PCEP Extensions for Associated Bidirectional Label Switched Paths (LSPs) with Stateful PCE

draft-ietf-pce-association-bidir-05

Rakesh Gandhi (rgandhi@cisco.com)

Colby Barth (cbarth@juniper.net)

Bin Wen (Bin_Wen@comcast.com)

Agenda

- Requirements and Scope

- Double-sided Associated Bidirectional LSP

- Single-sided Associated Bidirectional LSP

- PCEP Object Definitions

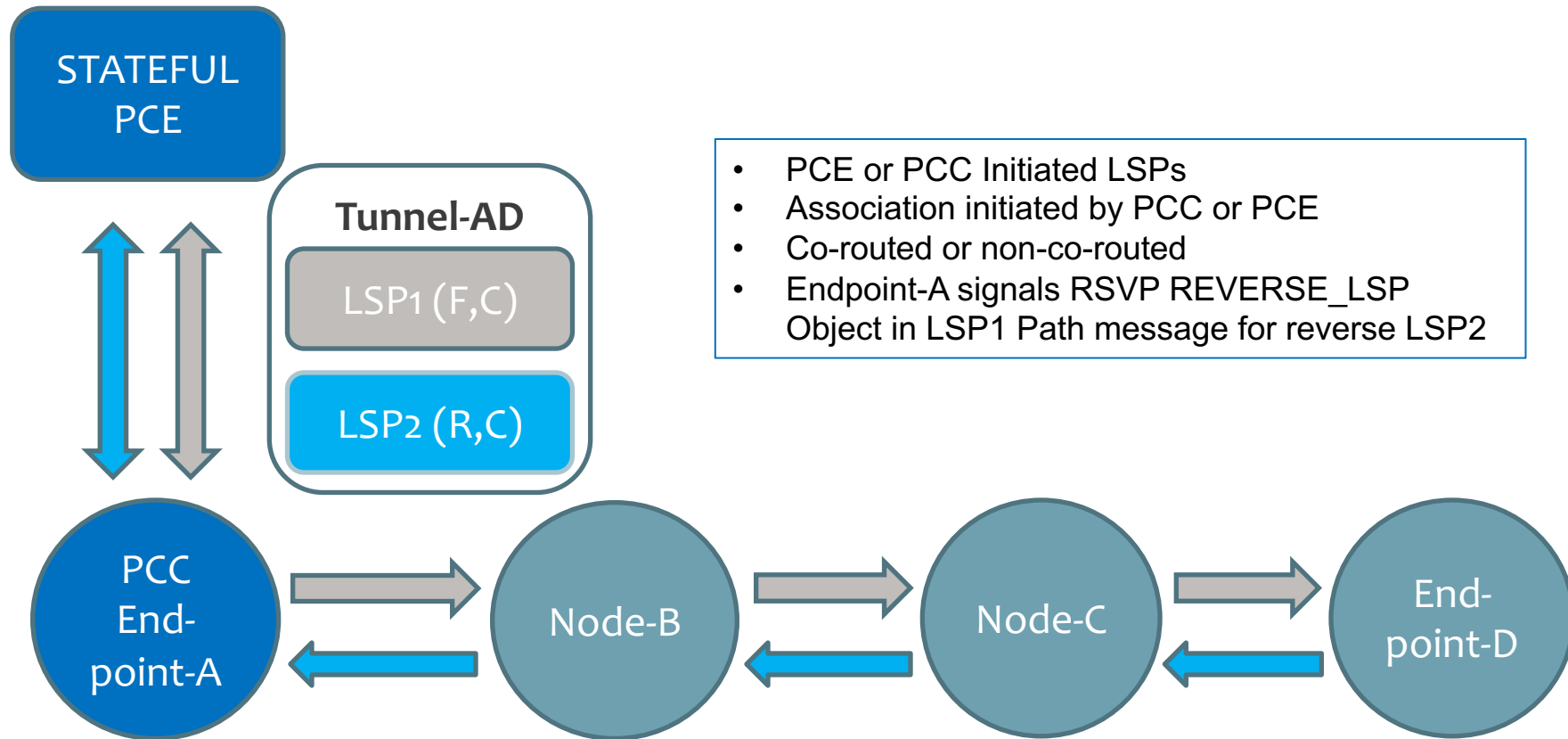- Next Steps

Requirements and Scope

Requirements:

- – Packet transport networks deploying bidirectional RSVP LSPs
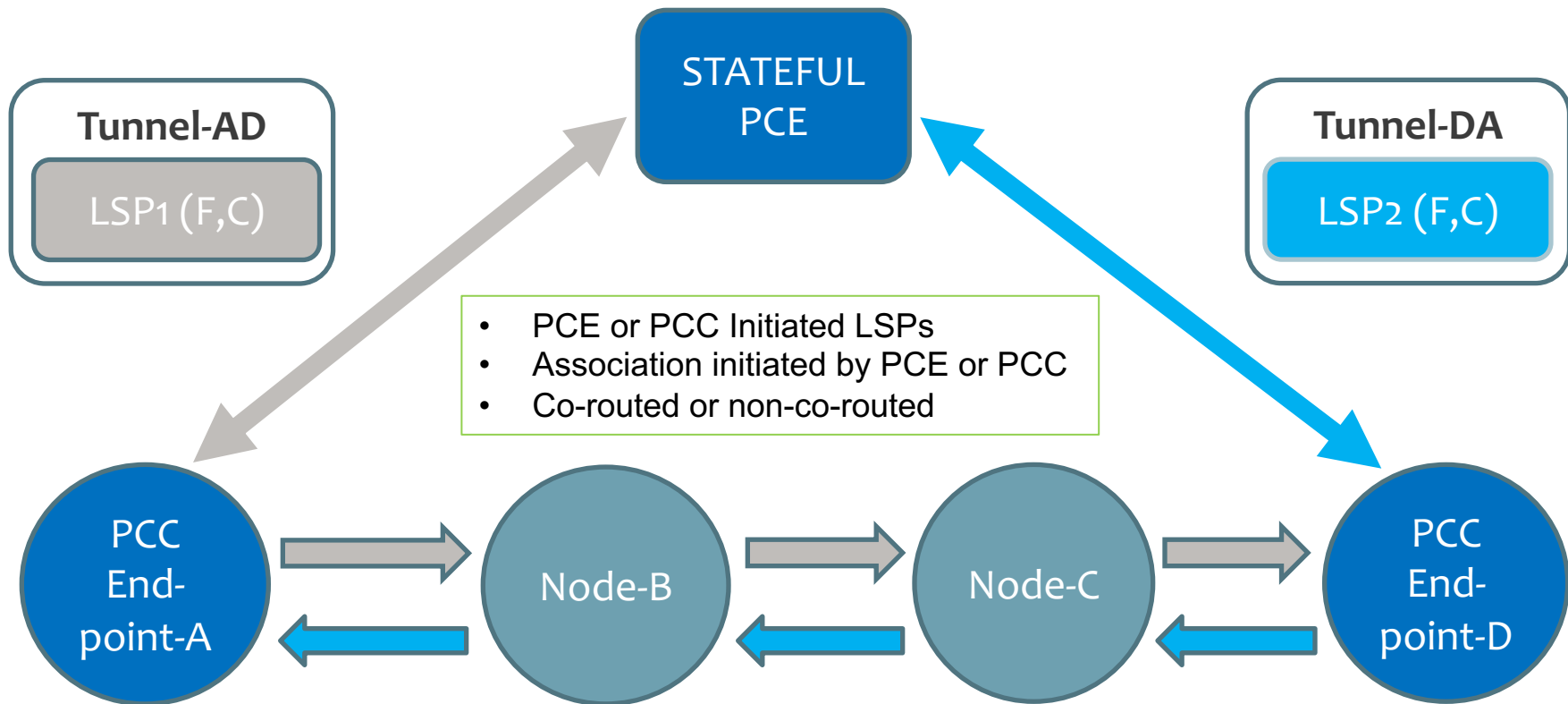- – Co-routed and non-co-routed forward and reverse RSVP LSPs

Scope:

- – Associated bidirectional RSVP LSPs
- – PCE-Initiated LSPs
- – PCC-Initiated LSPs
- – Stateless PCE (e.g. for co-routed path computation requests)

