

MLDP Signaling over BIER

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The Background

- mLDP signaling over BIER via Targeted LDP [RFC 7060]
 - Extending the work of signaling legacy multicast protocols over a BIER core.
- Some MNO/MSO providers are creating the Next Generation Converge Core for wireless and wireline services.
 - “Lean core”, Simplified underlay IGP and overlay BGP without any of the legacy MPLS protocols, in short relying on Segment Routing and BIER.
 - BIER is ideal for these network but extending it to all PEs (1000s) is operationally difficult and not necessarily desired. The access networks design are proven and work.
 - Operators are concentrating with upgrade of the core historically
- Problem:
 - Gradual upgrade to BIER starting with a desired network segment (Mostly Core).
 - Minimum interruption and disruption to mLDP portion of the network from signaling, services and image upgrade point of view

mLDP Signaling over BIER

- Use TLDP as per RFC 7060 to signal mLDP over BIER
- These procedures can be used for point-to-multipoint and multipoint-to-multipoint LSPs established via mLDP RFC 6388
- TLDP sessions between BIER edge routers and is used for signaling mLDP FEC over a BIER domain
- TLDP can be pre-established manually or initiated automatically on the IBBR

IBBR Procedure

- HAS a Targeted LDP established with EBBR closest to the ROOT of the FEC
- In case of a recursive FEC the ROOT is the Outer ROOT in the FEC
- Follow procedures in RFC 7060 in particular section 6 “targeted mLDP with Multicast Tunneling”
- For automatic initiation of TLDP between IBBR and EBBR procedures in RFC 7060 or draft bier-ietf-pim-signaling can be used to find the EBBR on IBBR base on the root IP address of the FEC

EBBR Procedures

- Provides an upstream assigned label for arriving FEC over T-LDP and advertises it to the IBBR
- The label assigned by EBBR can't be Implicit Null, to ensure identity of each P2MP/MP2MP tunnel in BIER domain is unique
- The labels can be assigned from a domain-wide Common Block (DCB) as per [ID.zzhang-bess-mvpn-evpn-aggregation-label]
- The interface ID TLV [RFC6389] includes a new BIER sub-domain sub-tlv (type TBD)
- EBBR should track all arriving FECs and use the information to build the BIER Header for each set of common FECs.

Datapath Traffic Flow

- On BFIR when the MPLS label for P2MP/MP2MP LSP arrives from the source, a lookup in ILM table is performed and label is swapped with tLDP upstream assigned label.
- The BFIR will build the BIER Header based on all the BFER that are interested in this P2MP/MP2MP FEC.
- BFIR will set the BIERHeader.Proto = MPLS and forward the packet into Bier domain
- On BFER, based on the BIERHeader.Proto the BIER header will be removed and a lookup in the ILM for the upstream assigned label is performed the corresponding action is executed.
- It should be noted as that BFIR and BFER can be ILER and ELER respectively.

Next Steps

- Asking for WG adaptation