LDP extensions for Explicit Pseudowire to transport LSP mapping

draft-cao-pwe3-mpls-tp-pw-over-bidir-lsp-05.txt

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Application and Motivation

It’s desirable to aggregate user circuits into the same “pipes”

- Easy to manage (e.g. protection)
- Predictable service qualities (e.g. delay)
- Can deliver over multiple transport domains
Problems

• Essentially, this is a PW-LSP binding problem
  • PW’s (fwd + reverse) → bi-dir co-routed LSP’s
  • Be able to support MS PW’s (a.k.a. FEC129)

• Issues today:
  – PEs select and bind PW’s to uni-directional LSP’s locally
  → Difficult to manage for bi-directional LSP binding (especially, over multiple segments)
Solution Overview (Single-Hop) (Strict Mode)

Setup Forward PW using PSN1; Make sure Reverse PW using PSN 1

OK

or, NO!

Don't want to use PSN1

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Setup Forward PW using PSN1; Make sure Reverse PW using a PSN with the same route as PSN1

Hmm… OK, how about PSN2?
Solution Overview (Multi-Segment) (Strict Mode)

1. Setup Fwd PW1 using PSN1; Reverse PW1 needs to be PSN 1
2. Setup Fwd PW2 using PSN3; Reverse PW2 needs to be PSN 3
3. OK
4. OK

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Protocol Extension

- PSN Tunnel Binding TLV (optional)

```
+-----------------+-----------------+-----------------+-----------------+
|                  |                  |                  |                  |
| 0                | 1                | 2                | 3                |
|                  |                  |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| |1|1|                  |                  |                  |                  |
| | PSN Tunnel Binding (TBA) | Length |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| | Flag            | Reserved         |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| ~                 |                  |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| PSN Tunnel Sub-TLV |                  |                  |                  |
```

- IPv4 PSN Tunnel sub-TLV format

```
+-----------------+-----------------+-----------------+-----------------+
|                  |                  |                  |                  |
| 0                | 1                | 2                | 3                |
|                  |                  |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| |0|0|                  |                  |                  |                  |
| | IPv4 PSN Tunnel sub-TLV | TLV Length |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| | Source Global ID |                  |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| | Source Node ID  |                  |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| | Source Tunnel Number | Source LSP Number (optional) |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| | Destination Global ID |                  |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| | Destination Node ID |                  |                  |                  |
| +-----------------+-----------------+-----------------+-----------------+
| | Destination Tunnel Number | Destination LSP Number (opt.) |                  |
```

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Changes since last version

• Rewrite the Abstract and Introduction sections to make the motivation and requirement clearer

• Some editorial changes
Key Comments from the list

• Suggest re-work procedures to withdraw such an advertised binding
• Need more explanation on the usage of FEC 128 (for SS-PW) and FEC 129 (for SS-PW and MS-PW)
Next steps

• Resolve the received comments and re-submit new version after this meeting

• Like to request for WG document?