SR Path Segment
& Bidirectional Path in PCEP

draft-li-pce-sr-path-segment-05
draft-li-pce-sr-bidir-path-05

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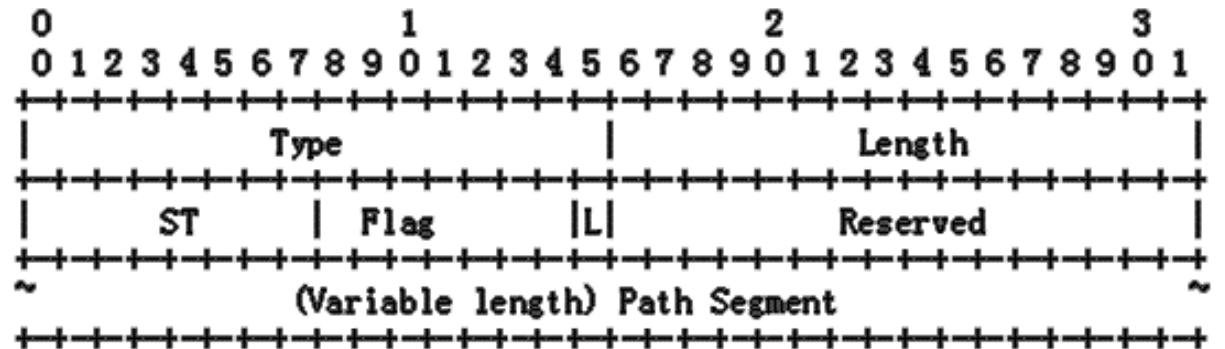
IETF#104

1

Motivation

- Use cases like end-2-end 1+1 path protection, bidirectional path correlation or performance measurement (PM) require the ability to implement "Path Segment" in SR networks:
  - [draft-ietf-spring-mpls-path-segment] introduces a new segment to uniquely identify an SR path referred to as Path Segment. Adopted in the SPRING WG recently.
  - [draft-li-spring-srv6-path-segment] defines a Path Segment in SRv6.

- For configuring or allocating Path Segment to an SR path, extensions in PCEP are needed.
  - Path Segment allocation by PCEP
  - PCE controlled ID Space, where PCC informs the PCE the ID space range from which it should make allocations

- Bidirectional path correlation is required in some scenarios such as mobile backhaul transport network for Segment Routing.
  - Path Segment can be used for binding

Updates: draft-li-pce-sr-path-segment-05

Recent Modifications

- LSP.P-flag：Path Segment Allocation flag -> PCE allocation Flag,
  - which can be reused by many other resource request, like binding SID.
  - The change has been mentioned in PCECC drafts already. Update to sync up.

- MSD: adding some text to describe MSD consideration in path segment allocation.

- Refs sync up

- Fixed some nits.

```
 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
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|              Type             |             Length            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|      ST       |    Flag       |L|          Reserved           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
~                 (Variable length) Path Segment                ~
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Personnel Changes

- Added Quan Xiong from ZTE as a new co-author.

Implementation Status

- Huawei: implementing in PCE and PCC products.

Updates: draft-li-pce-sr-bidir-path-05

Recent Modifications

- The comments were applicable to draft-ietf-pce-association-bidir and draft-li-pce-sr-bidir-path, so both have been updated accordingly.
- The F-bit in the figure represents the directions of LSP from PCC point of view (as opposed to PCE point of view).
- Clarify PLSP-ID for bidirectional LSP in Section 5.
- Various editorial changes.

Personnel Changes

- Added Quan Xiong as a new co-author.

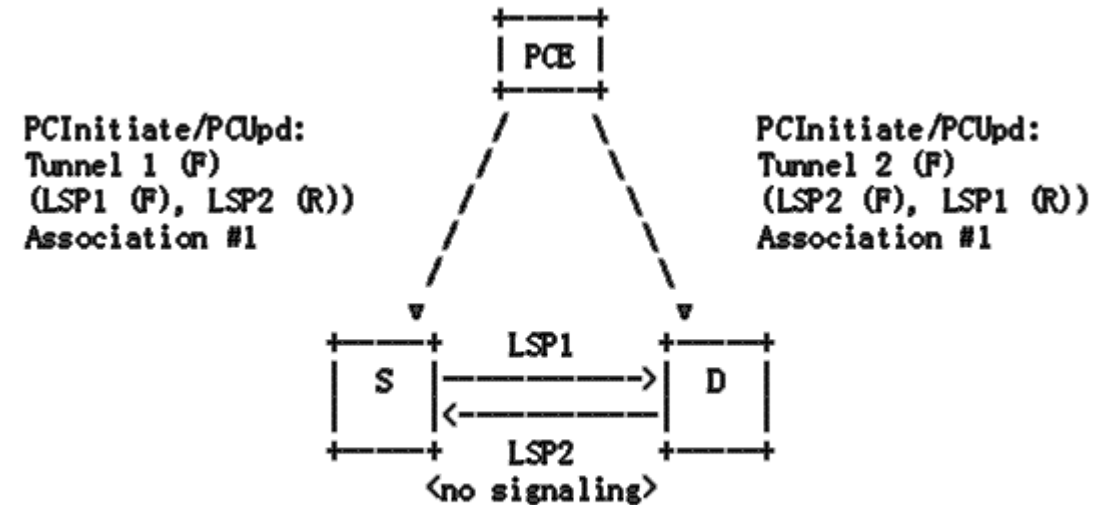- Implementation Status:
  - Huawei: implementing in products.

Many thanks to Marina Fizgeer and Quan Xiong's review!

```
                                          +----+
                                          | PCE |
                                          +----+
                                         /      \
PCInitiate/PCUpd:                       /        \        PCInitiate/PCUpd:
Tunnel 1 (F)                           /          \       Tunnel 2 (F)
(LSP1 (F), LSP2 (R))                  /            \      (LSP2 (F), LSP1 (R))
Association #1                        v            v      Association #1

                          +-----+       LSP1      +-----+
                          |     |------------->|     |
                          |  S  |              |  D  |
                          |     |<-------------|     |
                          +-----+       LSP2      +-----+
                                      <no signaling>
```

Figure 1: PCE-Initiated Double-sided Bidirectional SR Path
with Forward and Reverse Direction SR Paths

Next Plan

- The drafts are ready for WG adoption
  - Contents of drafts are stable
  - Commercial implementation is going on
  - Supported by operators and vendors

- We would like to request WG adoption for drafts
  - draft-li-pce-sr-path-segment-05
  - draft-li-pce-sr-bidir-path-05

- Your comments and contributions are very welcome!

Thank you

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