Configuring Seamless Integration of EVPN with L3VPN (MPLS LDP)

This chapter contains the following sections:

- Information About Configuring Seamless Integration of EVPN with L3VPN (MPLS LDP), on page 1
- Guidelines and Limitations for Configuring Seamless Integration of EVPN with L3VPN (MPLS LDP), on page 1
- Configuring Seamless Integration of EVPN with L3VPN (MPLS LDP), on page 2

Information About Configuring Seamless Integration of EVPN with L3VPN (MPLS LDP)

Data center deployments have adopted VXLAN EVPN for its benefits like EVPN control-plane learning, multitenancy, seamless mobility, redundancy, and easier POD additions. Similarly, the Core is either an LDP-based MPLS L3VPN network or transitioning from traditional an MPLS L3VPN LDP-based underlay to a more sophisticated solution like segment routing (SR). Segment routing is adopted for its benefits like unified IGP and MPLS control planes, simpler traffic engineering methods, easier configuration, and SDN adoption.

With two different technologies, a Border Leaf or a Shared PE router acting as the DCI Nodes within the data centers, it is natural to handoff from VXLAN to an MPLS-based core at the Border Leaf. These nodes which sit on the edge of the DC domain, interfacing with the Core edge router.

Guidelines and Limitations for Configuring Seamless Integration of EVPN with L3VPN (MPLS LDP)

The following are the guidelines and limitations for Configuring Seamless Integration of EVPN with L3VPN (MPLS LDP):

The following features are supported:

- Cisco Nexus 9504 and 9508 switches with -R and -RX line cards.
- Layer 3 orphans

- 256 peers/nodes within a VXLAN DC domain
- By default, MPLS extended ECMP is enabled.
- 24,000 ECMP routes by default on -RX line cards.

Note If you enter the **no hardware profile mpls extended-ecmp** command, the mode is switched to 4 K ECMP routes. This is applicable only when the line card is -RX and the ECMP group has exactly 2 paths.

- Beginning with Cisco NX-OS Release 10.3(3)F, Type-6 encryption for MPLS LDP user password is supported on Cisco NX-OS switches.

The following features are not supported:

- Subnet stretches across the DC domain
- vPC
- SVI/Subinterfaces

Configuring Seamless Integration of EVPN with L3VPN (MPLS LDP)

These configuration steps are required on a Border Leaf switch to import and re-originate the routes from a VXLAN domain to an MPLS domain and back to a VXLAN domain.

SUMMARY STEPS

1. **configure terminal**
2. **[no] install feature-set mpls**
3. **[no] feature-set mpls**
4. **feature mpls l3vpn**
5. **feature mpls ldp**
6. **mpls ip**
7. **nv overlay evpn**
8. **router bgp** *number*
9. **address-family ipv4 unicast**
10. **redistribute direct route-map** *route-map-name*
11. **exit**
12. **address-family l2vpn evpn**
13. **exit**
14. **neighbor** *address* **remote-as** *number*
15. **update-source** *type/id*
16. **ebgp-multihop** *ttl-value*
17. **address-family ipv4 unicast**

18. **send-community extended**
19. **exit**
20. **address-family ipv4 labeled-unicast**
21. **send-community extended**
22. **address-family vpnv4 unicast**
23. **send-community extended**
24. **import l2vpn evpn reoriginate**
25. **neighbor** *address* **remote-as** *number*
26. **address-family ipv4 unicast**
27. **send-community extended**
28. **address-family ipv6 unicast**
29. **send-community extended**
30. **address-family l2vpn evpn**
31. **send-community extended**
32. **import vpn unicast reoriginate**

DETAILED STEPS

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** `switch# configure terminal`	Enters global configuration mode.
Step 2	**[no] install feature-set mpls** **Example:** `switch# install feature-set mpls`	Installs the MPLS feature set. The no form of this command uninstalls the MPLS feature set.
Step 3	**[no] feature-set mpls** **Example:** `switch# feature-set mpls`	Installs the MPLS feature set. The no form of this command uninstalls the MPLS feature set.
Step 4	**feature mpls l3vpn** **Example:** `switch# feature mpls l3vpn`	Enables the MPLS Layer 3 VPN feature.
Step 5	**feature mpls ldp** **Example:** `switch# feature mpls ldp`	Enables the MPLS Label Distribution Protocol (LDP).

