draft-brissette-bess-evpn-l2gw-proto
Requirements

• Support L2 Access Protocols into EVPN core (incl. EVPN-IRB).
  • (M)STP 802.1d, G.8032, MPLS-TP, MST-AG, REP-AG, etc.

• L2 gateways largely unaware of the access network topology but
  • Access network is running an L2 protocol breaking loops
  • Access network is segmented by design

• Solution MUST support:
  • Optimal forwarding at L2 and L3
  • Fast-convergence
  • Scalability
  • Anycast IRB support
Challenges with existing load-balancing modes

**All-Active**
- creates L2 and L3 aliasing resulting in remote ECMP towards “wrong” PE
- L2 BUM isolated switches
- TCN propagation blocked by ESI split-horizon label filtering
Challenges with existing load-balancing modes

**Single-Active**
- Isolates network segments
- TCN propagation blocked by port state or ESI split-horizon label filtering
Single-Flow-Active

- Same ESI between peering PEs:
  - Ethernet-segment procedures still apply
- ESI-Label BGP extcomm extension to signal
  
  \[2:0]- \quad 000 = \text{all-active}, \quad 001 = \text{single-active}, \quad 010 = \text{single-flow-active}, \quad \text{other} = \text{unused}

  \[7:3]- \text{Reserved}

- Peering PE in SFA mode, MUST:
  - not perform ESI Split-Horizon filtering
  - enable MAC-Mobility within same ESI
- Remote PE for remote ESI in SFA mode:
  - MUST disable aliasing (at Layer-2 and Layer-3)
  - SHOULD pre-program backup per MAC entry
Single-Flow-Active: TCN

Peering PEs, upon receiving TCN from access
- Perform local MAC flush
  - MAY result in MAC RT-2 withdraws
- TCN propagation via dedicated PW
  - EVPN-VPWS well-suited for this
- Relay TCN between peering PEs and also forward back into access
- Peering access PEs MAY map TCN into EVI/EAD “Flush” extcomm with new Sequence ID