Proportional Multipath for VNF for Segment Routing

About Proportional Multipath for VNF for Segment Routing

In Network Function Virtualization Infrastructures (NFVi), service networks (Portable IPs) are routed by Virtual Network Functions (VNFs). The VNFs, also referred to as portable IP-Gateway (PIP-GW) routes the data packets to and from the VMs in the VNF. The Proportional Multipath for VNF for Segment Routing feature enables advertising the VNF of a service network (PIP) in the EVPN address-family. The IP address of the VNF is encoded in the "Gateway-IP Address" field of the EVPN IP Prefix Route NLRI advertisement of a service network.

By advertising the IP address of the VNFs, ingress nodes in the EVPN fabric recursively resolve the VNF IP address to the leaf attached to the VNF, which could be the same node that advertises the service network (PIP).

Route-injectors are BGP protocols that inject routes in the IPv4 or IPv6 AF. In this case, the route-injector injects routes to the VMs whose next hop is set as VNFs.

Unlike a route-injector, VNFs can participate in a routing protocol to advertise the VM reachability. The supported protocols are eBGP, IS-IS, and OSPF.

Enabling Proportional Multipath for VNF for Segment Routing

You can enable the Proportional Multipath for VNF for Segment Routing feature to redistribute routes for IGP or static routes by preserving the next-hop paths. You can then export and advertise the gateway-IP for the reoriginated EVPN type-5 routes.

In Cisco NX-OS Release 9.3(5), only one VNF can service a VM.

Before you begin

Do the following:

- Install and enable the MPLS feature set using the **install feature-set mpls** and **feature-set mpls** commands.

• Enable the MPLS segment routing feature.

Procedure

	Command or Action	Purpose
Step 1	**configure terminal** **Example:** switch# **configure terminal** **switch(config)#**	Enter global configuration mode.
Step 2	**route-map** *export-l2evpn-rtmap* **permit** *10* **Example:** switch(config)# **route-map** **export-l2evpn-rtmap permit 10**	<<need description>>
Step 3	**match ip address prefix-list** *pip-pfx-list* **Example:** switch(config-route-map)# **match ip** **prefix-list vm-pfx-list**	Defines the prefixes that must be advertised with PIP-GW as the gateway.
Step 4	**set evpn gateway-ip use-nexthop** **Example:** switch(config-route-map)# **set evpn** **gateway-ip use-nexthop**	Defines specific routes to advertise the gateway-ip.
Step 5	**vrf context** *VRF_Name* **Example:** switch(config-route-map)# vrf context vrf switch(config-route-map)# address-family ipv4 unicast switch(config-route-map)# export map export-l2evpn-rtmap	Applies the route map to the vrf context.
Step 6	**address-family ipv4 unicast** **Example:** switch(config-route-map)# address-family ipv4 unicast switch(config-route-map)# export map export-l2evpn-rtmap	Applies the route map to the vrf context.
Step 7	**export map** *export-l2evpn-rtmap* **Example:** switch(config-route-map)# export map export-l2evpn-rtmap	Applies the route map to the vrf context.

	Command or Action	Purpose
Step 8	**router bgp** *number* **Example:** switch(config)# **router bgp 100**	Configure BGP.
Step 9	**vrf** *VRF_Name* **Example:** switch(config-route-map)# vrf vrf3	Applies the route map to the vrf context.
Step 10	**address-family ipv4 unicast** **Example:** switch(config-router)# **address-family ipv4 unicast**	Configure address family for IPv4.
Step 11	**export-gateway-ip** **Example:** switch(config-route-map)# **export-gateway-ip**	Exports and advertises the gateway-ip to reconnect the EVPN type-5 routes. **Note** The export gateway-ip and set the EVPN gateway configurations can be performed simultaneously. If you configure them simultaneously, all prefixes are exported with the gateway-ip.