Configuring Seamless Integration of EVPN with L3VPN SRv6

This chapter contains the following sections:

About Seamless Integration of EVPN with L3VPN SRv6 Handoff

Data Center (DC) deployments have adopted VXLAN EVPN for its benefits such as EVPN control-plane learning, multitenancy, seamless mobility, redundancy, and easier POD additions. Similarly, the CORE is either an IP-based L3VPN SRv6 network or transitioning from the IPv6-based L3VPN underlay to a more sophisticated solution like IPv6 Segment Routing (SRv6) for IPv6. SRv6 is adopted for its benefits such as:

- Simpler traffic engineering (TE) methods

- Easier configuration

- SDN adoption

With two different technologies, one within the data center (DC) and one in the Core, there is traffic handoff from VXLAN to an SRv6 core that becomes a necessity at the DCI nodes, which sit at the edge of the DC domain and interface with the Core edge router.

Figure 1: BGP EVPN VXLAN to L3VPN SRv6 Handoff
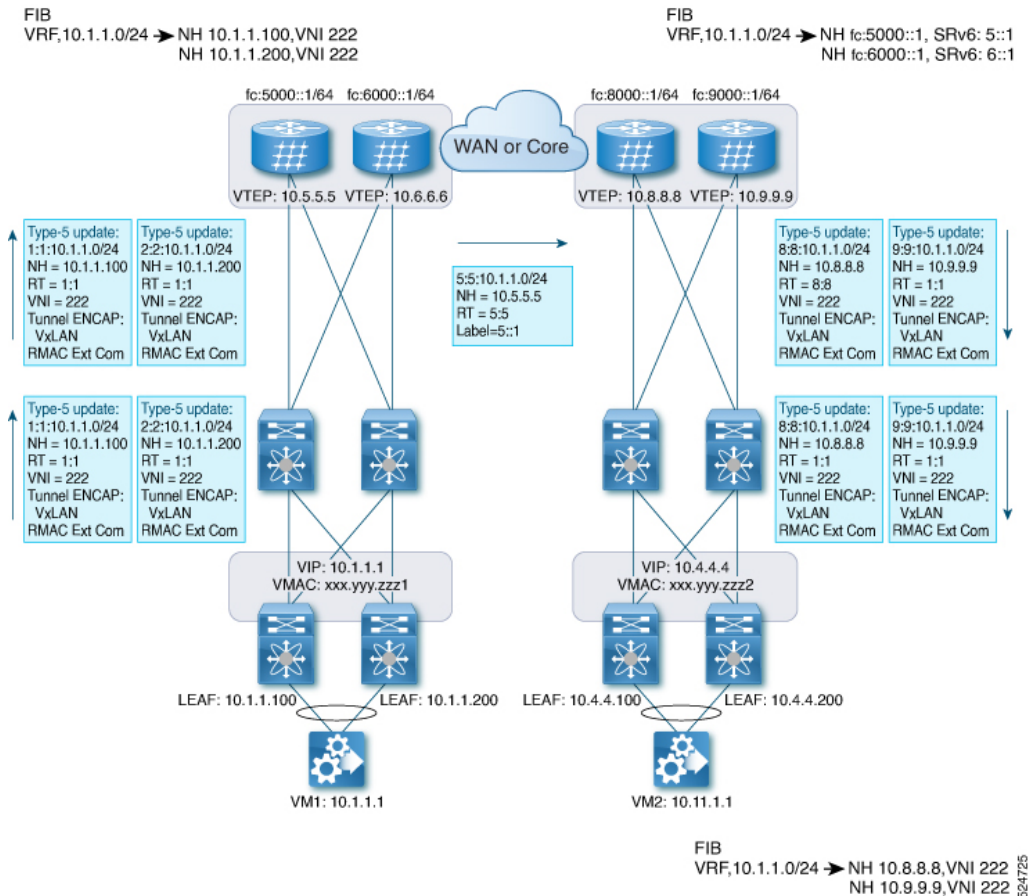
For traffic ingressing the EVPN-VxLAN fabric, the BGP EVPN routes get imported into a local VRF which contains the RD of the VRF. The bestpath is calculated and installed in the VRF's RIB, then inserted into the L3VPN SRv6 table. Along with the bestpath, the VRF's RD and per-VRF SRv6 SID are included. The L3VPN SRv6 route target is sent with the route, which is advertised to the L3VPN SRv6 peer.

