LSR for SR Proxy Forwarding

draft-hc-lsr-proxy-forwarding-00

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IETF 113,
Introduction

• Proxy Forwarding for SR-TE path protection
  – with IGP extensions
  – Protecting Node, Binding SIDs of a failed node
  – Presented and discussed in SPRING

• Move IGP extensions to this draft
IGP Extensions

• Advertising Binding Segment
  – Binding Segment: a binding SID and a list of segments
  – Node has Binding Segments
  – Node advertises them to its neighbors

• Advertising Proxy Forwarding capability
  – P with capability for P’s neighbors Advertises it
  – Capability of P for P’s neighbor N indicated by
    • mirror SID for N advertised by P if any, or
    • A PF (Proxy Forwarding) bit advertised by P
Advertising Binding Segment: OSPF

A binding segment is represented by binding segment TLV
Node N advertises it using TLV in link-scope LSA
• When N failed, P (neighbor of N) does proxy forwarding for N using the binding information

```
| 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 |
|---------------------------------------------|---------------------------------------------|
| 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 |
| +------------------------------------------+------------------------------------------+ |
| | Type (TBD2) | Length |
| +------------------------------------------+------------------------------------------+ |
| | Reserved | BindingSID Type | SIDs Type |
| +------------------------------------------+------------------------------------------+ |
| ~ Binding SID Sub-TLV/value ~            |
| ~ SIDs Type SID Sub-TLVs/values ~        |

OSPF Binding Segment TLV
```
Advertising Binding Segment: IS-IS

A binding segment is represented by binding segment TLV
• Node N advertises it using TLV in link-scope LSP
• When N failed, P (neighbor of N) does proxy forwarding for N using the binding information

```
<table>
<thead>
<tr>
<th>Type</th>
<th>Length</th>
<th>BindingSID Type</th>
<th>SIDs Type</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Binding SID value/Sub-TLV</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>SID values/Sub-TLVs</td>
<td></td>
</tr>
</tbody>
</table>
```

IS-IS Binding Segment TLV
Advertising Proxy Forwarding Cap: OSPF

A PF (Proxy Forwarding) bit defined in Existing Router Functional Capabilities TLV

<table>
<thead>
<tr>
<th>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</th>
</tr>
</thead>
<tbody>
<tr>
<td>+---------------------------------+---------------------------------+</td>
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<tr>
<td>+---------------------------------+---------------------------------+</td>
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<td></td>
</tr>
</tbody>
</table>

Existing Router Functional Capabilities TLV
Advertising Proxy Forwarding Cap: IS-IS

Similar to OSPF

- Node P advertises it using SR Capabilities sub-TLV with PF in Flags

```
  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
+-----------------------------------------------+---------------+---------------+---------------+
| Type (2) | Length | Flags | Range         |
+-----------------------------------------------+---------------+---------------+---------------+
+-----------------------------------------------+---------------+---------------+---------------+
// SID/Label Sub-TLV (variable)                 //
+-----------------------------------------------+---------------+---------------+---------------+
  0 1 2 3 4 5 6 7
+-----------------------------------------------+
| I| V| PF |
+-----------------------------------------------+
Existing SR Capabilities sub-TLV
```
Next Steps

• Welcome comments