

PCEP Extension for SR-MPLS Entropy Label Position

draft-peng-pce-entropy-label-position-07

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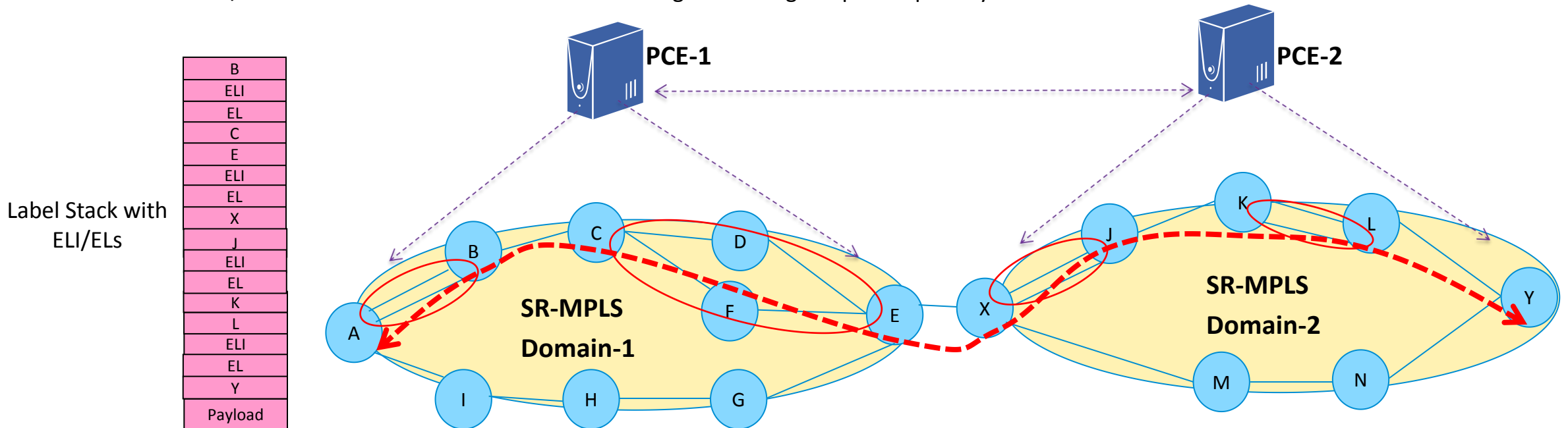
IETF 113 PCE, July 2022,

Updates from last versions

- Presented at IETF#106, #108 and #111 and comments on the mailing list are appreciated from :
 - Stephane Litkowski / Dhruv Dhody / Tarek Saad / Zhenbin Li / Jeff Tantsura/Cheng Li
- Updates before version -07
 - Move the E bit to LSP extended flags field in LSP-EXTENDED-FLAG TLV as per draft-ietf-pce-lsp-extended-flags
 - Clarification for the MSD and ERLD limitation and the requirements in PCE inter-domain scenario
 - Clarification for ingress capability and the E (ELP) bit is used to indicate the capability of inserting multiple ELI/EL pairs at PCC and support the SR path with ELP from PCE.
 - Clarification for the ELI/ELs positions calculated for a SR-Path
- Updates from version -07
 - Clarification for PCE to get MSD and ERLD capabilities and adding reference to existing underlying IGP extensions including IS-IS and OSPF
 - Clarification and remove the minimum-ERLD TLV
 - Synchronous update and consistent with the extension of BGP protocol

Overview

- RFC8662 proposes to apply the entropy labels to SR-MPLS networks and provides following criteria to determine the best ELI/ELs placement:
 - a limited number of <ELI, EL> pairs SHOULD be inserted in the SR-MPLS label stack;
 - the inserted positions SHOULD be within the Entropy Readable Label Depth (ERLD) of a maximize number of transit LSRs;
 - a minimum number of <ELI, EL> pairs SHOULD be inserted while satisfying the above criteria.
- As described in RFC8662, the ingress may not find the minimum ERLD along the path and does not support the computation of the minimum ERLD.
- The controller (e.g. PCE) MAY perform the end-to-end path computation as well as Entropy Label Position (ELP) including the number and the place of the ELI/ELs based on the minimum ERLD of each segment along the path especially in inter-domain scenarios.



PCEP Extensions

- The PCEs could get the information of all nodes such as MSD and ERLD through IGP and can compute the minimum ERLD along the end-to-end path.
 - The ERLD value can be collected via IS-IS [draft-ietf-isis-mpls-elic] and OSPF [draft-ietf-ospf-mpls-elic].
 - The MSD value can be collected via IS-IS [RFC8491] and OSPF [RFC8476].
- SR-PCE-CAPABILITY sub-TLV in Open Object
 - E bit is set to 1.
 - indicates that it supports the SR path computation with ELP configuration.
 - indicates that it supports the capability of inserting multiple ELI/EL pairs at PCC .

