Background

- [RFC9026] defines UMH Selection Based on Provider-Tunnel Status for MVPN fast failover.
  - “Hot root standby” will result in traffic redundancy throughout the backbone network.
  - It is somewhat complicated for the downstream PEs to find an efficient and accurate method to determine the "status" of a P-tunnel.
    - Discontinuous multicast flow
    - Lack of effective BFD capability
    - Remote upstream fault need to be perceived faster and more directly
- The idea: an upstream fast failover consideration.
  - Upstream PEs perform a Designated-Forwarder selection to prevent traffic redundancy in the P-tunnel.
  - Downstream PEs perform “ANYCAST” RPF checking.
  - Upstream DF status described here is per-VPN, and could be more refined (per-leaf or per-flow) for further use case with stateless multicast underlay (IR/BIER) adopted.
Upstream Designated Forwarder Selection

- Map the role of the VRRP routers to that of the upstream PEs in MVPN dual homing upstream PEs.

  - Virtual Router -- pair of dual homing upstream PEs
  - Virtual Router Master -- the primary upstream PE
  - Virtual Router Backup -- the standby upstream PE
Upstream Designated Forwarder Selection

- Both the primary and standby PEs install VRF PIM state corresponding to BGP Source Tree Join route and send C-Join messages to the CE toward C-S.

- (C-S,C-G) flow arrive at both the primary and the standby upstream PEs.

- Only the primary upstream PE (Virtual Router Master according to VRRP) forwards (C-S,C-G) flow to downstream PEs through a P-tunnel.

- Other private implementations for DF selection (which should be deployed per VRF) could also be optional.
Downstream PE Behavior

- Standby C-multicast route advertising described in [RFC9026] is still necessary.
- Standby PE Community is no longer necessary.
- Downstream PEs recognize the Upstream DF Selection behavior (by using some provisioning methods) and execute the “ANYCAST” RPF checking.
- Downstream PEs accept the C-flow from any of candidate upstream PEs and forward it to CEs, the upstream DF selection prevents the C-flow duplication in backbone.
Next Steps

• Seek for comments and discussions.
Thanks