

BIER in BABEL

draft-zhang-bier-babel-extensions-01

IETF99# Prague

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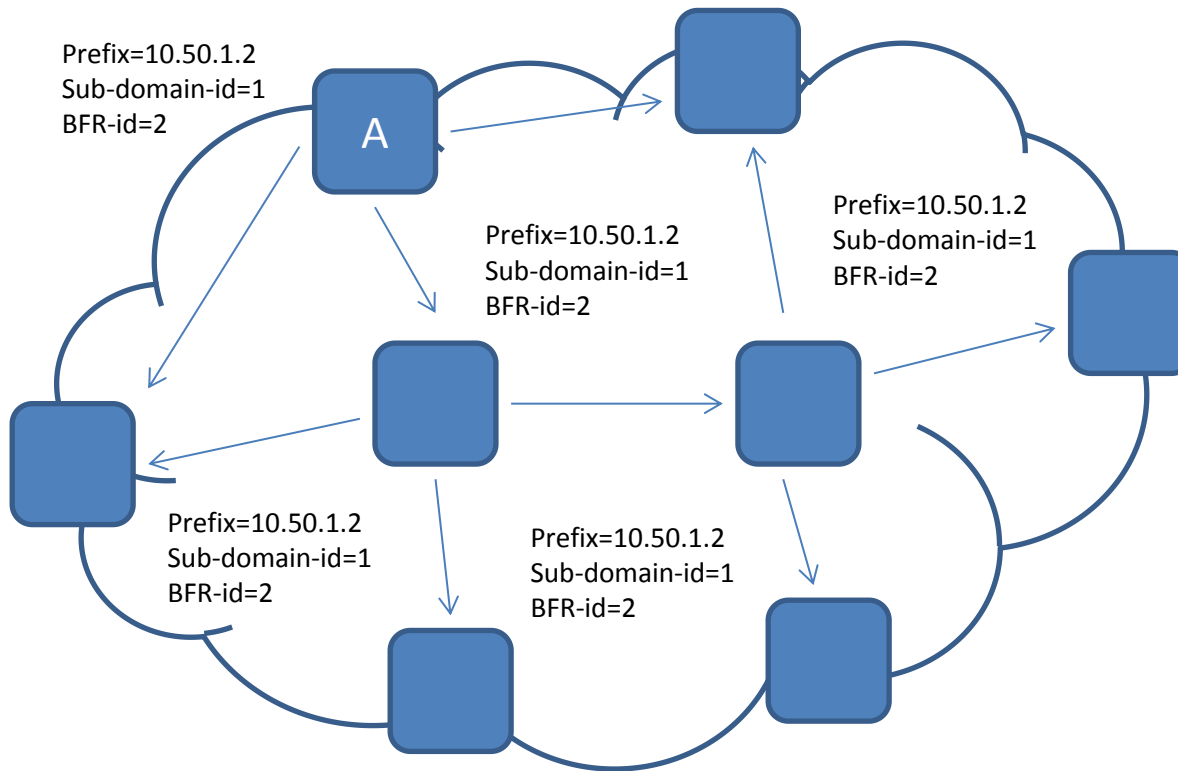
BIER

- Bit Indexed Explicit Replication
- BIER introduces a novel architecture for multicast packet forwarding. It does not require a signaling protocol to explicitly build multicast distribution trees, nor does it require intermediate nodes to maintain any per-flow state.
- In order to forward BIER encapsulated packet, some BIER key parameters should be conveyed by the routing protocol.
- The key parameters include: Sub-domain-id, BFR-id, MPLS info, BSL, etc.

Babel

- Babel defines a distance-vector routing protocol that operates in a robust and efficient fashion both in ordinary wired as well as in wireless mesh networks.
- Babel use several TLVs to carry the routing information. And Babel can also use a new sub-TLV to convey BIER information. This document defines a way to convey BIER information in Babel.

BIER in Babel



BIER Babel extension is used to build BIER forwarding plane.

BMLD is used to convey multicast information between edge nodes.

Then multicast flows can be forwarded from ingress edge node to egress edge nodes.

