to the vPC pair link. LACP vPC convergence must be enabled for interface port-channel configuration.

Table 2: Label switching verified scalability limits in NPU network mode

Feature	Supported platforms	Verified limits
Equal-cost multipaths (ECMPs)	N9324C-SE1U and N9348Y2C6D-SE1U switches	32
Layer 3 VPN routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	400,000 IPv4 routes; 90,000 IPv6 routes
Hierarchical ECMP		
Node SID	N9324C-SE1U and N9348Y2C6D-SE1U switches	4000
Adjacency SID	N9324C-SE1U and N9348Y2C6D-SE1U switches	8
VRF	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000
VPN label	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000
Level 1 ECMP groups	N9324C-SE1U and N9348Y2C6D-SE1U switches	12
Level 2 ECMP groups	N9324C-SE1U and N9348Y2C6D-SE1U switches	10
Level 2 ECMP members	N9324C-SE1U and N9348Y2C6D-SE1U switches	8
VPN decapsulation statistics	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000 VRFs

Note

Hierarchical ECMP provides enhanced ECMP scale and convergence, with two level route resolution.

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.

Table 3: Layer 2 switching verified scalability limits in NPU network mode

Feature	Supported platforms	Verified limits
MAC addresses	N9324C-SE1U and N9348Y2C6D-SE1U switches	120,000, including control-plane MAC addresses
MST instances	N9324C-SE1U and N9348Y2C6D-SE1U switches	64
RPVST virtual ports (physical ports × VLANs)	N9324C-SE1U and N9348Y2C6D-SE1U switches	48,000
RPVST logical ports (logical ports × VLANs)	N9324C-SE1U and N9348Y2C6D-SE1U switches	22,000
VLANs in MST mode	N9324C-SE1U and N9348Y2C6D-SE1U switches	3967; the remaining 127 VLANs are reserved
VLANs in RPVST mode	N9324C-SE1U and N9348Y2C6D-SE1U switches	3967

Feature	Supported platforms	Verified limits
Total VLANs × ports with switch port isolation (3967 VLANs × 48 ports)	N9324C-SE1U and N9348Y2C6D-SE1U switches	190,000

Table 4: Multicast routing verified scalability limits in NPU network mode

Feature	Supported platforms	Verified limits
IPv4 multicast routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	131,072 Layer 2 and Layer 3 entries with the multicast-ext-heavy template
IPv6 multicast routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	8192 (Layer 2 + Layer 3)
Outgoing interfaces (OIFs)	N9324C-SE1U and N9348Y2C6D-SE1U switches	256 physical Layer 3 interfaces
MLD snooping groups	N9324C-SE1U and N9348Y2C6D-SE1U switches	8192
IGMP snooping groups	N9324C-SE1U and N9348Y2C6D-SE1U switches	16,000

Note

IPv4 multicast routes and IPv4 or IPv6 host routes share a hardware table. The available scale depends on the routing template.

Table 5: IP Fabric for Media Solution policer verified scalability limits in NPU network mode

Feature	Supported platforms	Verified limits
NBM flow policers (slice/system)	N9324C-SE1U switch	1792/3584

Table 6: Programmability verified scalability limits in NPU network mode

Feature	Supported Platforms	Verified limits
NX-API See **Guidelines and Limitations** for NX-API limitations.		
Maximum Number of concurrent VSH session	N9324C-SE1U and N9348Y2C6D-SE1U switches	5 concurrent VSH sessions and 5 persistent VSH sessions per worker process.
Number of worker processes in Nginx	N9324C-SE1U and N9348Y2C6D-SE1U switches	4 worker processes
Number of VSH sessions per worker process	N9324C-SE1U and N9348Y2C6D-SE1U switches	A maximum of 5 persistent VSH sessions are supported for each worker process
Maximum response size supported in output	N9324C-SE1U and N9348Y2C6D-SE1U switches	10 MB

Feature	Supported Platforms	Verified limits
Maximum number of concurrent session supported for chunk mode. See **Configuring the Message Format and Command Type** to know more about chunk mode	N9324C-SE1U and N9348Y2C6D-SE1U switches	2
Maximum size of response supported in chunk mode	N9324C-SE1U and N9348Y2C6D-SE1U switches	After 10.3(1) release, the maximum size supported in chunk mode is the same as the amount of space available in volatile.
DME **Note** • If all the DME features are configured together, it may cause performance issues. • Model to CLI Conversion of payload is not supported.		
Telemetry	N9324C-SE1U and N9348Y2C6D-SE1U switches	Telemetry data can be streamed to 4 receivers in parallel

