



# BGP EVPN VXLAN Scalability Guide

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## Scale and Performance Capabilities for BGP EVPN VXLAN on Cisco Catalyst 9500 Series Switches

This section provides information about the platform capabilities and the scale values and for various components of a BGP EVPN VXLAN fabric. The numbers in the following table depend on the ternary content addressable memory (TCAM) scale. Use the SDM configuration templates to adjust the Layer 2 and Layer 3 TCAM forwarding table sizes based on the platform positioning. For more information, see *Configuring SDM Templates* module of the *System Management Configuration Guide* for the applicable release.

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

- [Table 1: Scale Values for Cisco Catalyst 9500 and 9500 High Performance Series Switches](#)
- [Table 2: Scale Values for Cisco Catalyst 9500X Series Switches](#)
- [Unsupported Features on Cisco Catalyst 9500X Series Switches](#)

**Table 1: Scale Values for Cisco Catalyst 9500 and 9500 High Performance Series Switches**

Product Specification								
Switch Model	C9500-12Q, C9500-24Q, C9500-16X, C9500-40X				C9500-32C, C9500-32QC, C9500-48Y4C, C9500-24Y4C			
BGP EVPN / VXLAN -- Leaf Scale								
SDM Template	Distribution	Core	NAT	Custom	Distribution	Core	NAT	Custom
VXLAN Leaf Node (Per Fabric Domain)	500	500	500	500	500	500	500	500
VRF	1000	1000	1000	1000	1000	1000	1000	1000

Product Specification								
Switch Model	C9500-12Q, C9500-24Q, C9500-16X, C9500-40X				C9500-32C, C9500-32QC, C9500-48Y4C, C9500-24Y4C			
Layer 2 Virtual Network Instances (VNIs)	512	512	512	512	512	512	512	512
Layer 3 VNIs	512	512	512	512	512	512	512	512
Layer 3 VRF SVI Interface	4094	4094	4094	4094	4094	4094	4094	4094
MAC Entries ( Local L2 Network)	64000	16000	16000	128000	82000	32000	32000	128000
MAC Entries ( Remote EVPN VXLAN Network )	64000	16000	16000	128000	82000	32000	32000	128000
Overlay IPv4 routes (LPM or Indirect Routes)	64000	64000	64000	256000	114000	212000	212000	256000
Overlay IPv4 Host routes	48000	32000	48000	256000	114000	212000	212000	256000
Overlay IPv6 routes (LPM or Indirect Routes)	64000	64000	64000	256000	114000	212000	212000	256000
Overlay IPv6 Host routes	48000	32000	48000	256000	114000	212000	212000	256000
Tenant Routed Multicast (TRM) IPv4	16000	16000	16000	32000	2000	2000	2000	32000
TRM IPv6	16000	16000	16000	32000	2000	2000	2000	32000
TRMv4: Overlay Multicast Routes (*,G and S,G)	16000	32000	32000	32000	16000	32000	32000	32000
TRMv6: Overlay Multicast Routes (*,G and S,G)	16000	32000	32000	32000	16000	32000	32000	32000
EVPN VXLAN Aware Flexible NetFlow - Pv4 Ingress Cache Entries	128000	128000	128000	64000	98000	32000	32000	64000

<b>Product Specification</b>								
<b>Switch Model</b>	<b>C9500-120, C9500-240, C9500-16X, C9500-40X</b>				<b>C9500-32C, C9500-32QC, C9500-48Y4C, C9500-24Y4C</b>			
EVPN VXLAN Aware Flexible NetFlow - IPv4 Egress Cache Entries	128000	128000	128000	64000	32000	32000	32000	64000
EVPN VXLAN Aware Flexible NetFlow - IPv6 Ingress Cache Entries	128000	128000	128000	64000	32000	32000	32000	64000
EVPN VXLAN Aware Flexible NetFlow - IPv6 Egress Cache Entries	128000	128000	128000	64000	32000	32000	32000	64000
Layer 2 VNI (L2VNI) Multicast Replication BUM Rate-Limiter	512	512	512	512	512	512	512	512
MicroSegmentation - Community VLAN to L2VNI	2000	2000	2000	2000	2000	2000	2000	2000
NanoSegmentation - Isolated VLAN to L2VNI	384	384	384	384	384	384	384	384
Wide Area Bonjour (mDNS) over VXLAN Service Instance Count	15000	15000	15000	15000	15000	15000	15000	15000
<b>BGP EVPN / VXLAN -- Spine Scale</b>								
SDM Template	Distribution	Core	NAT	Custom	Distribution	Core	NAT	Custom
BGP IPv4 Peer Scale	250	250	250	250	1000	1000	1000	1000
BGP IPv6 Peer Scale	250	250	250	250	1000	1000	1000	1000
BGP L2VPN EVPN Peer Scale	250	250	250	250	1000	1000	1000	1000