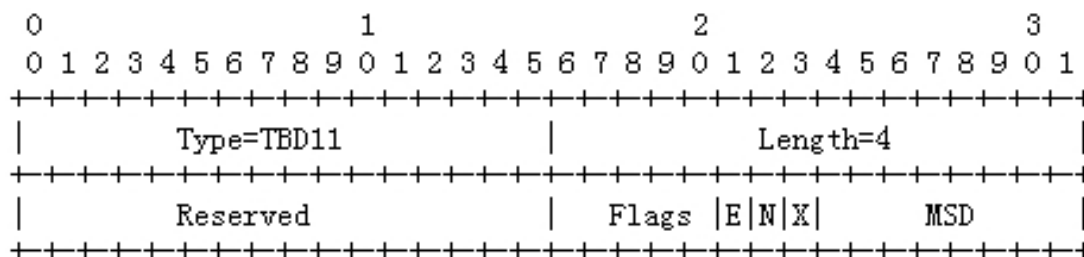


Figure 2: E-flag in SR-PCE-CAPABILITY sub-TLV

PCEP Extensions

- LSP-EXTENDED-FLAG TLV in LSP Object defined in draft-ietf-pce-lsp-extended-flags
 - E bit is set to 1.
 - indicates that the PCC requests PCE to compute the SR path with ELP information.

- SR-ERO Subobject
 - E bit is set to 1.
 - indicates that the position after this SR-ERO subobject is the position to insert <ELI, EL>, otherwise it cannot insert <ELI, EL> after this segment.

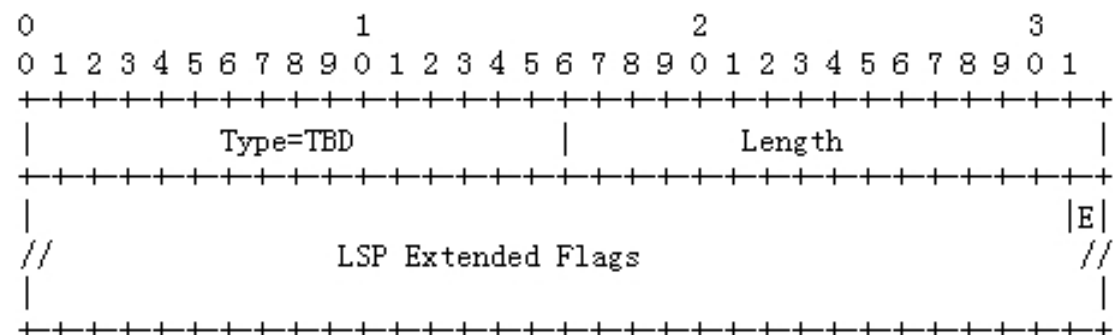


Figure 3: E-flag in LSP-EXTENDED-FLAG TLV

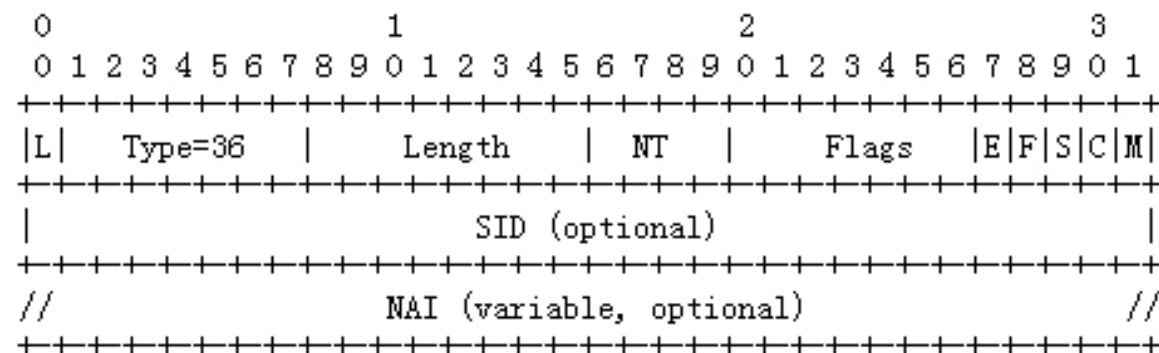


Figure 5: E-flag in SR-ERO subobject

Next Step

- This document has been discussed many times in details at the meetings and on the mailing list and all comments have been resolved .
- Thanks for all your comments and suggestions!
- Request for adoption!

Thank you!