EVPN layer-3 multi-homing load-balancing

draft-mackenzie-bess-evpn-l3mh-proto

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IETF-111

July, 2021

Overview

- Bring higher network availability and load balancing benefits of EVPN MC-LAG to various L3 services
  - No need for ICCP, LDP, or ICL Link between PEs
- Transparent to a CE device, and uses existing BGP L3 service control plane
- Signalling will be limited to the redundant service PEs sharing an ESI.
- Will synchronize ARP/ND, multicast Join/Leave, and customer IGP routes

L3 Service Sync

L3 VPN
MPLS|SRv6|VxLAN

PE1

PE2

ESI-x

Active

Active

LAG

CE
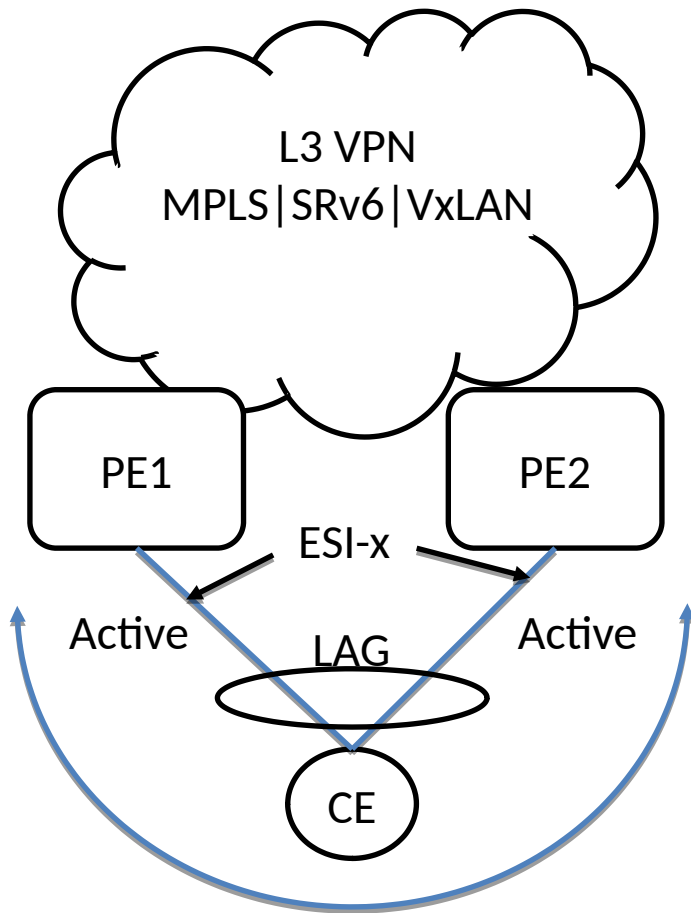
ARP/ND, IGMP Sync

- EVPN Instance per L3-VRF
- The layer-3 VRF is derived from the matching EVI
- The main interface is derived from the ESI
- The VLAN / sub-interface is derived from the AC-ID provided in the Attachment-Circuit-ID extended community

Route Types

- ARP/ND Sync
  - CE may hash ARP/ND response to single PE
  - Both PEs attracting traffic. Adjacency required for FWD
  - RT-2 IP/MAC (MAC only not needed)
- IGMP Sync
  - CE may hash IGP join to non Multicast DR
  - RT-7, RT-8
- Customer IGP route Sync
  - CE IGP protocol will form adjacency with one PE
  - Cannot take advantage of other PE for remote LB
  - RT-5

No new signaling required

- EVI-RT Extended Community
  - I-D.ietf-bess-evpn-igmp-mld-proxy
- Attachment Circuit ID Extended Community
  - I-D.sajassi-bess-evpn-ac-aware-bundling
- **Applicable to RT-2, RT-5, RT-7 and RT-8**

Advantages

- Open standards based per interface all-active redundancy
  - Eliminates the need to run legacy solutions with ICCP and LDP.
- Benefits over legacy solutions
  - Fast convergence with mass-withdraw
- Removes the burden of requiring ICL link
- Agnostic of underlay technology (MPLS, VXLAN, SRv6)
- Agnostic of associated services (L3, L3-VPN)
- Signaling already defined in existing EVPN RFCs and drafts
  - I-D.ietf-bess-evpn-igmp-mld-proxy
  - I-D.sajassi-bess-evpn-ac-aware-bundling
  - I-D.ietf-bess-evpn-prefix-advertisement

Next Steps

❑ Request WG feedback and comments

❑ Further study into BGP PE to CE protocol support