MVPN using Segment Routing and BIER for High Reachability Multicast Deployment

draft-geng-bier-sr-multicast-deployment-00

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Problem Statement

• PIM has a high reachability.
  • Only require the Multicast source address is reachable.

• mLDP has a high reachability.
  • Only require the mLDP Root IP address is reachable.

• BIER has a poor reachability.
  • Segmented MVPN introduces per-flow states on boundary routers.
  • It has a limited scope for IGP to advertise the BIER information.
  • Sending to many Sets (SIs) is something like Ingress Replication + BIER.

• Considering a highly reachable SR(IR) + BIER for Un-Segmented MVPN.
Solution overview

- SR for high reachability, stateless.
- BIER for bandwidth saving, stateless too.
- A hybrid P2MP tunnel — SR+BIER, or BIER over SR+hop-by-hop.
- MVPN is deployed end-to-end.

Figure 1: MVPN using BIER and SR for E2E deployment
Solution overview: another diagram

• ABR2a and ABR2b are expected to use the same BIER Label.
• So Use SRGB Label for BIER forwarding in Area2.

Figure 2: MVPN using BIER and SR for E2E deployment and protection
• Use SRGB label for BIFT building.
  • ‘static’ config the ‘anchor bier label’ on PE21/PE22/PE23 for adv LeafAD.
  • Anycast BIER label for two anchors per-subdomain (next page).

• Forwarding Plane view: BIER over SR + BIER hop-by-hop.
• Use Domain-wide BIFT-ID for BIFT building.
  • ‘static’ config the ‘anchor bier BIFT-id’ on PE21/PE22/PE23 for adv LeafAD.
  • Anycast BIER BIFT-id for two anchors per-subdomain. e.g, ABR2a/ABR2b.
• Data Plane : BIER IPv6 over SRH + BIER IPv6 hop-by-hop.
comments and suggestions are welcome
Thank you !