Feature History for BGP EVPN VXLAN

- Feature History for BGP EVPN VXLAN, on page 1
- Unsupported BGP EVPN VXLAN Features on Cisco Catalyst 9600 Series Supervisor 2 Module, on page 9

Feature History for BGP EVPN VXLAN

This table provides release and related information for the features explained in this module.

These features are available in all the releases subsequent to the one they were introduced in, unless noted otherwise.

Release	Feature	Feature Information
Cisco IOS XE Gibraltar 16.12.1	EVPN VXLAN Overlay Network for IPv4 Bridged Traffic	EVPN VXLAN overlay network for IPv4 bridged traffic is a Layer 2 overlay network that allows host devices within the same subnet to send IPv4 bridged traffic to each other using a Layer 2 virtual network instance (VNI).
	EVPN VXLAN Overlay Network for IPv4 Routed Traffic	EVPN VXLAN overlay network for IPv4 routed traffic is a Layer 3 overlay network that allows host devices in different Layer 2 networks to send IPv4 routed traffic to each other using a Layer 3 VNI and an IP VRF.
	Layer 2 Broadcast, Unknown Unicast, and Multicast (BUM) Traffic Forwarding using Underlay Multicast	Multi-destination Layer 2 broadcast, unknown unicast, and multicast (BUM) traffic in an EVPN VXLAN network is replicated through a multicast group in the underlay network and forwarded to all the endpoints of the network.
	Leaf Functionality	A leaf switch sits on the edge of a BGP EVPN VXLAN fabric and is connected to the host or access devices. It functions as a virtual tunnel end point (VTEP) and performs encapsulation and decapsulation.
	EVPN VXLAN Integrated and Bridging	EVPN VXLAN integrated and bridging (IRB) allows the VTEPs in a VXLAN network to forward both Layer 2 or bridged traffic and Layer 3 or routed traffic. It is implemented as symmetric and asymmetric IRB.
	EVPN VXLAN Distributed Anycast Gateway	EVPN VXLAN distributed anycast gateway is a default gateway addressing mechanism that enables the use of the same gateway IP address across all the leaf switches that are part of a VXLAN network. Support was introduced with manual MAC address configuration on the Layer 2 VNI VLAN's switch virtual interface (SVI) on all VTEPs as the only method to enable the feature.
	DHCP Relay for IPv4 Traffic in BGP EVPN VXLAN Fabric	The VTEP in a BGP EVPN VXLAN fabric is configured as a DHCP relay agent to provide DHCP relay services for IPv4 traffic in a multi-tenant VXLAN environment.
	EVPN VXLAN Overlay Network for IPv6 Bridged Traffic	EVPN VXLAN overlay network for IPv6 bridged traffic is a Layer 2 overlay network that allows host devices within the same subnet to send IPv6 bridged traffic to each other using a Layer 2 VNI.
	EVPN VXLAN Overlay Network for IPv6 Routed Traffic	EVPN VXLAN overlay network for IPv6 routed traffic is a Layer 3 overlay network that allows host devices in different Layer 2 networks to send IPv6 routed traffic to each other using a Layer 3 VNI and an IP VRF.

