

## **EVPN Layer-3 Multi-Homing load-balancing**

draft-mackenzie-bess-evpn-l3mh-proto  
M. MacKenzie(cisco), P. Brissette (cisco), S. Matsushima (Softbank),  
J. Rabadan (Nokia), W. Lin (Juniper)

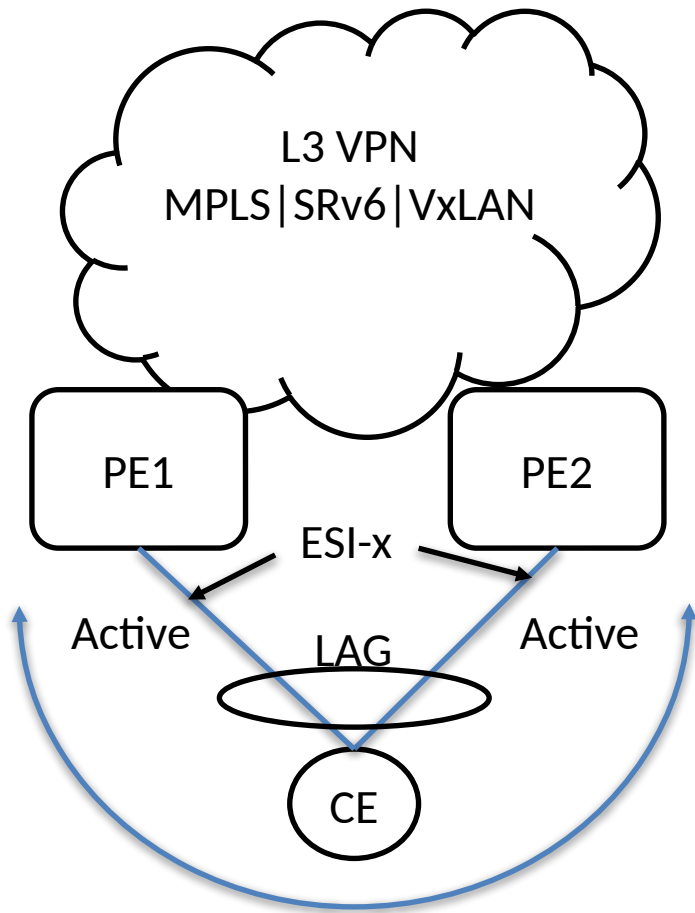
# **IETF-115**

November, 2022

# Overview

- Bring higher network availability and load balancing benefits of EVPN multi-homing toolset 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 limited to the redundant service PEs sharing an ESI.
- Synchronization of ARP/ND, multicast Join/Leave, and customer IGP routes

# L3 Service Sync



ARP/ND, IGMP Sync

- Synchronization per layer-3 VRF
- 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 any sync route e.g., 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
  - RFC-9251 (igmp/mld routes)
  - RFC-9136 (prefix route)
  - I-D.sajassi-bess-evpn-ac-aware-bundling

# Next Steps

- ❑ Request WG feedback and comments
- ❑ Further study into BGP PE to CE protocol support