Table 7: QoS verified scalability limits in NPU network mode

Feature	Supported platforms	Verified limits
Class maps per policy map	N9324C-SE1U and N9348Y2C6D-SE1U switches	128
Total policy maps	N9324C-SE1U and N9348Y2C6D-SE1U switches	127

Table 8: Security verified scalability limits in NPU network mode

Feature	Supported platforms	Verified limits
Ingress RACLv4	N9324C-SE1U and N9348Y2C6D-SE1U switches	7168 ACEs per slice
Ingress RACLv6	N9324C-SE1U and N9348Y2C6D-SE1U switches	3584 ACEs per slice
Egress RACLv4	N9324C-SE1U and N9348Y2C6D-SE1U switches	7168 ACEs per slice
Egress RACLv6	N9324C-SE1U and N9348Y2C6D-SE1U switches	3584 ACEs per slice
Ingress PACLv4	N9324C-SE1U and N9348Y2C6D-SE1U switches	7168 ACEs per slice
Ingress PACLv6	N9324C-SE1U and N9348Y2C6D-SE1U switches	3584 ACEs per slice
Ingress SVI RACLv4	N9324C-SE1U and N9348Y2C6D-SE1U switches	7168 ACEs per slice
Ingress SVI RACLv6	N9324C-SE1U and N9348Y2C6D-SE1U switches	3584 ACEs per slice
Egress SVI RACLv4	N9324C-SE1U and N9348Y2C6D-SE1U switches	7168 ACEs per slice
Egress SVI RACLv6	N9324C-SE1U and N9348Y2C6D-SE1U switches	3584 ACEs per slice
Ingress IPv4 ACL labels	N9324C-SE1U and N9348Y2C6D-SE1U switches	126 unique labels

Feature	Supported platforms	Verified limits
Ingress IPv6 ACL labels	N9324C-SE1U and N9348Y2C6D-SE1U switches	126 unique labels
Egress IPv4 ACL labels	N9324C-SE1U and N9348Y2C6D-SE1U switches	14 unique labels
Egress IPv6 ACL labels	N9324C-SE1U and N9348Y2C6D-SE1U switches	14 unique labels
Ingress supervisor IPv4 TCAM entries	N9324C-SE1U and N9348Y2C6D-SE1U switches	360
Ingress supervisor IPv6 TCAM entries	N9324C-SE1U and N9348Y2C6D-SE1U switches	180

Table 9: System management verified scalability limits in NPU network mode

Feature	Supported platforms	Verified limits
PTP ports	N9324C-SE1U switch	96 per system
	N9348Y2C6D-SE1U switch	80 per system
sFlow ports	N9324C-SE1U and N9348Y2C6D-SE1U switches	64
Active SPAN or ERSPAN sessions	N9324C-SE1U and N9348Y2C6D-SE1U switches	10
Source interfaces per SPAN or ERSPAN session (Rx and Tx, Rx, or Tx)	N9324C-SE1U and N9348Y2C6D-SE1U switches	48
Destination interfaces per SPAN session	N9324C-SE1U and N9348Y2C6D-SE1U switches	1 physical interface; port-channel interfaces are not supported
NetFlow - Flow monitors	N9324C-SE1U and N9348Y2C6D-SE1U switches	15 IPv4, 15 IPv6, and 15 Layer 2 flow monitors; two exporters per flow monitor
Maximum number of flows in the software table	N9324C-SE1U and N9348Y2C6D-SE1U switches	1,000,000 flows

Table 10: Unicast routing verified scalability limits in NPU network mode

Feature	Supported platforms	Verified limits
IPv4 ARP and IPv6 ND		
IPv4 ARP (Default routing template)	N9324C-SE1U and N9348Y2C6D-SE1U switches	98,304
IPv6 ND (Default routing template)	N9324C-SE1U and N9348Y2C6D-SE1U switches	98,304
IPv4 and IPv6 Routes		
IPv4 host routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	1,146,880

