SR P2MP Policy
draft-ietf-pce-sr-p2mp-policy

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Update/Relevant Drafts

draft-spring-sr-replication-segment-19 (RFC9524, MPLS and SRv6 encap)

draft-ietf-pim-sr-p2mp-policy-07 (Last call passed, added SRv6)

draft-ietf-pim-p2mp-policy-ping-07 (last call passed)

draft-ietf-bess-mvpn-evpn-sr-p2mp-07 (work in progress)

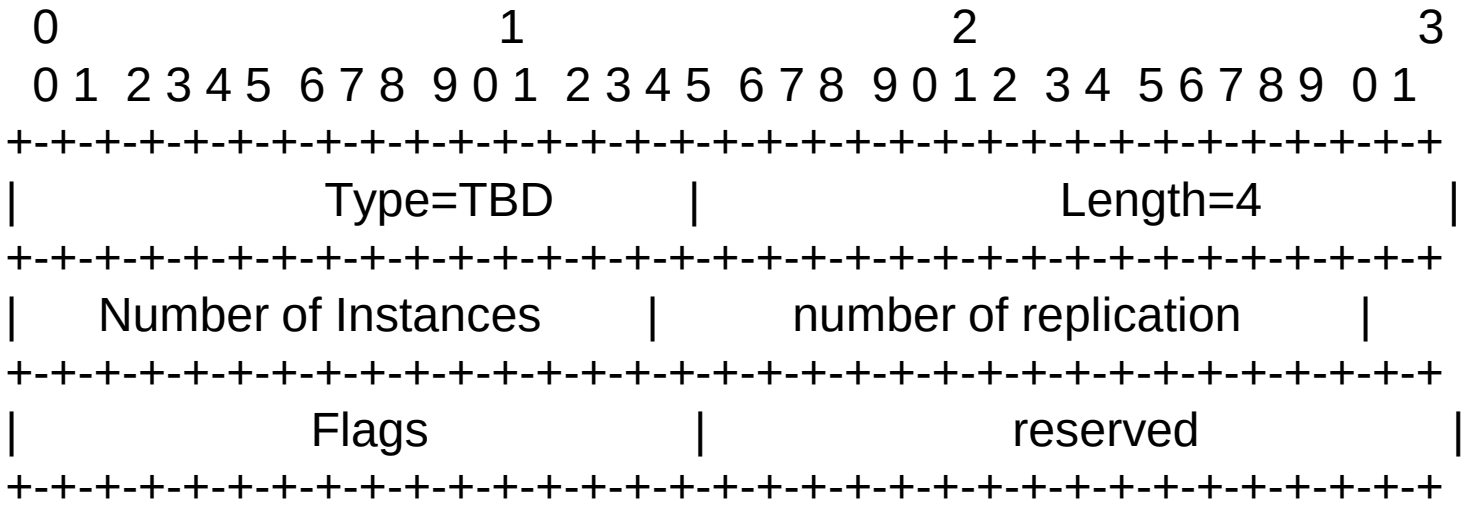
draft-ietf-pce-sr-p2mp-policy-01 (work in progress, under implementation by multiple vendors, last call by end of 2024)

draft-ietf-idr-sr-p2mp-policy-04 (draft now, need to progress the work here)

draft-hb-spring-sr-p2mp-policy-yang-02 (need to revive it)

Extend PCEP Open object

- P2MP Capability during discover via a new optional TLV
- Path Computation Capabilities



Number of Instances 16 bits - Number of instances the advertising PCEP speaker supports. This is meaningful for PCEs. PCEs can determine the least number of instances that could be created for a SR P2MP policy.
Flags 16 bits

Number of replication 16 bits - number of out going interfaces that the system is capable of having per multicast state.

New Procedures

- Local Optimization
  - When pcc lacks the support of multiple instances global MBB is not possible.
  - However, with knowledge of the PCCs' advertised capabilities, the PCE can detect this limitation and instead opt for local re-optimization of the candidate path.
  - In such cases, the PCE can compute the optimized LSP by send the PCUpd message using the existing Instance for candidate path, specifically targeting the PCCs where the optimized LSP triggers a change in forwarding state.

