PCE Multi-layer LSP Association

IETF 99, Prague

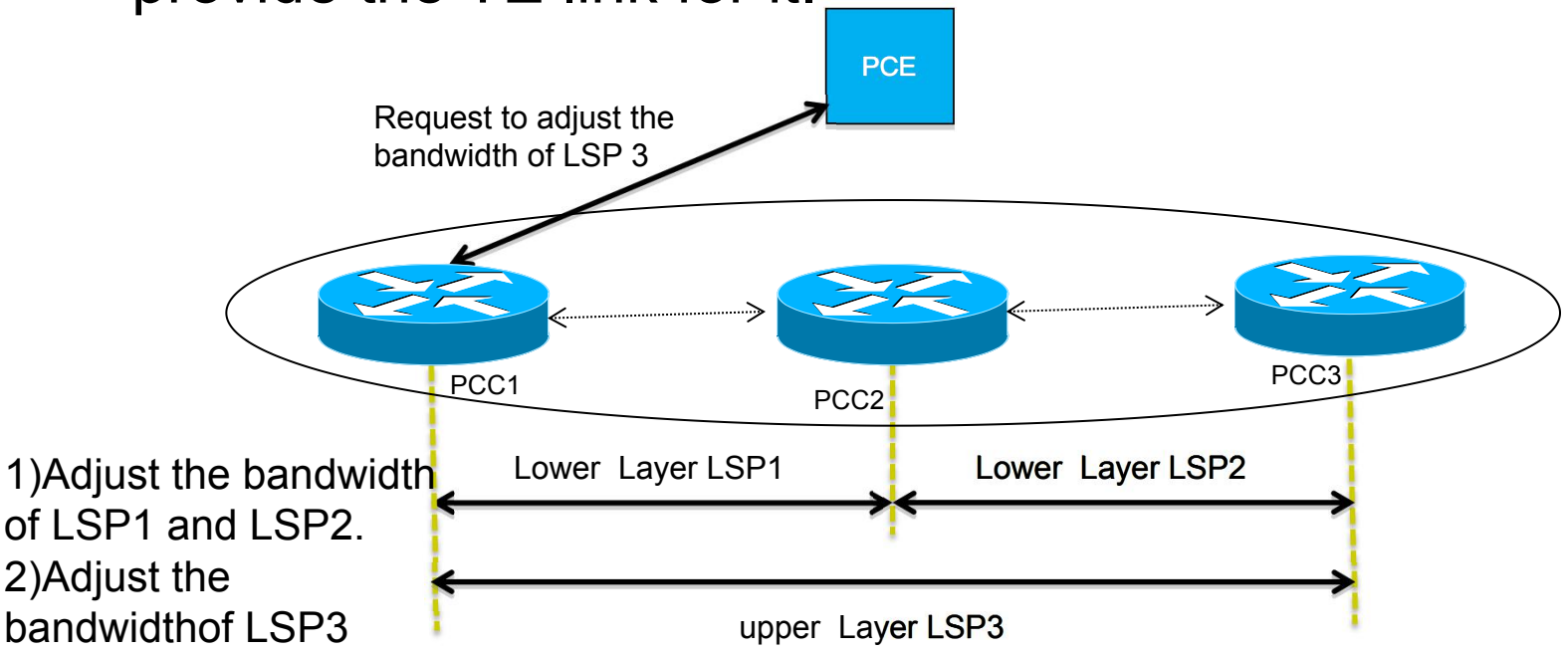
Quan Xiong, ZTE
Fangwei Hu, ZTE
Ran Chen, ZTE

Overview

- draft-xiong-pce-multilayer-lsp-association-00
- 00 version provided in march 2017 and first present at IETF 99 in Prague.
- This document proposes a set of extensions to PCEP to associate a grouping of multi-layer LSPs including upper-layer LSP and related lower-layer LSPs.