Release	Feature	Feature Information
	Layer 2 Broadcast, Unknown Unicast, and Multicast (BUM) Traffic Forwarding using Ingress Replication	Ingress replication is a unicast approach to handle multi-destination Layer 2 BUM traffic in an EVPN VXLAN network. It involves an ingress device replicating every incoming BUM packet and sending them as a separate unicast to the remote egress devices.
	MAC Aliasing for EVPN VXLAN Distributed Anycast Gateway	MAC aliasing allows the leaf switches in an EVPN VXLAN network to advertise the MAC addresses of their Layer 2 VLAN's SVI as the gateway MAC address to all the other leaf switches in the network. MAC aliasing removes the need to explicitly configure the same MAC address on the Layer 2 VNI VLAN's SVI on all VTEPs in order to enable distributed anycast gateway.
	Border Leaf Functionality	A border leaf switch is a leaf switch in a BGP EVPN VXLAN fabric that enables external connectivity with other Layer 2 and Layer 3 networks by acting as the connecting node between the two networks.
	Autonomous System Number Rewrite	The **rewrite-evpn-rt-asn** command was introduced to enable the rewrite of the autonomous system number (ASN) portion of the EVPN route target that originates from the current autonomous system with the ASN of the target eBGP EVPN peer.
	VRF-Lite Border Leaf Handoff	VRF-Lite border leaf handoff in a BGP EVPN VXLAN fabric allows Layer 3 external connectivity with a VRF-Lite network through a border leaf switch.
	MPLS Layer 3 VPN Border Leaf Handoff	MPLS Layer 3 VPN border leaf handoff in a BGP EVPN VXLAN fabric allows Layer 3 external connectivity with an MPLS Layer 3 VPN network through a border leaf switch.
	IEEE 802.1Q Border Leaf Handoff	IEEE 802.1Q border leaf handoff in a BGP EVPN VXLAN fabric allows Layer 2 external connectivity with an IEEE 802.1Q network through a border leaf switch.
	Access Border Leaf Handoff	Access border leaf handoff in a BGP EVPN VXLAN fabric allows Layer 2 external connectivity with an Access network through a border leaf switch.
	VPLS over MPLS Border Leaf Handoff	VPLS over MPLS border leaf handoff in a BGP EVPN VXLAN fabric allows Layer 2 external connectivity with a VPLS over MPLS network through a border leaf switch.

Release	Feature	Feature Information
Cisco IOS XE Amsterdam 17.1.1	Spine Functionality	A spine switch acts as the connecting node between all the leaf switches in a BGP EVPN VXLAN fabric, forwards the traffic between the leaf switches and provides redundancy to the network.
	Border Spine Functionality	A border spine switch in a BGP EVPN VXLAN fabric enables external connectivity with other Layer 2 and Layer 3 networks by acting as the connecting node between the two networks.
	ARP and IPv6 Neighbor Discovery Flooding Suppression	Flooding suppression avoids the flooding of ARP and IPv6 neighbor discovery packets over the VXLAN network to the local and remote host or access devices.
	Layer 3 Tenant Routed Multicast for IPv4 Traffic	Layer 3 tenant routed multicast (TRM) for IPv4 traffic enables multicast forwarding for IPv4 traffic in a BGP EVPN VXLAN fabric. It provides multi-tenancy-aware multicast forwarding between senders and receivers within the same subnet or different subnets, locally or across VTEPs. You can configure TRM with PIM sparse mode (PIM-SM) using anycast RP mode and TRM with PIM source specific mode (PIM-SSM).
	VRF-Lite Border Spine Handoff	VRF-Lite border spine handoff in a BGP EVPN VXLAN fabric allows Layer 3 external connectivity with a VRF-Lite network through a border spine switch.
	MPLS Layer 3 VPN Border Spine Handoff	MPLS Layer 3 VPN border spine handoff in a BGP EVPN VXLAN fabric allows Layer 3 external connectivity with an MPLS Layer 3 VPN network through a border spine switch.
	IEEE 802.1Q Border Spine Handoff	IEEE 802.1Q border spine handoff in a BGP EVPN VXLAN fabric allows Layer 2 external connectivity with an IEEE 802.1Q network through a border spine switch.
	Access Network Border Spine Handoff	Access border spine handoff in a BGP EVPN VXLAN fabric allows Layer 2 external connectivity with an Access network through a border spine switch.
	VPLS over MPLS Border Spine Handoff	VPLS over MPLS border spine handoff in a BGP EVPN VXLAN fabric allows Layer 2 external connectivity with a VPLS over MPLS network through a border spine switch.
	Configuring VXLAN-Aware Flexible Netflow	VXLAN-aware Flexible Netflow captures the VXLAN flow information for both bridged and routed traffic.
	BGP EVPN VXLAN MIB support	Support was introduced for the MIB.