For traffic egressing the EVPN VxLAN fabric, the BGP L3VPN SRv6 routes get imported into a local VRF which contains the RD of the VRF. The bestpath is calculated and installed in the VRF's RIB, then inserted into the EVPN table. Along with the bestpath, the VRF's RD and VNI are included. The EVPN-VXLAN route target is sent with the route, which is advertised to the EVPN-VxLAN peer.

Guidelines and Limitations for EVPN to L3VPN SRv6 Handoff

This feature has the following guidelines and limitations:

- The same RD import is supported for L3VPN SRV6 fabrics.

- The same RD import is not supported for EVPN VXLAN fabrics.

- On a handoff device, do not use the same RD import on the EVPN VXLAN side.

- Beginning with Cisco NX-OS Release 9.3(3), support is added for the following switches:

- Cisco Nexus C93600CD-GX

- Cisco Nexus C9364C-GX

- Cisco Nexus C9316D-GX

Importing L3VPN SRv6 Routes into EVPN VXLAN

The process of handing off routes from the L3VPN SRv6 domain to the EVPN VXLAN fabric requires configuring the import condition for L3VPN SRv6 routes. Routes can be either IPv4 or IPv6. This task configures unidirectional route advertisement into the EVPN VXLAN fabric. For bidirectional advertisement, you must explicitly configure the import condition for the L3VPN SRv6 domain.

Before you begin

Make sure you have a fully configured L3VPN SRv6 fabric. For more information, see "Configuring Layer 3 VPN over SRv6" in the *Cisco Nexus 9000 Series NX-OS SRv6 Configuration Guide*.

SUMMARY STEPS

1. **config terminal**
2. **router bgp** *as-number*
3. **neighbor bgp** *ipv6-address* **remote-as** *as-number*
4. **address family vpnv4 unicast** or **address family vpnv6 unicast**
5. **import l2vpn evpn route-map** *name* **[reoriginate]**

DETAILED STEPS

Procedure

	Command or Action	**Purpose**

Step 1	**config terminal**
	
	Example:
	
	`switch-1# config terminal`
	`Enter configuration commands, one per line. End`
	`with CNTL/Z.`
	`switch-1(config)#`
		Enter configuration mode.

Step 2	**router bgp** *as-number*
	
	Example:
	
	`switch-1(config)# router bgp 100`
	`switch-1(config-router)#`
		Enter BGP router configuration mode.

Step 3	**neighbor bgp** *ipv6-address* **remote-as** *as-number*
	
	Example:
	
	`switch-1(config-router)# neighbor fc:1234::1`
	`remote-as 200`
	`switch-1(config-router-neighbor)#`
		Enter BGP router configuration mode.

	Command or Action	Purpose

Step 4	**address family vpnv4 unicast** or **address family vpnv6 unicast**
	
	Example:
	
	`switch-1(config-router-neighbor)# address-family vpnv4 unicast`
	`switch-1(config-router-neighbor-af)#`
	
	Example:
	
	`switch-1(config-router-neighbor)# address-family vpnv6 unicast`
	`switch-1(config-router-neighbor-af)#`
		Configure the IPv4 or IPv6 address family for unicast traffic that the EVPN VXLAN will handoff to L3VPN SRv6.

Step 5	**import l2vpn evpn route-map** *name* [**reoriginate**]
	
	Example:
	
	`switch-1(config-router-neighbor-af)# import l2vpn evpn route-map test reoriginate`
	`switch-1(config-router-neighbor-af)#`
		Configure the IPv4 or IPv6 address family for unicast traffic that EVPN VXLAN will handoff to L3VPN SRv6. This command enables routes learned from L3VPN SRv6 domain to be advertised to the EVPN VXLAN domain. Using the optional **reoriginate** keyword advertises only domain-specific RTs.

What to do next

For bidirectional route advertisement, configure importing EVPN VXLAN routes into the L3VPN SRv6 domain.

