BIER in BABEL
draft-zhang-bier-babel-extensions-02

IETF106# Singapore

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Motivation

Using BABEL protocol as BIER underlay protocol to build BIER forwarding layer

- BIER is a new technology which can achieve multicast forwarding without explicitly multicast distribution trees building, and it doesn't 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 BIER encapsulation functions include: MPLS, Ethernet, IPv6
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.
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.

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.

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**BMLD:** BIER Ingress Multicast Flow Overlay using Multicast Listener Discovery Protocols draft-ietf-bier-mld
**BIER in Babel signaling**

- **BIER sub-TLV**

  Different sub-sub-TLVs are carried as payload of BIER sub-TLV. *e.g.* MPLS, Ethernet.

- **BIER MPLS Encapsulation sub-sub-TLV**

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

Existed IGP/BGP extension of BIER:

- BIER support via ISIS (RFC8401)
- OSPF Extensions for BIER (RFC8444)
- 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 😊

Thanks!