Release	Feature	Feature Information
Cisco IOS XE Amsterdam 17.2.1	EVPN VXLAN Centralized Default Gateway	EVPN VXLAN Centralized Default Gateway allows a single VTEP in the EVPN VXLAN network to act as the Layer 3 gateway for all the Layer 2 VNIs in the network.
Cisco IOS XE Amsterdam 17.3.1	Layer 3 Tenant Routed Multicast for IPv6 Traffic	Layer 3 TRM for IPv6 traffic enables multicast forwarding for IPv6 traffic in a BGP EVPN VXLAN fabric. It provides multi-tenancy-aware multicast forwarding between senders and receivers within the same subnet or different subnets, locally or across VTEPs. Support was introduced to configure TRM with PIM-SSM and TRM with PIM-SM.
	Enhanced RP Functionality for Layer 3 TRM for IPv4 and IPv6 traffic	Enhancement was introduced for the configuration of an RP in the overlay network for TRM with PIM-SM. The enhancement allows you to configure an RP on a single or multiple VTEPs inside the BGP EVPN VXLAN fabric or on a device outside the fabric.
	Interworking of Layer 3 TRM with MVPN Networks for IPv4 Traffic	Interworking of Layer 3 TRM with MVPN Networks allows you to forward IPv4 Layer 3 multicast traffic between sources and receivers of an EVPN VXLAN network and an MVPN network.
	Broadcast, Unknown Unicast, and Multicast Traffic Rate Limiting	BUM Traffic Rate Limiting allows you to use a policer and set the flood rate limit of the BUM traffic in the network to a predefined value.
Cisco IOS XE Amsterdam 17.3.2a	VNI Support Enhancement	Support for up to 512 VNIs (Layer 2 and Layer 3 VNIs combined) per VTEP was introduced.
	Route Type 2 (RT 2) to Route Type 5 (RT 5) Host Route Reorigination for Overlay Networks with a Centralized Gateway (Asymmetric IRB)	RT 2 to RT 5 reorigination allows a Layer 2 and Layer 3 VXLAN network to import IP addresses from another Layer 2-only VXLAN network. A centralized gateway VTEP can reoriginate any RT 2 host routes, that it learns from the Layer 2 EVPN segment (or MAC VRF), as RT 5 routes in the Layer 3 EVPN segment (or IP VRF).
Cisco IOS XE Bengaluru 17.6.1	Private VLANs (PVLANs) in a BGP EVPN VXLAN Fabric	BGP EVPN VXLAN allows you to extend a PVLAN across the VTEPs in an EVPN fabric overlay. The extension uses isolated and community VLANs to provide features like subnet management and sub segmentation of a broadcast domain in the fabric.

Release	Feature	Feature Information
Cisco IOS XE Bengaluru 17.6.1	EVPN VXLAN Multi-homing in Single-active Redundancy Mode	Multi-homing provides redundancy in the connection between a customer edge (CE) device and a VTEP by connecting the customer network with multiple VTEPs in an EVPN VXLAN network. In single-active redundancy mode, only one VTEP, among a group of VTEPs that are attached to the particular ethernet segment, is allowed to forward traffic to and from that ethernet segment. Multi-homing in single-active redundancy mode was introduced only in the form of dual-homing, allowing a CE device to be connected to two VTEPs.
Cisco IOS XE Bengaluru 17.6.1	Route Leaking between EVPN and Global Routing Table	The route leaking feature provides the import and export of routes between an EVPN-enabled VRF and the Global Routing Table (GRT). By enabling the import and export of the EVPN learned routes into the GRT, the border node provides access to services such as DNS or DHCP to the hosts in the fabric.
Cisco IOS XE Bengaluru 17.6.2	Data MDT Support for L3 TRM	Data MDTs are purpose built underlay MDTs to provide optimized forwarding in the MVPN and EVPN core.
Cisco IOS XE Cupertino 17.8.1	Optimized Layer 2 Overlay Multicast for IPv4 and IPv6 traffic	Optimized Layer 2 Overlay Multicast forwards multicast traffic within the Layer 2 Virtual Network Instance (L2VNI). IPv4 and IPv6 Layer 2 overlay multicast traffic is optimized both at the access level and within the VXLAN fabric.
Cisco IOS XE Dublin 17.10.1	BGP EVPN VXLAN with IPv6 in the Underlay (VXLANv6)	Introduced support for IPv6 addressing in the underlay of a BGP EVPN VXLAN fabric. In a new deployment, you can build your BGP EVPN VXLAN fabric with IPv6 underlay. For an existing BGP EVPN VXLAN fabric with IPv4 underlay, you can seamlessly migrate to an IPv6 or dual stack underlay.

