



Service Redirection in VXLAN Fabrics

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Service Redirection in VXLAN EVPN Fabrics

Today, insertion of service appliances (also referred to as service nodes or service endpoints) such as firewalls, load-balancers, etc are needed to secure and optimize applications within a data center. This section describes the Layer 4-Layer 7 service insertion and redirection features offered on VXLAN EVPN fabrics that provides sophisticated mechanisms to onboard and selectively redirect traffic to these services.

Guidelines and Limitations for Policy-Based Redirect

The following guidelines and limitations apply to PBR over VXLAN.

- The following platforms support PBR over VXLAN:
 - Cisco Nexus 9332C and 9364C switches
 - Cisco Nexus 9300-EX switches
 - Cisco Nexus 9300-FX/FX2/FX3 switches
 - Cisco Nexus 9300-GX switches
 - Cisco Nexus 9504 and 9508 switches with -EX/FX line cards
- PBR over VXLAN doesn't support the following features: VTEP ECMP, and the **load-share** keyword in the **set {ip | ipv6} next-hop ip-address** command.

Enabling the Policy-Based Redirect Feature

To configure basic PBR, in cases where the advanced (and recommended) ePBR functions are not deployed, see the following sections:

- [Enabling the Policy-Based Redirect Feature, on page 2](#)
- [Configuring a Route Policy, on page 2](#)
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- [Configuration Example for Policy-Based Redirect, on page 4](#)

Before you begin

Enable the policy-based redirect feature before you can configure a route policy.

Procedure

	Command or Action	Purpose
Step 1	configure terminal Example: <code>switch# configure terminal</code>	Enters global configuration mode.
Step 2	[no] feature pbr Example: <code>switch(config)# feature pbr</code>	Enables the policy-based routing feature.
Step 3	(Optional) show feature Example: <code>switch(config)# show feature</code>	Displays enabled and disabled features.
Step 4	(Optional) copy running-config startup-config Example: <code>switch(config)# copy running-config startup-config</code>	Saves this configuration change.

Configuring a Route Policy

You can use route maps in policy-based routing to assign routing policies to the inbound interface. Cisco NX-OS routes the packets when it finds a next hop and an interface.



Note The switch has a RACL TCAM region by default for IPv4 traffic.

Before you begin

Configure the RACL TCAM region (using TCAM carving) before you apply the policy-based routing policy. For instructions, see the “Configuring ACL TCAM Region Sizes” section in the [Cisco Nexus 9000 Series NX-OS Security Configuration Guide, Release 9.2\(x\)](#).

Procedure

	Command or Action	Purpose
Step 1	configure terminal Example: switch# configure terminal	Enters global configuration mode.
Step 2	interface type slot/port Example: switch(config)# interface ethernet 1/2	Enters interface configuration mode.
Step 3	{ip ipv6} policy route-map map-name Example: switch(config-if)# ip policy route-map Testmap	Assigns a route map for IPv4 or IPv6 policy-based routing to the interface.
Step 4	route-map map-name [permit deny] [seq] Example: switch(config-if)# route-map Testmap	Creates a route map or enters route-map configuration mode for an existing route map. Use <i>seq</i> to order the entries in a route map.
Step 5	match {ip ipv6} address access-list-name name [name...] Example: switch(config-route-map)# match ip address access-list-name ACL1	Matches an IPv4 or IPv6 address against one or more IPv4 or IPv6 access control lists (ACLs). This command is used for policy-based routing and is ignored by route filtering or redistribution.
Step 6	set ip next-hop address1 Example: switch(config-route-map)# set ip next-hop 192.0.2.1	Sets the IPv4 next-hop address for policy-based routing.
Step 7	set ipv6 next-hop address1 Example: switch(config-route-map)# set ipv6 next-hop 2001:0DB8::1	Sets the IPv6 next-hop address for policy-based routing.
Step 8	(Optional) set interface null0 Example: switch(config-route-map)# set interface null0	Sets the interface that is used for routing. Use the null0 interface to drop packets.

	Command or Action	Purpose
Step 9	(Optional) copy running-config startup-config Example: <pre>switch(config-route-map)# copy running-config startup-config</pre>	Saves this configuration change.