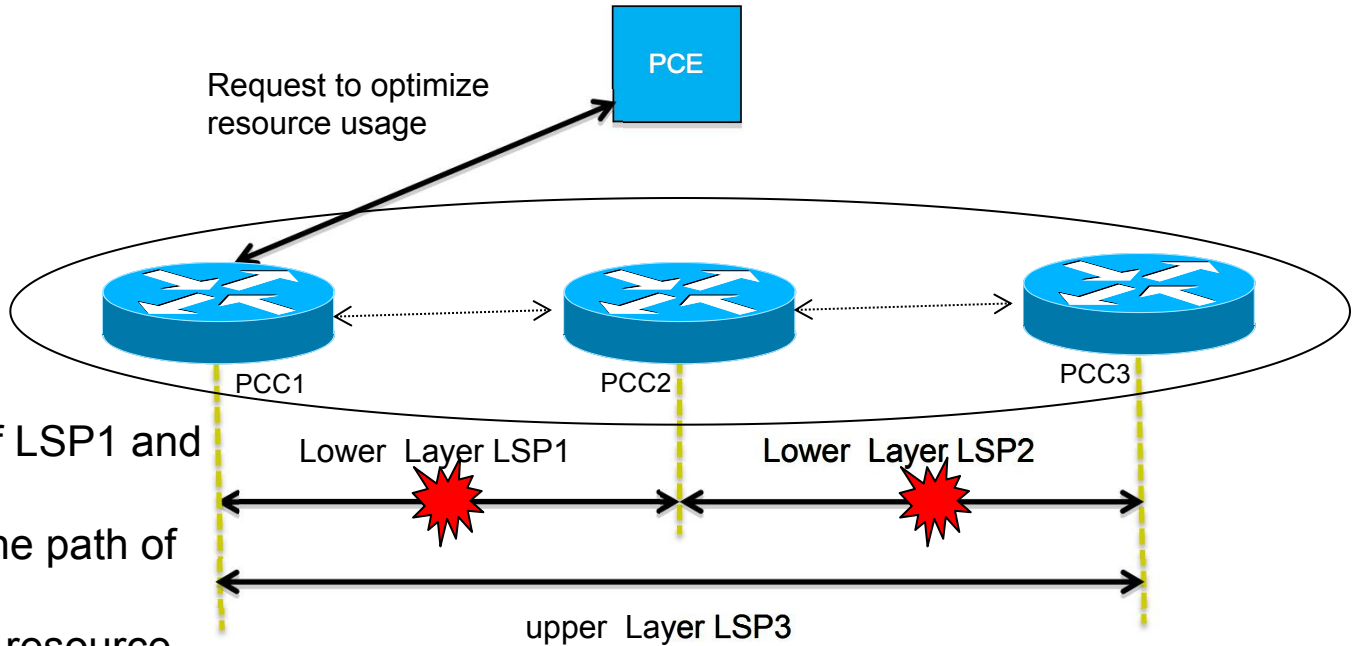
Use Cases 1:Bandwidth Adjustment

- The stateful PCE provides the ability to adjust the bandwidth, for example, enlarge the bandwidth of the upper layer LSP and it MUST be necessary to adjust the bandwidth of related lower layer LSPs first, which provide the TE link for it.



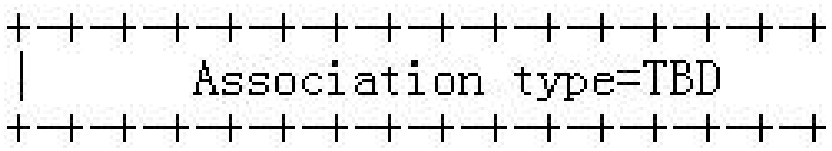
Use Cases 2:TE Links Optimization

- The stateful PCE MAY request to optimize the link and path based on the lower layer of the LSP and its upper TE Link, and in the case of the failure of the lower level LSP, it MAY update the upper network LSP path and re-optimize resource usage across multi-layers.