Release	Feature	Feature Information
Cisco IOS XE Dublin 17.10.1	BGP EVPN VXLAN on Cisco Catalyst 9600 Series Supervisor 2 Module (C9600X-SUP-2)	The following features of BGP EVPN VXLAN were enabled on the Cisco Catalyst 9600 Series Supervisor 2 Module (C9600X-SUP-2): • IPv4 and IPv6 host support in the Layer 2 and Layer 3 overlays • IPv4 and IPv6 overlay unicast forwarding • Multicast Replication for Broadcast, Unknown Unicast and Multicast (BUM) traffic forwarding • EVPN VXLAN integrated routing and bridging (IRB) with distributed anycast gateway. • External connectivity: VRF-Lite and IEEE 802.1Q handoff
Cisco IOS XE Dublin 17.11.1	EVPN Microsegmentation	BGP EVPN VXLAN integrates Cisco TrustSec to provide microsegmentation and end-to-end access control with the propagation of the security group tag (SGT). Using security group-based access control lists (SGACLs), you can control the operations that a user can perform, based on the security group assignments and destination resources in a VXLAN campus fabric.
	EVPN VXLAN Multi-Homing	BGP EVPN is enhanced to restrict the ethernet segment operations to the EVPN-controlled VLANs on the trunk port. This allows traditional Layer 2 domains to co-exist with the Layer 2 VNI-enabled VLANs at access layer. It also allows selective VLAN migration to overlay VXLAN segmentation.
	Dynamic BGP Peering for EVPN	Support for BGP dynamic neighbor sessions is extended to the L2VPN EVPN address family.
	EVPN Route Map Support	The Leaf, Spine and Border nodes of a BGP EVPN fabric now support route map for the L2VPN address family. With route map support, the BGP attributes and their values can be modified to customize the routing policy based on the requirement. The routing policy can be applied for both inbound and outbound EVPN routes.

Release	Feature	Feature Information
Cisco IOS XE Dublin 17.11.1	Cisco StackWise Virtual Support	Cisco StackWise Virtual is a network system virtualization technology that pairs two switches into one virtual switch to simplify operations with a single control and management plane. Support for Cisco StackWise Virtual was introduced on the Cisco Catalyst 9600 Series Supervisor 2 Module (C9600X-SUP-2).
	Layer 3 Tenant Routed Multicast with Data MDT	Layer 3 TRM support was introduced on the Cisco Catalyst 9600 Series Supervisor 2 Module (C9600X-SUP-2).
Cisco IOS XE Dublin 17.11.99sw	TRM over BGP EVPN VXLANv6	TRM over BGP EVPN VXLANv6 follows the industry standard IETF RFCs 6513 and 6514 to support rich multicast applications over the BGP EVPN VXLAN fabric network. The Cisco Catalyst 9000 series switches provide flexibility to transport IPv4 multicast applications in overlay networks while the underlay network can be built on single-stack IPv6 only.
Cisco IOS XE Dublin 17.12.1	Optimized Layer 2 Overlay Multicast for IPv4 and IPv6 traffic	Support for Optimized Layer 2 Overlay Multicast was introduced on Cisco Catalyst 9600 Series Supervisor 2 Module (C9600X-SUP-2).
Cisco IOS XE Dublin 17.12.1	BGP EVPN VRF Auto RD and Auto RT	BGP EVPN Layer 3 overlay VRF configuration is simplified with the introduction of new CLIs to auto generate the route distinguisher (RD) and route target (RT) for a VRF.
	Dynamic ARP inspection (DAI) and DHCP Rogue Server Protection in BGP EVPN VXLAN fabric	BGP EVPN VXLAN fabric now supports ARP inspection and DHCP Rogue Server Protection. To configure these features, enable ARP inspection and DHCP Snooping on the VTEPs in the corresponding VLANs of the EVPN VXLAN fabric.
Cisco IOS XE Dublin 17.12.2	TRM over BGP EVPN VXLANv6	TRM over BGP EVPN VXLANv6 follows the industry standard IETF RFCs 6513 and 6514 to support rich multicast applications over the BGP EVPN VXLAN fabric network.
	DHCP Relay on VTEPs in Layer 2 Overlay	In a BGP EVPN VXLAN Layer 2 overlay, DHCP Relay is configured on the centralized gateway (CGW). The CGW is configured either on an external router or on the Layer 2 border VTEP.