Single-sided Associated Bidirectional LSP

STATEFUL PCE

Tunnel-AD

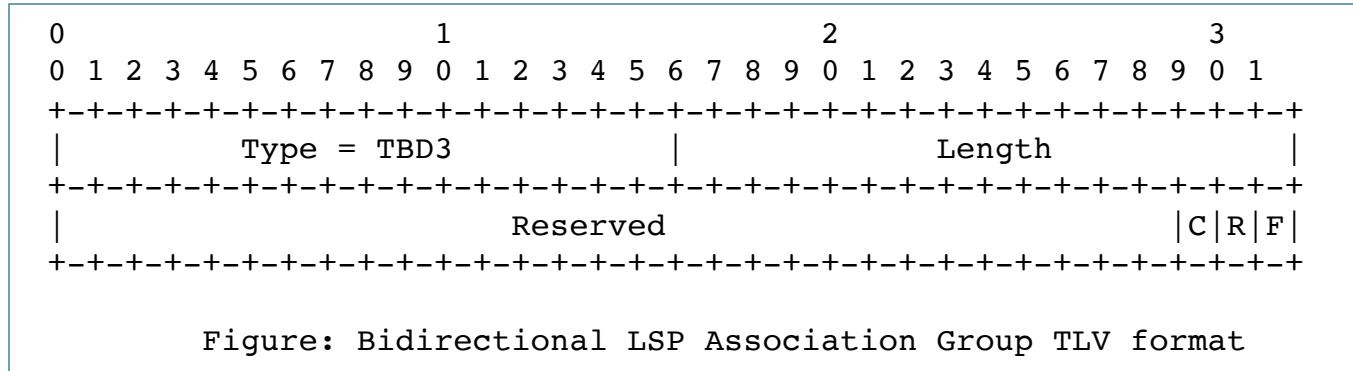LSP1 (F,C)

LSP2 (R,C)

- PCE or PCC Initiated LSPs
- Association initiated by PCC or PCE
- Co-routed or non-co-routed
- Endpoint-A signals RSVP REVERSE_LSP Object in LSP1 Path message for reverse LSP2

PCC End-point-A

Node-B

Node-C

End-point-D

Double-sided Associated Bidirectional LSP

Tunnel-AD

LSP1 (F,C)

STATEFUL PCE

Tunnel-DA

LSP2 (F,C)

- PCE or PCC Initiated LSPs
- Association initiated by PCE or PCC
- Co-routed or non-co-routed

PCC End-point-A

Node-B

Node-C

PCC End-point-D

PCEP Association Object

- Association Type (TBD1) = Single-sided Bidirectional LSP Association Group

- Association Type (TBD2) = Double-sided Bidirectional LSP Association Group

- The Association ID, Association Source, Global Association Source and Extended Association ID in the Association Object of the bidirectional LSPs are populated using the procedures defined in [RFC7551].

- These Association Types are operator-configured associations.
  - Operator-configured Association Range TLV SHOULD NOT be sent, so that the entire range of association ID can be used.

Bidirectional LSP Association Group TLV

```
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 = TBD3             |              Length            |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                    Reserved                          |C|R|F|
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+

        Figure: Bidirectional LSP Association Group TLV format
```

- F (Forward LSP, 1 bit)
  - Indicates whether the LSP associated is the forward LSP of the bidirectional LSP.
- R (Reverse LSP, 1 bit)
  - Indicates whether the LSP associated is the reverse LSP of the bidirectional LSP.
- C (Co-routed LSP, 1 bit)
  - Indicates whether the associated bidirectional LSP is co-routed.

Error Handling (PCErr Error-Type 26 - Association Error)

1. Both forward and reverse LSPs MUST belong to the same bidirectional TE tunnel [RFC3209].

   – Error-Value = Bidirectional LSP Association - Tunnel mismatch

2. LSP (forward or reverse) cannot be part of more than one Bidirectional LSP Association Group.

   – Error-Value = Bidirectional LSP Association - Group Mismatch

3. If a PCEP speaker receives a different PST value for Bidirectional LSP association group and it does not support.

   – Error-Value = Bidirectional LSP Association - Path Setup Type Not Supported

Next Steps

- Welcome your review comments and suggestions
- Already in the WG LC Queue

Thank you.

PCEP Extensions for Associated Bidirectional SR **LSPs**

draft-ietf-pce-sr-bidir-path-01

Cheng Li (chengli13@huawei.com)

Mach(Guoyi) Chen (Mach.chen@huawei.com)

Weiqiang Cheng (chengweiqiang@chinamobile.com)

Rakesh Gandhi (rgandhi@cisco.com) - Presenter

Quan Xiong (xiong.quan@zte.com.cn)

Agenda

- Requirements and Scope
- Double-sided Associated Bidirectional **with Reverse** LSP
- PCEP Object Definitions
- Next Steps

Requirements and Scope

Requirements:

– Packet transport networks deploying bidirectional **SR LSPs**

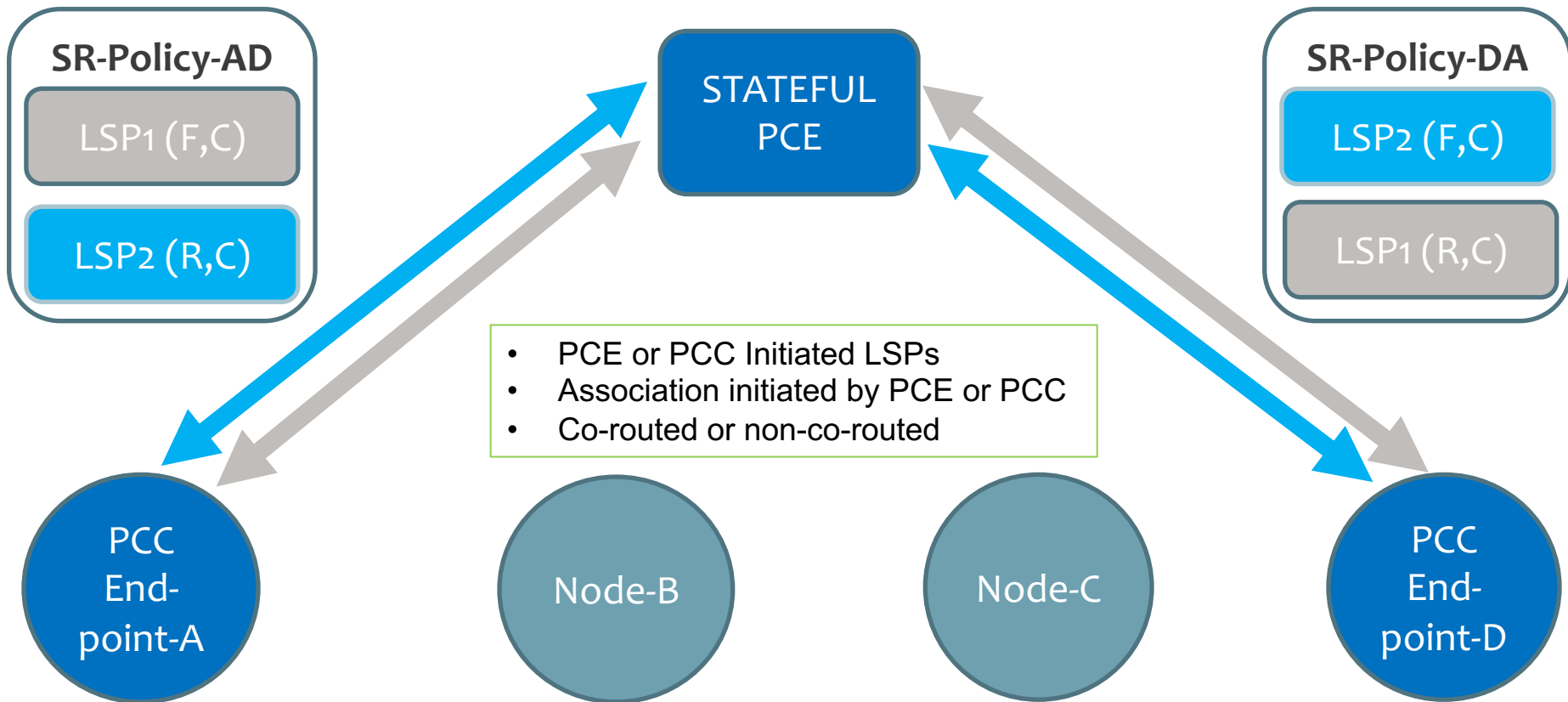– Co-routed and non-co-routed forward and reverse **SR LSPs**

Scope:

– Associated bidirectional **SR LSPs**

– PCE-Initiated LSPs

– PCC-Initiated LSPs

– Stateless PCE (e.g. for co-routed path computation requests)

Not in Scope:

– **Associating bidirectional SR with RSVP LSPs**

Double-sided Associated Bidirectional **with Reverse** LSP

SR-Policy-AD
- LSP1 (F,C)
- LSP2 (R,C)

STATEFUL PCE

SR-Policy-DA
- LSP2 (F,C)
- LSP1 (R,C)

- PCE or PCC Initiated LSPs
- Association initiated by PCE or PCC
- Co-routed or non-co-routed

PCC End-point-A

Node-B

Node-C

PCC End-point-D

PCEP Association Object

- Association Type (TBD1) = Double-sided Bidirectional **with Reverse** LSP Association Group

- The Association Object Populated using the procedure defined in [*draft-ietf-pce-association-bidir*]

Error Handling (PCErr Error-Type 26 - Association Error)

- PCErr defined in [*draft-ietf-pce-association-bidir]* are applicable

Specifically –

- If a PCEP speaker receives a different Path Setup Type (PST) value for Bidirectional LSP association group and it does not support.
  - Error-Value = Bidirectional LSP Association - Path Setup Type Not Supported
- **Keep the door open for future extensions for other PSTs**

Next Steps

- Welcome your review comments and suggestions
- Queue for WG LC?

Thank you.