Importing EVPN VXLAN Routes into L3VPN SRv6

The process of handing off routes from the EVPN VXLAN fabric to the L3VPN SRv6 domain requires configuring the import condition for EVPN VXLAN routes. Routes can be either IPv4 or IPv6. This task configures unidirectional route advertisement into the L3VPN SRv6 fabric. For bidirectional advertisement, you must explicitly configure the import condition for the EVPN VXLAN domain.

Before you begin

Make sure you have a fully configured L3VPN SRv6 fabric. For more information, see "Configuring Layer 3 VPN over SRv6" in the *Cisco Nexus 9000 Series NX-OS SRv6 Configuration Guide*.

SUMMARY STEPS

1. **config terminal**
2. **router bgp** *as-number*
3. **neighbor** *ipv6-address* **remote-as** *as-number*
4. **address-family l2vpn evpn**
5. **import vpn unicast route-map** *name* [**reoriginate**]

DETAILED STEPS

Procedure

	Command or Action	Purpose

Step 1	**config terminal**
	
	Example:
	
	`switch-1# config terminal`
	`Enter configuration commands, one per line. End`
	`with CNTL/Z.`
	`switch-1(config)#`
		Enter configuration mode.

Step 2	**router bgp** *as-number*
	
	Example:
	
	`switch-1(config)# router bgp 200`
	`switch-1(config-router)#`
		Enter BGP router configuration mode.

Step 3	**neighbor** *ipv6-address* **remote-as** *as-number*
	
	Example:
	
	`switch-1(config-router)# neighbor fc:1234::1`
	`remote-as 100`
	`switch-1(config-router-neighbor)#`
		Enter BGP router configuration mode.

Step 4	**address-family l2vpn evpn**
	
	Example:
	
	`switch(config-router-neighbor)# address-family`
	`l2vpn evpn`
	`switch(config-router-neighbor-af)#`
		Configure the address family for unicast traffic that EVPN VXLAN will handoff to L3VPN SRv6.

Step 5	**import vpn unicast route-map** *name* **[reoriginate]**
	
	Example:
	
	`switch-1(config-router-neighbor-af)# import vpn`
	`unicast route-map test reoriginate`
	`switch-1(config-router-neighbor-af)#`
		Configure the IPv4 or IPv6 address family for unicast traffic that EVPN VXLAN will handoff to L3VPN SRv6. This command enables routes learned from the EVPN VXLAN domain to be advertised to the L3VPN SRv6 domain. Using the optional **reoriginate** keyword advertises only domain-specific RTs.

What to do next

For bidirectional route advertisement, configure importing L3VPN SRv6 routes into the EVPN VXLAN fabric.

Example Configuration for VXLAN EVPN to L3VPN SRv6 Handoff

```
feature vn-segment-vlan-based
feature nv overlay
feature interface-vlan
nv overlay evpn
feature srv6
```

```
vrf context customer1
    vni 10000
    rd auto
    address-family ipv4 unicast
     route-target both 1:1
     route-target both auto evpn
    address-family ipv6 unicast
     route-target both 1:1
     route-target both auto evpn

segment-routing
  srv6
    encapsulation
     source-address loopback1
    locators
     locator DCI_1
      prefix café:1234::/64

interface loopback0
  ip address 10.1.1.0/32

interface loopback1
  ip address 10.1.1.1/32
  ipv6 address fc:4567::1/128

interface nve1
  source-interface loopback0
  member vni 10000 associate-vrf
  host-reachability protocol bgp

vlan 100
  vn-segment 10000

interface vlan 100
 ip forward
 ipv6 address use-link-local-only
 vrf member customer1

router bgp 65000
   segment-routing srv6
    locator DCI_1
   neighbor 10.2.2.2 remote-as 200
      remote-as 75000
      address-family l2vpn evpn
      import vpn route-map | reoriginate
   neighbor fc:1234::1 remote-as 100
      remote-as 65000
      address-family vpnv4 unicast
      import l2vpn evpn route-map | reoriginate
      address-family vpnv6 unicast
      import l2vpn evpn route-map | reoriginate

vrf customer
  segment-routing srv6
  alloc-mode per-vrf
  address-family ipv4 unicast
  address-family ipv6 unicast
```