Release	Feature	Feature Information
Cisco IOS XE 17.13.1	TRM over BGP EVPN VXLANv6	TRM over BGP EVPN VXLANv6 follows the industry standard IETF RFCs 6513 and 6514 to support rich multicast applications over the BGP EVPN VXLAN fabric network. The Cisco Catalyst 9000 series switches provide flexibility to transport IPv4 and IPv6 multicast applications in overlay networks while the underlay network can be built on single-stack IPv6 only.
	Simplified CLIs for the BGP EVPN VXLAN Layer 2 and Layer 3 Overlay Configuration	**Layer 2 Overlay Configuration:** You can now configure a range of VLANs using a single CLI - **vlan configuration** *vlan-id-range*. By defining the **member evpn-instance** command under the VLAN configuration, EVPN Instance (EVI) ID and VXLAN Layer 2 VNI ID (L2VNI) are autogenerated for each VLAN. You also have the option of auto creating the EVI and L2VNI from a predefined service profile to simplify the provisioning of Layer 2 overlay. **Layer 3 Overlay Configuration**: BGP EVPN Layer 3 overlay VRF configuration is further simplified in this release with the introduction of new keywords in the **vnid** command in the VRF submode. If you have enabled auto generation of route target for a VRF, Cisco IOS XE 17.13.1 provides you with the option of auto generating the Layer 3 VNI (L3VNI) or specifying a value for L3VNI. It also provides the option to automatically associate the NVE interface with the given VRF and acquire the core SVI and core VLAN, using the **vnid** *vnid* [**evpn-instance** [**vni**{*vni-id* | **auto**} [**core-vlan** *vlan-num*]]] command.

Use Cisco Feature Navigator to find information about platform and software image support. To access Cisco Feature Navigator, go to Cisco Feature Navigator.

Unsupported BGP EVPN VXLAN Features on Cisco Catalyst 9600 Series Supervisor 2 Module

The following BGP EVPN VXLAN features are not supported on the Cisco Catalyst 9600 Series Supervisor 2 Module.

- Layer 2 Broadcast, Unknown Unicast, and Multicast (BUM) Traffic Forwarding using Ingress Replication
- BUM Traffic Rate Limiting

- Dynamic ARP inspection (DAI) and DHCP Rogue Server Protection
- EVPN VXLAN Centralized Default Gateway
- VXLAN-Aware Flexible Netflow
- MPLS Layer 3 VPN Border Leaf Handoff
- MPLS Layer 3 VPN Border Spine Handoff
- VPLS over MPLS Border Leaf Handoff
- VPLS over MPLS Border Spine Handoff
- Interworking of Layer 3 TRM with MVPN Networks for IPv4 Traffic
- Private VLANs (PVLANs)
- BGP EVPN VXLAN with IPv6 in the Underlay (VXLANv6)
- VRF aware NAT64 EVPN Fabric
- EVPN VXLAN Multi-Homing