Reuse of draft multi-path

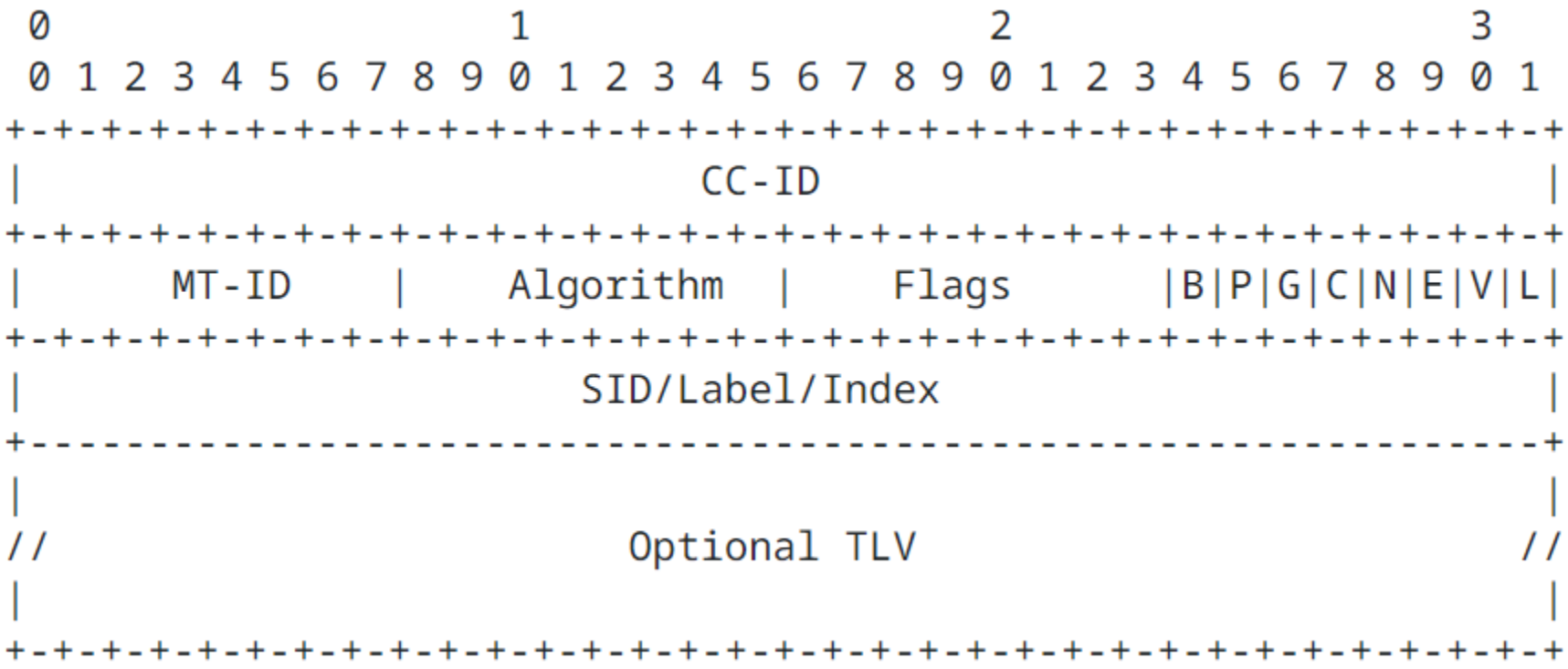
- This draft uses the draft-ietf-pce-multipath for backup path instances (i.e. protection)
- For P2MP Policy the multipath weight tlv should not be used. Weighted ECMP is no recommended for multicast.

Instance ID

- A candidate path can have 2 path Instances for global optimizatoin
- Path Instance assigned by PCE and consistent for all nodes on the P2MP tree end-to-end.
- Two CP within the same P2MP policy can not have the same instance-id, i.e. instance ID is unique per P2MP policy. That said 2 different policy can use the same Instance-ID value.
- Instance-id 0 should be reserved.

Slicing for P2MP replication

- For setting up P2MP Policy and its replication segments over different slices, Segment Routing CCI object is used in draft: https://datatracker.ietf.org/doc/html/draft-ietf-pce-pcep-extension-pce-controller-sr-07#name-cci-object is used



Next Steps

- Asking for early IANA assignment
- Comments, suggestions are welcome
- This draft is being implemented as we speak, any concerns feedback should be provided sooner to ensure it is part of the implementation.

Thank You!