



Configuring Seamless Integration of EVPN with L3VPN (MPLS LDP)

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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
- 24,000 ECMP routes is supported 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.

- The Egress RACL (e-RACL) TCAM and MPLS Extended ECMP features are mutually exclusive. To enable MPLS Extended ECMP (**hardware profile mpls extended-ecmp**) on the Cisco Nexus N9K-X9636C-RX line card, set the e-RACL TCAM carving to 0.
- 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

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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: <pre>switch# configure terminal</pre>	Enters global configuration mode.
Step 2	[no] install feature-set mpls Example: <pre>switch# install feature-set mpls</pre>	Installs the MPLS feature set. The no form of this command uninstalls the MPLS feature set.
Step 3	[no] feature-set mpls Example: <pre>switch# feature-set mpls</pre>	Installs the MPLS feature set. The no form of this command uninstalls the MPLS feature set.
Step 4	feature mpls l3vpn Example: <pre>switch# feature mpls l3vpn</pre>	Enables the MPLS Layer 3 VPN feature.
Step 5	feature mpls ldp Example: <pre>switch# feature mpls ldp</pre>	Enables the MPLS Label Distribution Protocol (LDP).
Step 6	mpls ip Example: <pre>switch# interface Ethernet1/1 switch(config-if)# mpls ip</pre>	Enables MPLS on the specified interfaces that are MPLS links.

	Command or Action	Purpose
Step 7	nv overlay evpn Example: switch(config)# nv overlay evpn	Enables the EVPN control plane for VXLAN.
Step 8	router bgp <i>number</i> Example: switch(config)# router bgp 100	Configures BGP. The value of the <i>number</i> 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 <i>route-map-name</i> 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 <i>address</i> remote-as <i>number</i> Example: switch(config-router)# neighbor 108.108.108.108 remote-as 22	Configures a BGP neighbor. The range of the <i>number</i> argument is from 1 to 65535.
Step 15	update-source <i>type/id</i> Example: switch(config-router-neighbor)# update-source loopback100	Specifies the source of the BGP session and updates.
Step 16	ebgp-multihop <i>ttl-value</i> Example: switch(config-router-neighbor)# ebgp-multihop 10	Specifies the multihop TTL for the remote peer. The range of <i>ttl-value</i> is from 2 to 255.
Step 17	address-family ipv4 unicast Example:	Configures the unicast sub-address family.

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

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