PCEP Extensions for Establishing Relationships Between Sets of LSPs and Virtual Networks

https://datatracker.ietf.org/doc/draft-leedhody-pce-vn-association
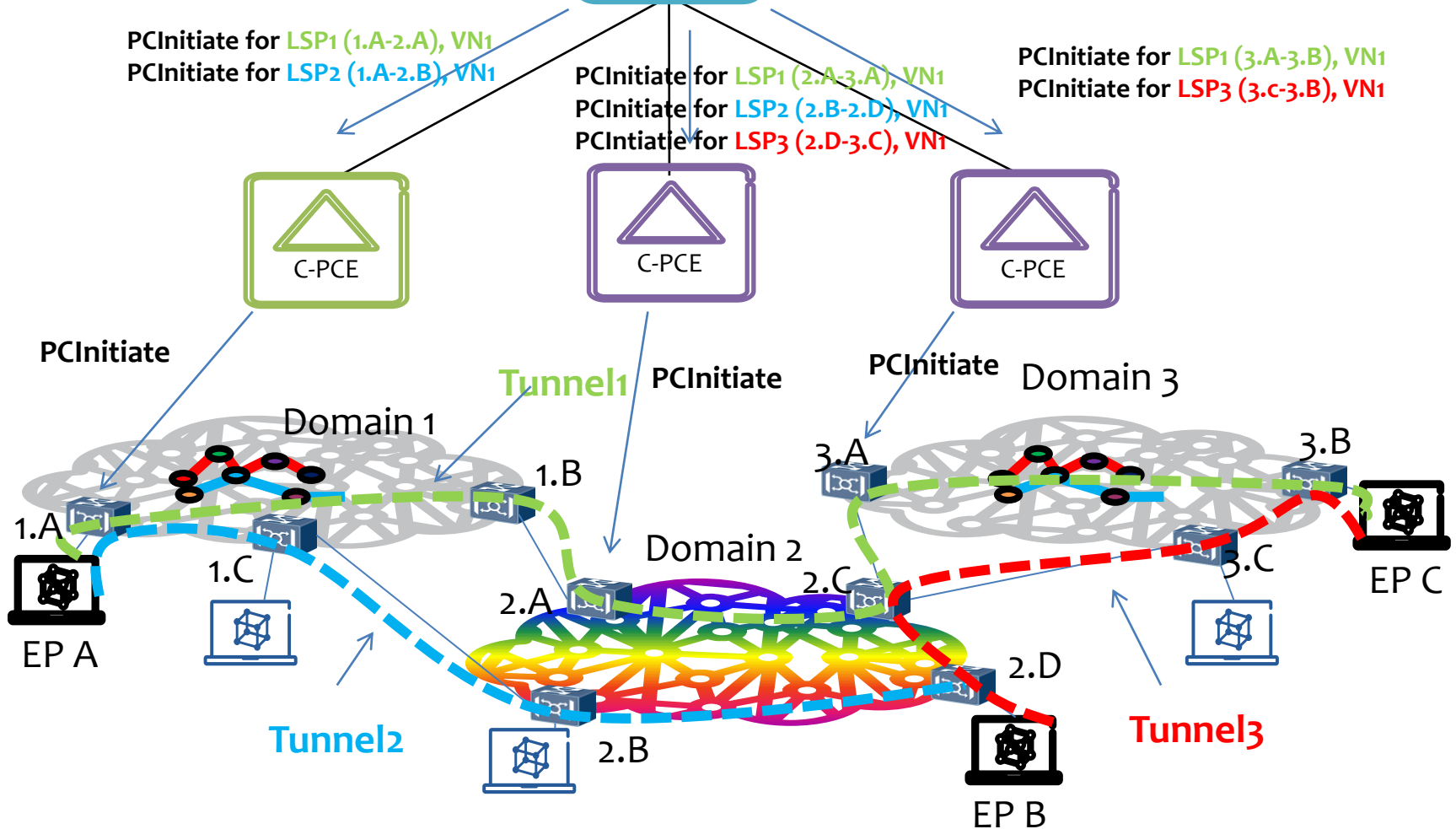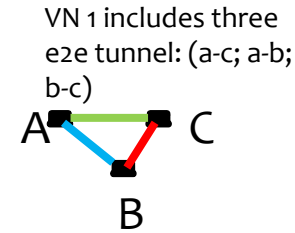
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Background/Motivation

- As per [I-D.ietf-pce-association-group], LSPs are associated with other LSPs with which they interact by adding them to a common association group.

- In this draft, this grouping is used to define associations between a set of LSPs and a virtual network for a PCE to identify LSP under a VN.