Product Specification								
Switch Model	C9500-12Q, C9500-24Q, C9500-16X, C9500-40X				C9500-32C, C9500-32QC, C9500-48Y4C, C9500-24Y4C			
Overlay IPv4 routes (LPM or Indirect Routes)	64000	64000	64000	256000	114000	212000	212000	256000
Overlay IPv4 Host routes	48000	32000	48000	256000	114000	212000	212000	256000
Overlay IPv6 routes (LPM or Indirect Routes)	64000	64000	64000	256000	114000	212000	212000	256000
Overlay IPv6 Host routes	48000	32000	48000	256000	114000	212000	212000	256000
BGP EVPN / VXLAN -- Border Scale								
SDM Template	Distribution	Core	NAT	Custom	Distribution	Core	NAT	Custom
EVPN to Layer 2 Handoff: IEEE 802.1Q	512	512	512	512	512	512	512	512
EVPN to Layer 2 Handoff: IEEE 802.1ad (QinQ)	512	512	512	512	512	512	512	512
EVPN to VRF Handoff: IP VRF (IPv4 and IPv6)	1000	1000	1000	1000	1000	1000	1000	1000
EVPN to MPLS Layer 3 VRF Unicast Handoff: VPNv4	256	256	256	256	512	512	512	512
EVPN to MPLS Layer 3 VRF Unicast Handoff: VPNv6	256	256	256	256	512	512	512	512
EVPN to MPLS Layer 3 VRF Multicast Handoff: mVPNv4	256	256	256	256	512	512	512	512
EVPN to MPLS Layer 3 VRF Multicast Handoff: mVPNv6	512	512	512	512	512	512	512	512

Product Specification								
Switch Model	C9500-120, C9500-240, C9500-16X, C9500-40X				C9500-32C, C9500-32QC, C9500-48Y4C, C9500-24Y4C			
EVPN to VPLS Layer 2 Handoff: Virtual Forwarding Instances (VFIs)	512	512	512	512	512	512	512	512
EVPN to VPLS Layer 2 Handoff: Neighbors Per VFI	128	128	128	128	128	128	128	128
EVPN to VPLS Layer 2 Handoff: Pseudowire	512	512	512	512	512	512	512	512

Table 2: Scale Values for Cisco Catalyst 9500X Series Switches

Product Specification		
Switch Model	C9500X-28C8D	
<b>BGP EVPN / VXLAN -- Leaf Scale</b>		
SDM Template	Core	Custom
VXLAN Leaf Node (Per Fabric Domain)	500	500
VRF	1000	1000
Layer 2 Virtual Network Instances (VNIs)	512	512
Layer 3 VNIs	512	512
Layer 3 VRF SVI Interface	4094	4094
MAC Entries ( Local L2 Network)	128000	256000
MAC Entries ( Remote EVPN VXLAN Network )	128000	256000
Overlay IPv4 routes (LPM or Indirect Routes)	212000	256000
Overlay IPv4 Host routes	212000	256000
Overlay IPv6 routes (LPM or Indirect Routes)	212000	256000
Overlay IPv6 Host routes	212000	256000
Tenant Routed Multicast (TRM) IPv4	2000	32000
TRM IPv6	2000	32000
TRMv4: Overlay Multicast Routes (*,G and S,G)	32000	32000
TRMv6: Overlay Multicast Routes (*,G and S,G)	32000	32000

<b>Product Specification</b>		
<b>Switch Model</b>	<b>C9500X-28C8D</b>	
Wide Area Bonjour (mDNS) over VXLAN Service Instance Count	15000	15000
<b>BGP EVPN / VXLAN -- Spine Scale</b>		
SDM Template	Core	Custom
BGP IPv4 Peer Scale	1000	1000
BGP IPv6 Peer Scale	1000	1000
BGP L2VPN EVPN Peer Scale	1000	1000
Overlay IPv4 routes (LPM or Indirect Routes)	212000	256000
Overlay IPv4 Host routes	212000	256000
Overlay IPv6 routes (LPM or Indirect Routes)	212000	256000
Overlay IPv6 Host routes	212000	256000
<b>BGP EVPN / VXLAN -- Border Scale</b>		
SDM Template	Core	Custom
EVPN to Layer 2 Handoff: IEEE 802.1Q	512	512
EVPN to VRF Handoff: IP VRF (IPv4 and IPv6)	1000	1000

### Unsupported Features on Cisco Catalyst 9500X Series Switches

Cisco Catalyst 9500X Series switches don't support the following features in Cisco IOS XE, Release 17.10.1:

- EVPN VXLAN Aware Flexible NetFlow
- Layer 2 VNI (L2VNI) Multicast Replication BUM Rate-Limiter
- Private VLAN: Community VLAN to L2VNI
- Private VLAN: Isolated VLAN to L2VNI
- EVPN to Layer 2 Handoff: IEEE 802.1ad (QinQ)
- EVPN to MPLS Layer 3 VRF Unicast Handoff
- EVPN to MPLS Layer 3 VRF Multicast Handoff
- EVPN to VPLS Layer 2 Handoff
- EVPN to VPLS Layer 2 Handoff: Neighbors Per VFI
- EVPN to VPLS Layer 2 Handoff: Pseudowire