Extensions for BIER-TE with MPLS and non-MPLS Encapsulation

draft-zwx-bier-te-isis-extensions draft-zwx-bier-te-ospf-extensions draft-zwx-bier-te-ospfv3-extensions

IETF114# BIER

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Background

- draft-ietf-bier-te-arch:
 - BIER-TE replaces in-network autonomous path calculation by explicit paths calculated offpath by the BIER-TE controller host.
 - In BIER-TE every BitPosition of the BitString of a BIER-TE packet indicates one or more adjacencies - instead of a BFER as in BIER.
 - BIER-TE in each BFR has no routing table but only a BIER-TE Forwarding Table (BIFT) indexed by SI:BitPosition and populated with only those adjacencies to which the BFR should replicate packets to.

All the BIER encapsulation methods apply to BIER-TE:

- MPLS
- Ethernet
- BIERin6

BIER-TE (Tree Engineering for Bit Index Explicit Replication)

```
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
                                                                       ....> BFR3 <....
            BIFT-id
                                                                     (Rtr2)
                                                                                               BFR<sub>6</sub>
                                                           BFR1
                                                                                    (Rtr5)
|Nibble | Ver |
                                 Entropy
                                                                       ....> BFR4 <....
OAM Rsv
                                                                          p2 p4 p8
                    Proto
BitString (first 32 bits)
                                                           (simplified) BIER-TE Bit Index Forwarding Tables (BIFT):
                                                                  p1 -> forward routed() to BFR3
                                                           BFR1:
                                                                  p2 -> forward routed() to BFR4
              BitString (last 32 bits)
                                                                  p3 -> local_decap()
                                                           BFR3:
                                                                     -> forward routed() to BFR6
```

- The composition of BitString is the link BP.
- The forwarding table seems like BIER, but it's different.
- The BIFT-id field indicates the BIFT of the packet.

BIFT-id signaling

Take IS-IS as an example.

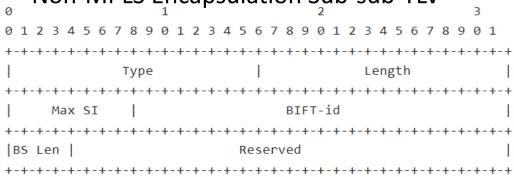
Follow the BIER-TE info sub-tlv defined in [ietf-bier-te-isis].

The signaling in OSPF and OSPFv3 is similar.

MPLS Encapsulation Sub-sub-TLV

0	1	2	3
0 1 2 3 4 5 6 7	8 9 0 1 2 3 4	5 6 7 8 9 0 1 2 3	4 5 6 7 8 9 0 1
+-+-+-+-+-+	-+-+-+-+-+-	+-+-+-+-+-+-+-+	+-+-+-+-+-+-+
1	Гуре	Le	ength
+-+-+-+-+-+	-+-+-+-+-+-	+-+-+-+-+-+-+-+-+-	-+-+-+-+-+-+-+
Max SI		Label	1
+-			
BS Len		Reserved	
+-			

Non-MPLS Encapsulation Sub-sub-TLV



BIER-TE IPv6 Encapsulation

Sub-sub-sub-Tlv



• Any comments ©

Thanks!