BIER-TE Encapsulation and Extension

Rachel Huang, Nu Xia, Naiwen Yang
ietf100@Singapore
Motivation

- BIER-TE uses every BitPosition of the BitString to indicate one or more adjacentencies, which brings traffic engineer to native BIER.

- However, it has the scalability issue: Due to the limited size of BitString, one BIER-TE packet can only travel through a small area of the network.

- It can be solved by sending multiple packets, but not the complete end to end traffic engineering.

- Thus, we bring out this extension for discussion.
BIER-TE Extensions

• SI is re-defined as the segment area index.
  – The number of adjacencies assigned BitPosition inside one SI is not larger than the value of BSL

• Some Rules
  – A packet is allowed to travel to multiple segment areas with different SIs
    □ To do that, multiple bitstrings belonging to different SIs may be carried in the packet header.
  – the total length of all the bitstrings that a packet can carry is the maximum BSL 4096.
    □ If the topology of the network is well planned, this design is sufficient for use.
  – If the packet leaves one segment area, the corresponding bitstring can be removed.
    • This means all the BP of the bistring is 0.
  – The BIFT is used as described in [I-D.eckert-bier-te-arch], which is indexed by SI:BitPosition
• The detailed format for the bitstring information in different segment area is undefined yet.
Forwarding Example

**Expected Routes**
- S1:(p2, p4, p5, p6)
- S2:(p1, p3, p4)

**BIER header**
- BIER header
- Extension

**Adjacencies**

<table>
<thead>
<tr>
<th>ID</th>
<th>F-BP</th>
<th>Adjacencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>P8-1</td>
<td>forward_connected(BFIR1)</td>
</tr>
<tr>
<td>2</td>
<td>P1-2</td>
<td>forward_connected(BFR5)</td>
</tr>
</tbody>
</table>

**BIFT for BFR4**

- Rcv1
- Rcv2
Next Step

- Welcome reviews.
- Seeking for suggestions on the follow-up.