Applicability: H-PCE and ACTN

• P-PCE computes paths and determines each domain paths and associate VN1 with LSPs for each Domain
• For each LSP Initiate, Use- **Association Object** to associate VN ID with LSPs

VN 1 includes three e2e tunnel: (a-c; a-b; b-c)

A   C
B

P-PCE

PCInitiate for LSP1 (1.A-2.A), VN1
PCInitiate for LSP2 (1.A-2.B), VN1

PCInitiate for LSP1 (2.A-3.A), VN1
PCInitiate for LSP2 (2.B-2.D), VN1
PCIntiatie for LSP3 (2.D-3.C), VN1

PCInitiate for LSP1 (3.A-3.B), VN1
PCInitiate for LSP3 (3.c-3.B), VN1

C-PCE   **C-PCE**   **C-PCE**

PCInitiate   **Tunnel1**   **PCInitiate**   **PCInitiate**   Domain 3

Domain 1

1.B   3.A   3.B

1.A

1.C   Domain 2

EP A   2.A   2.C   3.C

2.B   2.D   EP C

Tunnel2   **Tunnel3**

EP B

PCEP VN Association Group (VNAG)

- Thus this document defines one new association type called "VN Association Type" of value TBD1.

- The scope and handling of VNAG identifier is similar to the generic association identifier defined in [I-D.ietf-pce-association-group].

The VNAG Object formats (IPV4)

```
    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
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   | Reserved                      | Flags                     |R|
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |      Association type=TBD1  |        Association ID      |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |                   IPv4 Association Source                  |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   //                      Optional TLVs                       //
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+


    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=[TBD2]           |      Length (variable)     |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |                                                            |
   //                  Virtual Network Name                    //
   |                                                            |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
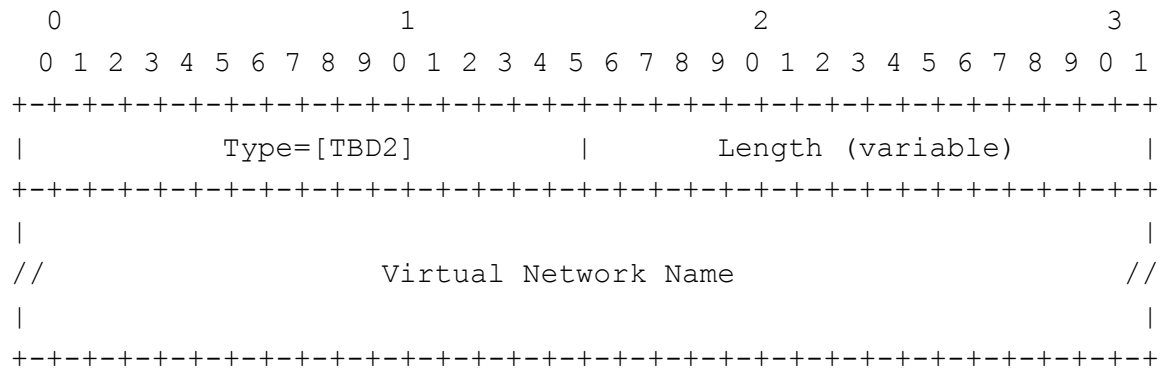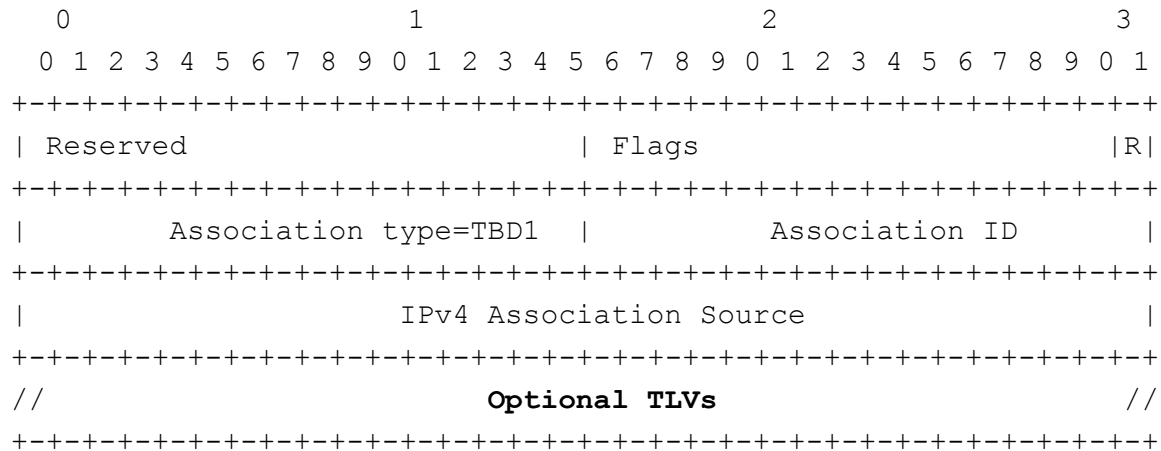
The VIRTUAL-NETWORK-TLV formats

Summary & Next Step

- An early multi-vendor implementation is in progress.
- Continue to refine the document.