- The BIER information can be carried in Babel update message.
- The mandatory bit of BIER sub-TLV should be set to 0. If a router cannot recognize a sub-TLV, the router MUST ignore this unknown sub-TLV.

BMLD: BIER Ingress Multicast Flow Overlay using Multicast Listener Discovery Protocols
draft-ietf-bier-mld-00

BIER in Babel

- BIER sub-TLV

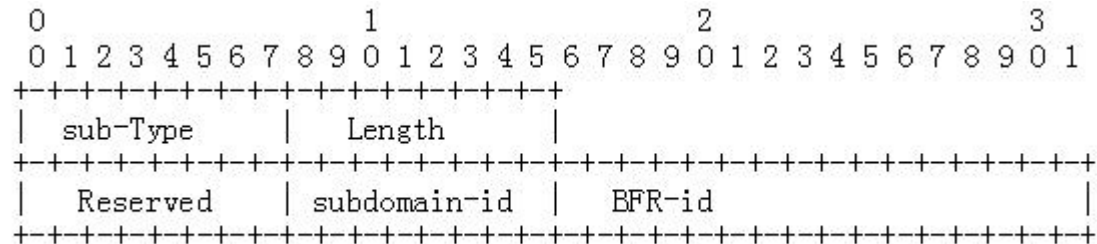


Figure 1: BIER sub-TLV

Two sub-sub-TLVs are carried as payload of BIER sub-TLV.

The length of BIER sub-TLV:
Include the length of BIER sub-TLV and potential length of the two sub-sub-TLVs.

- BIER MPLS Encapsulation sub-sub-TLV

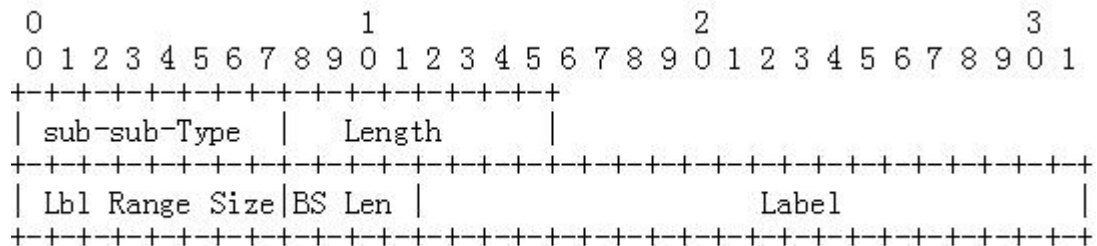


Figure 3: MPLS Encapsulation sub-sub-TLV

- Optional BIER sub-domain BSL conversion sub-sub-TLV

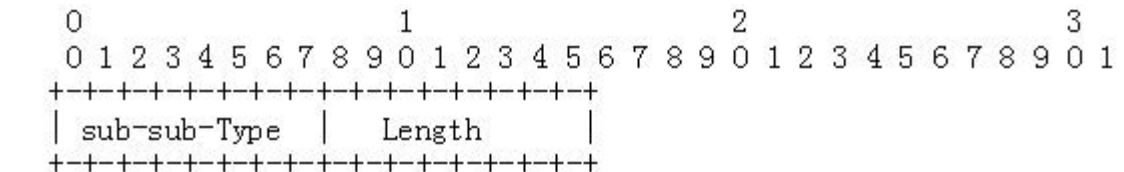


Figure 4: BSL conversion sub-sub-TLV

Information

Existed IGP/BGP extension of BIER:

- BIER support via ISIS (draft-ietf-bier-isis-extensions)
- OSPF Extensions for BIER (draft-ietf-bier-ospf-bier-extensions)
- BGP Extensions for BIER (draft-ietf-bier-idr-extensions)

Still to solve:

- BIER architecture does not rely on all routers in a domain performing BFR procedures. How to support tunnels that will allow to tunnel BIER across such routers in Babel is for further study.

Implementation of BIER in Babel:

- https://github.com/SandyZhang2015/BIER_in_Babel

BIER in BABEL

- Any comments are welcome 😊
- WG adoption?

Thanks!