Step 6	**mpls ip**
	Example:
	`switch# interface Ethernet1/1`
	`switch(config-if)# mpls ip`
		Enables MPLS on the specified interfaces that are MPLS links.

Step 7	**nv overlay evpn** **Example:**	Enables the EVPN control plane for VXLAN.

	Command or Action	Purpose
	`switch(config)# nv overlay evpn`	
Step 8	**router bgp** *number* **Example:** `switch(config)# router bgp 100`	Configures BGP. The value of the *number* argument is from 1 to 4294967295.
Step 9	**address-family ipv4 unicast** **Example:** `switch(config-router)# address-family ipv4 unicast`	Configures the address family for IPv4.
Step 10	**redistribute direct route-map** *route-map-name* **Example:** `switch(config-router-af)# redistribute direct route-map passall`	Configures the directly connected route map.
Step 11	**exit** **Example:** `switch(config-router-af)# exit`	Exits command mode.
Step 12	**address-family l2vpn evpn** **Example:** `switch(config-router)# address-family l2vpn evpn`	Configures the L2VPN address family.
Step 13	**exit** **Example:** `switch(config-router-af)# exit`	Exits command mode.
Step 14	**neighbor** *address* **remote-as** *number* **Example:** `switch(config-router)# neighbor 108.108.108.108 remote-as 22`	Configures a BGP neighbor. The range of the *number* argument is from 1 to 65535.
Step 15	**update-source** *type/id* **Example:** `switch(config-router-neighbor)# update-source loopback100`	Specifies the source of the BGP session and updates.
Step 16	**ebgp-multihop** *ttl-value* **Example:** `switch(config-router-neighbor)# ebgp-multihop 10`	Specifies the multihop TTL for the remote peer. The range of *ttl-value* is from 2 to 255.
Step 17	**address-family ipv4 unicast** **Example:** `switch(config-router-neighbor)# address-family ipv4 unicast`	Configures the unicast sub-address family.

	Command or Action	Purpose
Step 18	**send-community extended** **Example:** `switch(config-router-neighbor-af)# send-community extended`	Configures the community attribute for this neighbor.
Step 19	**exit** **Example:** `switch(config-router-neighbor-af)# exit`	Exits command mode.
Step 20	**address-family ipv4 labeled-unicast** **Example:** `switch(config-router-neighbor)# address-family ipv4 labeled-unicast`	Advertises the labeled IPv4 unicast routes as specified in RFC 3107.
Step 21	**send-community extended** **Example:** `switch(config-router-neighbor-af)# send-community extended`	Sends the extended community attribute.
Step 22	**address-family vpnv4 unicast** **Example:** `switch(config-router-neighbor)# address-family vpnv4 unicast`	Configures the address family for IPv4.
Step 23	**send-community extended** **Example:** `switch(config-router)# send-community extended`	Sends the extended community attribute.
Step 24	**import l2vpn evpn reoriginate** **Example:** `switch(config-router)# import l2vpn evpn reoriginate`	Reoriginates the route with a new RT.
Step 25	**neighbor** *address* **remote-as** *number* **Example:** `switch(config-router)# neighbor 175.175.175.2 remote-as 1`	Defines the neighbor.
Step 26	**address-family ipv4 unicast** **Example:** `switch(config-router)# address-family ipv4 unicast`	Configures the address family for IPv4.
Step 27	**send-community extended** **Example:** `switch(config-router)# send-community extended`	Configures the community for BGP neighbors.

	Command or Action	Purpose
Step 28	**address-family ipv6 unicast** **Example:** `switch(config-router)# address-family ipv6 unicast`	Configures the IPv6 unicast address family. This is required for IPv6 over VXLAN with an IPv4 underlay.
Step 29	**send-community extended** **Example:** `switch(config-router)# send-community extended`	Configures the community for BGP neighbors.
Step 30	**address-family l2vpn evpn** **Example:** `switch(config-router)# address-family l2vpn evpn`	Configures the L2VPN address family.
Step 31	**send-community extended** **Example:** `switch(config-router)# send-community extended`	Configures the community for BGP neighbors.
Step 32	**import vpn unicast reoriginate** **Example:** `switch(config-router)# import vpn unicast reoriginate`	Reoriginates the route with a new RT.