PCEP Extensions for Bidirectional Forwarding Detection

draft-li-pce-bfd-00

Zhenbin Li, Huawei
Xia Chen, Huawei (Presenter)

IETF 95, Buenos Aires, Argentina
Introduction

• This document describes the extensions to the PCEP to notify BFD parameters for LSPs from PCE to PCC for PCE-initiated LSP.

• The extensions include:
  – PCE notify BFD protocol parameters
  – Allow PCC to support BFD for PCE-Initiated LSP whose BFD session is a bi-directional co-routed channel.
Requirement

• BFD session for the PCE-initiated LSP is created dynamically. The return path is implicitly the shortest path. Such BFD session whose forward and reverse paths are possibly not co-routed. This may lead to the false failure deduction.

• It requires BFD session for the PCE-initiated LSP is a bi-directional co-routed channel.
Requirement

• The BFD protocol parameters such as detection time multiplier, desired Min TX Interval, required Min RX Interval for PCE-initiated LSP can come from the public template or global configuration on PCC. All the LSPs can share the same BFD parameters.

• Sometimes it is necessary to adjust BFD parameters for special PCE-initiated LSP.
Building Bi-directional Co-routed BFD Session

Two methods:

• Building BFD session without LSP Ping
• Building BFD session with LSP Ping
Building BFD session without LSP Ping

1) PCE initiates LSP A→B and LSP B→A which are bi-directional co-routed.
2) PCE allocate the pair of discriminators for the bi-directional co-routed LSPs.

BTW: How to guarantee the discriminators allocated by PCE and PCC are not the same is out of scope of this document.

BFD session for LSP A→B is bi-directional co-routed channel.

The same BFD session is set up not only for LSP A→B but also LSP B→A.
Building BFD session with LSP Ping

1) PCE initiates LSP A→B
2) PCC delegates it with LSP-IDENTIFIERS TLV including FEC information
3) PCE notify to set up BFD session for LSP A→B carrying the FEC information about the reverse LSP, LSP B→A.

1) PCE initiates LSP B→A
2) PCC delegates it with LSP-IDENTIFIERS TLV including FEC information

The procedure defined in draft-ietf-mpls-bfd-directed-02:
1) A send LSP Ping with BFD Reverse Path TLV carrying the FEC information about the reverse LSP, LSP B→A.
2) BFD session for LSP A→B is bi-directional co-routed channel.

BTW: Two BFD sessions are set up for LSP A→B and LSP B→A independently.
TLVs of PCEP Extensions for BFD

• BFD Reverse Path TLV
  – Provides BFD parameters used to indicate the reverse path for BFD session.

• BFD Generic TLV
  – Provides BFD generic parameters of BFD session

• BFD Authentication TLV
  – Provides BFD authentication parameters of BFD session.
BFD Reverse Path TLV

- Optionally included in the LSPA Object with PCUpd message

- Here reverse Path refers to Reverse Path defined in BFD Reverse Path TLV in draft-ietf-mpls-bfd-directed-02.
BFD Generic TLV

- Optionally included in the LSPA Object with PCInitiate or PCUpd message

- Used to notify the BFD parameters for special LSP
- Used to notify the PCE allocated discriminator
BFD Authentication TLV

• Optionally included in the LSPA Object with PCInitiate or PCUpd message

```
0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| BFD Authentication TLV Type | Length |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| Auth Type | Auth Len | Authentication Data... |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

• Used to notify the BFD authentication parameters for special LSP
Next Steps

• Solicit comments.
• Revise the draft.