

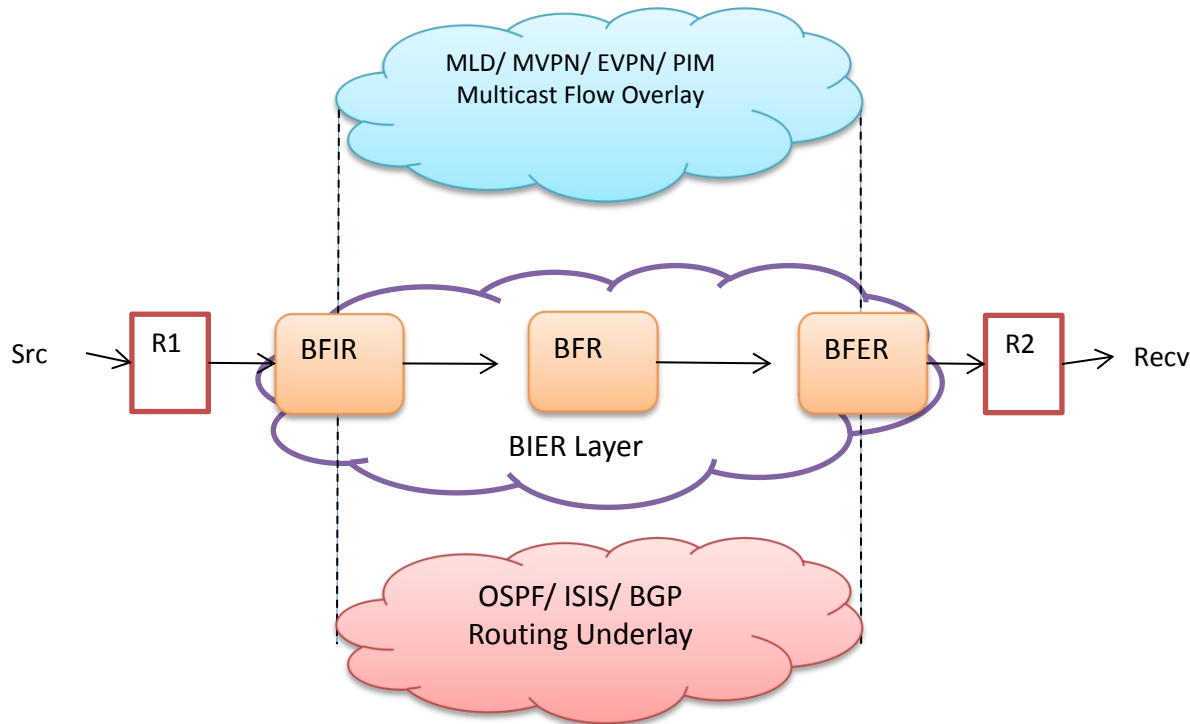
BIER in BABEL

draft-zhang-bier-babel-extensions-07

IETF114# Joint MANET/BABEL/ROLL

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BIER: Bit Index Explicit Replication (RFC8279)



BIER is a new technology that achieves efficient multicast forwarding without explicit tree building. Intermediate nodes do not maintain any per-flow state

BIER forwarding is based on a BitString in a BIER Header that follows a L2 or a tunnel header (e.g., MPLS, Ethernet, IPv6 or any tunnel whose encapsulation header can indicate that BIER header follows). Each bit indicates an edge router that needs to receive the traffic.²

Three Layers in BIER Architecture

Multicast Flow Overlay

For ingress BIER routers to determine what BitString to use and egress BIER routers to determine how to continue to forward after removing BIER header

BIER Layer

Forward BIER packets based on BIER forwarding tables (BIFTs)

Routing Underlay

BIER forwarding is through a routing underlay – along the paths to the egress BIER routers. BIFTs are built based on routing extensions.

BIER is perfect for Babel Networks

- No multicast tree signaling/state needed
- BIER can work with any routing underlay protocols to signal BIER information used to calculate BIFTs
- BIER can work with any L2 or tunnel encapsulations
- If multicast traffic rate is not high, software-based BIER forwarding can be used

BIER Signaling in Babel

- Babel route advertisements for BIER router loopback addresses carry TLVs for BIER information used for BIFT calculation
- BIER traffic can be tunneled over BIER-incapable nodes
 - Any kind of tunnels can be used
 - Babel being a distance-vector routing protocol, mechanisms used in BGP-BIER signaling will be borrowed for this purpose
 - To be added

- Comments appreciated!
- Open Source implementation:
 - https://github.com/SandyZhang2015/BIER_in_Babel