Verifying the Policy-Based Redirect Configuration

To display the policy-based redirect configuration information, perform one of the following tasks:

Command	Purpose
show [ip ipv6] policy [name]	Displays information about an IPv4 or IPv6 policy.
show route-map [name] pbr-statistics	Displays policy statistics.

Use the **route-map map-name pbr-statistics** command to enable policy statistics. Use the **clear route-map map-name pbr-statistics** command to clear these policy statistics.

Configuration Example for Policy-Based Redirect

Perform the following configuration on all tenant VTEPs, excluding the service VTEP.

```
feature pbr

ipv6 access-list IPV6_App_group_1
10 permit ipv6 any 2001:10:1:1::0/64

ip access-list IPV4_App_group_1
10 permit ip any 10.1.1.0/24

ipv6 access-list IPV6_App_group_2
10 permit ipv6 any 2001:20:1:1::0/64

ip access-list IPV4_App_group_2
10 permit ip any 20.1.1.0/24

route-map IPV6_PBR_Appgroup1 permit 10
 match ipv6 address IPV6_App_group_2
 set ipv6 next-hop 2001:100:1:1::20 (next hop is that of the firewall)

route-map IPV4_PBR_Appgroup1 permit 10
 match ip address IPV4_App_group_2
 set ip next-hop 10.100.1.20 (next hop is that of the firewall)

route-map IPV6_PBR_Appgroup2 permit 10
 match ipv6 address IPV6_App_group1
 set ipv6 next-hop 2001:100:1:1::20 (next hop is that of the firewall)

route-map IPV4_PBR_Appgroup2 permit 10
 match ip address IPV4_App_group_1
 set ip next-hop 10.100.1.20 (next hop is that of the firewall)
```

```

interface Vlan10
! tenant SVI appgroup 1
vrf member appgroup
 ip address 10.1.1.1/24
 no ip redirect
 ipv6 address 2001:10:1:1::1/64
 no ipv6 redirects
 fabric forwarding mode anycast-gateway
ip policy route-map IPV4_PBR_Appgroup1
ipv6 policy route-map IPV6_PBR_Appgroup1
interface Vlan20
! tenant SVI appgroup 2
vrf member appgroup
 ip address 20.1.1.1/24
 no ip redirect
 ipv6 address 2001:20:1:1::1/64
 no ipv6 redirects
 fabric forwarding mode anycast-gateway
ip policy route-map IPV4_PBR_Appgroup2
ipv6 policy route-map IPV6_PBR_Appgroup2

```

On the service VTEP, the PBR policy is applied on the tenant VRF SVI. This ensures the traffic post decapsulation will be redirected to firewall.

```
feature pbr
```

```

ipv6 access-list IPV6_App_group_1
10 permit ipv6 any 2001:10:1:1::0/64

```

```

ip access-list IPV4_App_group_1
10 permit ip any 10.1.1.0/24

```

```

ipv6 access-list IPV6_App_group_2
10 permit ipv6 any 2001:20:1:1::0/64

```

```

ip access-list IPV4_App_group_2
10 permit ip any 20.1.1.0/24

```

```

route-map IPV6_PBR_Appgroup1 permit 10
 match ipv6 address IPV6_App_group_2
 set ipv6 next-hop 2001:100:1:1::20 (next hop is that of the firewall)

```

```

route-map IPV6_PBR_Appgroup permit 20
 match ipv6 address IPV6_App_group1
 set ipv6 next-hop 2001:100:1:1::20 (next hop is that of the firewall)

```

```

route-map IPV4_PBR_Appgroup permit 10
 match ip address IPV4_App_group_2
 set ip next-hop 10.100.1.20 (next hop is that of the firewall)

```

```

route-map IPV4_PBR_Appgroup permit 20
 match ip address IPV4_App_group_1
 set ip next-hop 10.100.1.20 (next hop is that of the firewall)

```

```

interface vlan1000
!L3VNI SVI for Tenant VRF
vrf member appgroup
ip forward
ipv6 forward
ipv6 ipv6 address use-link-local-only
ip policy route-map IPV4_PBR_Appgroup
ipv6 policy route-map IPV6_PBR_Appgroup

```