1)Failure of LSP1 and LSP2.
2)Update the path of LSP3.
3)Optimize resource usage

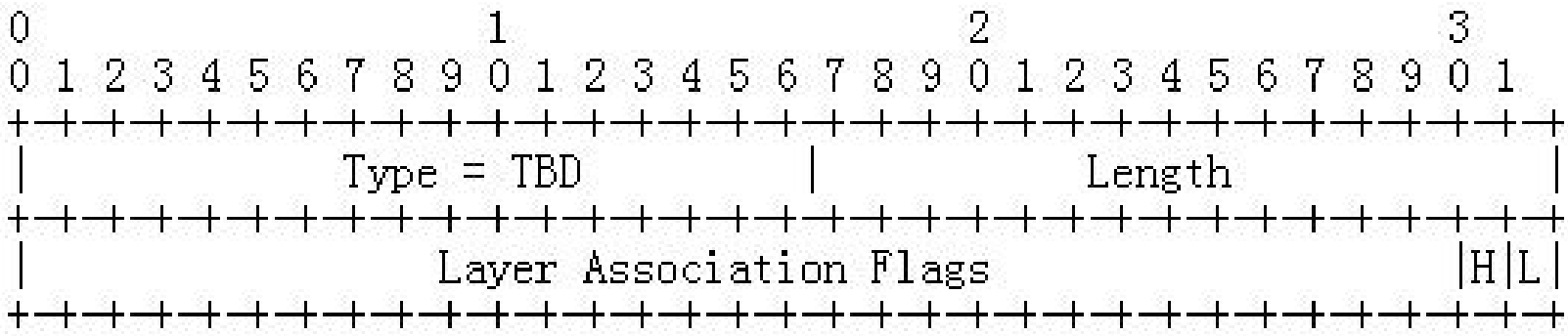
ASSOCIATION type



One new optional Association Object type is carried in the Association object including IPv4 and IPv6 and proposes a new Association type for multi-layer LSPs association.

Association type: [TBD], 16 bits-Layer Association Type, the association type for multi-layer LSPs.

LAYER-ASSOCIATION TLV

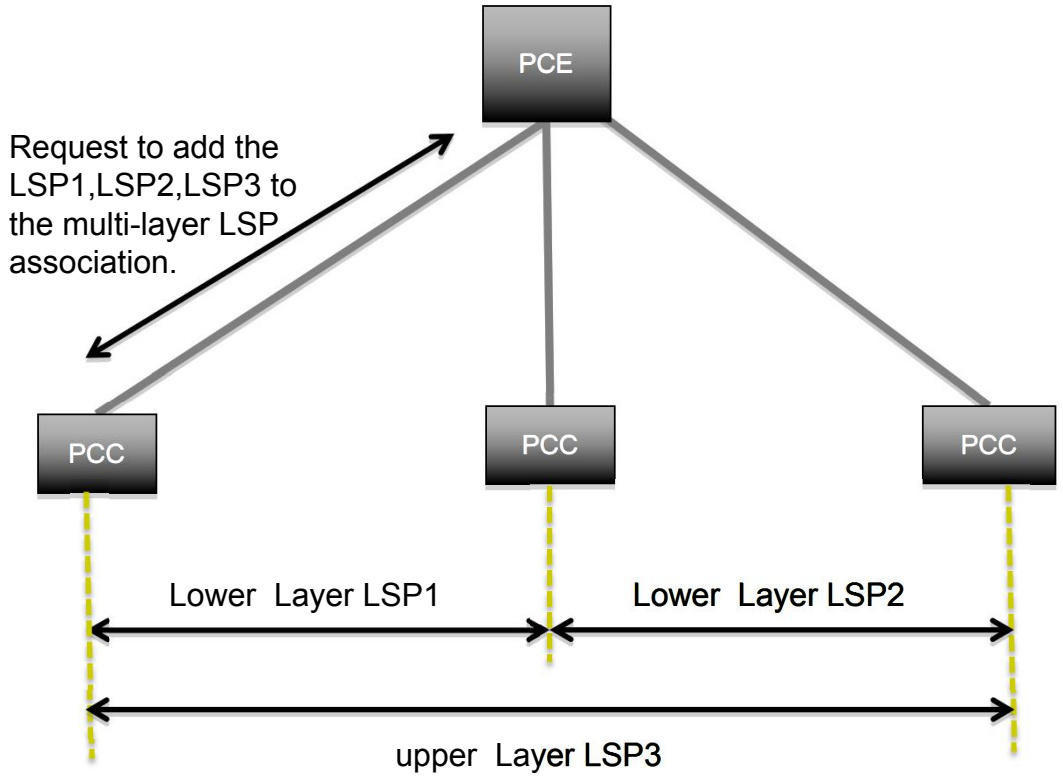


The type of the TLV is [TBD] which indicates the LAYER ASSOCIATION TLV. The fields in the format are:

- Length:16bits,the length of the TLV.
- Layer Association Flags-H:1bit, indicates LSP of the upper layer when it is set.
- Layer Association Flags-L:1bit, indicates LSP of the lower layer when it is set.

Extension Operation

Once a group of multilayer LSPs is created, the upper layer LSP is associated with its related lower layer LSPs. Association objects can be carried in PCReq, PCRpt, PCUpd, or PCInit messages.



Next Steps

- Discussed with the association draft authors
- Comment and discussion
- Request WG Adoption