Feature	Supported platforms	Verified limits
IPv6 host routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	212,992
IPv4 LPM routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	1,048,576
IPv6 LPM routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	524,288
Unicast Protocols		
BFD sessions (echo mode)	N9324C-SE1U and N9348Y2C6D-SE1U switches	128 at 50-ms intervals; 1000 IPv4 and IPv6 sessions at 300-ms intervals
BGP neighbors (IPv4 and IPv6 combined)	N9324C-SE1U and N9348Y2C6D-SE1U switches	1024
HSRP groups	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000 with virtual MAC address support
IS-ISv4 adjacencies	N9324C-SE1U and N9348Y2C6D-SE1U switches	255
IS-ISv4 BFD sessions	N9324C-SE1U and N9348Y2C6D-SE1U switches	255
IS-ISv4 routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	10,000
OSPFv2 and OSPFv3 LSA or LSDB size	N9324C-SE1U and N9348Y2C6D-SE1U switches	100,000
OSPFv2 and OSPFv3 areas	N9324C-SE1U and N9348Y2C6D-SE1U switches	100
OSPFv2 and OSPFv3 neighbors	N9324C-SE1U and N9348Y2C6D-SE1U switches	256
VRRPv3 groups per interface	N9324C-SE1U and N9348Y2C6D-SE1U switches	250
VRRPv3 groups with default timers (1 second)	N9324C-SE1U and N9348Y2C6D-SE1U switches	250
VRRPv3 groups with relaxed timers (3 seconds)	N9324C-SE1U and N9348Y2C6D-SE1U switches	250
Static Routes		
IPv4 Static routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	8000
IPv6 Static routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	8000
Virtual Routing and Forwarding		
VRFs	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000
Policy Based Routing		
Configured sequences per PBR policy	N9324C-SE1U and N9348Y2C6D-SE1U switches	128
Next-hop addresses per PBR policy	N9324C-SE1U and N9348Y2C6D-SE1U switches	32

Feature	Supported platforms	Verified limits
IPv4 ACEs	N9324C-SE1U and N9348Y2C6D-SE1U switches	3582 per network forwarding engine
IPv6 ACEs	N9324C-SE1U and N9348Y2C6D-SE1U switches	1792 per network forwarding engine
Interfaces with PBR policy	N9324C-SE1U and N9348Y2C6D-SE1U switches	512
ECMP		
ECMP paths (IPv4 and IPv6 unicast address family)	N9324C-SE1U and N9348Y2C6D-SE1U switches	64
ECMP groups	N9324C-SE1U and N9348Y2C6D-SE1U switches	8192

Note

- The IPv4 and IPv6 unicast routes share a hardware table. Scale values can vary when you combine routing parameters.
- 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.

Table 11: VXLAN verified scalability limits in NPU network mode

Feature	Supported platforms	Verified limits
VXLAN BGP eVPN and Ingress Replication **Note** Scale limit are with default system routing template.		
Layer 2 VNIs	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000
SVI with distributed anycast gateway; Layer 2 VNI extended	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000
Layer 3 VNIs or VRFs	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000
VTEP peers	N9324C-SE1U and N9348Y2C6D-SE1U switches	350 vPC pairs or 1000 standalone VTEPs with ingress replication; 512 standalone VTEPs with multicast underlay
Port VLAN translations under an interface	N9324C-SE1U and N9348Y2C6D-SE1U switches	3967
MAC addresses	N9324C-SE1U and N9348Y2C6D-SE1U switches	90,000 with the default template; 96,000 with the dual-stack-host-scale template
IPv4 host routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	512,000

Feature	Supported platforms	Verified limits
IPv6 host routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	112,000
Overlay IPv4 LPM routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	1,000,000
Overlay IPv6 LPM routes	N9324C-SE1U and N9348Y2C6D-SE1U switches	512,000
Underlay multicast groups	N9324C-SE1U and N9348Y2C6D-SE1U switches	512
Overlay EVPN ECMP paths	N9324C-SE1U and N9348Y2C6D-SE1U switches	64
Underlay EVPN ECMP paths	N9324C-SE1U and N9348Y2C6D-SE1U switches	64
Multi-Site		
Number of sites	N9324C-SE1U and N9348Y2C6D-SE1U switches	128
Number of sites for TRM	N9324C-SE1U and N9348Y2C6D-SE1U switches	16
Tenant Route Multicast Layer 3 Mode with VXLAN BGP eVPN		
VXLAN Layer 3 VNI or VRFs	N9324C-SE1U and N9348Y2C6D-SE1U switches	250
Total Multicast routes (PIM ASM & PIM SSM)	N9324C-SE1U and N9348Y2C6D-SE1U switches	32,000

Note

To scale MAC addresses independently, use the dual-stack-host-scale system routing template and reload the switch. VXLAN scale depends on the selected routing template and topology.

Table 12: Smart Switch verified scalability limits in DPU security mode

Feature	Supported platforms	Verified limits
Service VLANs	N9324C-SE1U and N9348Y2C6D-SE1U switches	1000
Service VRFs	N9324C-SE1U and N9348Y2C6D-SE1U switches	100