Objectives

- To improve load-balancing for IP routing in symmetric IRB by extending EVPN aliasing procedures to IP forwarding for symmetric IRB
  - Symmetric IRB only maintains ARP entries for its locally connected hosts. Thus, it only performs L3 forwarding for remote hosts on ingress PEs;
  - Whereas, asymmetric IRB maintains ARP entries for remote hosts and performs both L3+L2 forwarding for remote hosts. Thus it leverages L2 aliasing procedures for its load-balancing
PEs advertise in BGP the ESIs of local multi-homed Ethernet Segments.

- All-Active Redundancy Mode indicated

When PE learns MAC address on its AC, it advertises the MAC in BGP along with the ESI of the Ethernet Segment from which the MAC was learnt.

Remote PEs can load-balance traffic to a given MAC address across all PEs advertising the same ESI.

**Challenge:**
How to load-balance traffic towards a multi-homed device across multiple PEs when MAC addresses are learnt by only a single PE?

**Route Type** | **Usage** | **Benefits**
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Ethernet A-D Route (Type 1) | • Advertising Split-Horizon Label • Aliasing • Mass Withdraw of addresses • SH/AA MH Indication | • Loop avoidance – even transient • Efficient load • Fast convergence • balancing • Per-site policy

**Challenge:**
How to load-balance traffic towards a multi-homed device across multiple PEs when MAC addresses are learnt by only a single PE?
L2 Unicast Forwarding and Aliasing
Aliasing for IP addresses

- Basically repeat RFC 7432 aliasing procedure for L3 EVI (instead of L2 EVI)
- Besides advertising Ethernet AD per EVI route for L2 EVI (MAC-VRF), also advertise it for L3 EVI (IP-VRF)
- This Eth AD per EVI is advertised with RT corresponding to the L3 EVI (IP-VRF)
- Remote PE uses the alias route, to build next hop adjacencies for that ES/EVI
- Both MAC/IP route and Eth AD/EVI route needs to be validated by Eth AD/ES route as before
Mass withdraw upon failure

- Just as before, when an access link (or node) failure happens, the Eth AD per ES route corresponding to the failed ES is withdrawn.
- This time around this route withdraw is sent with not only RTs for L2 EVI but also RTs for L3 EVI.
- The receiving PEs use this route to trim down their next hop lists for both MAC addresses (using L2 RTs) and IP addresses (using L3 RTs).
Next Step

- Discussions on the Mailing list