PCEP Extensions for Segment Routing leveraging the IPv6 data plane

draft-negi-pce-segment-routing-ipv6-00

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Introduction & Motivation

- Segment Routing (SR) can be used to steer packets through an IPv6 or MPLS network using the source routing paradigm.
- Since SR can be applied to both MPLS and IPv6 data plane
  - Should a PCE be able to compute SR-Path for both MPLS and IPv6 forwarding plane?
  - And thus should PCEP be able to do this?

PCEP for SRv6

- Segment Routing can be applied to the IPv6 the Segment Routing Header (SRH).
  - Segment identified by an IPv6 address
  - Making it an ordered list of IPv6 addresses in the routing header
- This document extends [I-D.ietf-pce-segment-routing] to support SR for IPv6 data plane.
  - Extend SR-ERO, SR-RRO subobjects for SRv6
  - Capability advertisement for SRv6 in PCEP
  - A new path setup type

PCEP Messages

- No change here, all messages remains the same –
  - PCReq
  - PCRep
  - PCRpt
  - PCUpd
  - PCInitiate
- Only,
  - The ERO object will use SR-ERO sub-object extended for SRv6
  - The RRO object will use SR-RRO sub-object extended for SRv6

PCEP Extn

- SRv6-PCE-CAPABILITY TLV in OPEN
- A new PST value for SRv6, carried in PATH-SETUP-TYPE TLV in RP/SRP object
- SR-ERO Sub-object extended
  - a new SID Type (ST)
  - SRv6 Identifier (SRv6I) is the 128 bit IPv6 addresses representing SRv6 segment.
  - SRv6ST indicates NAI
  - Fn Code indicates function associated with SRv6 SID
  - NAI - IPv6 Node ID or IPv6 Adjacency (optional)

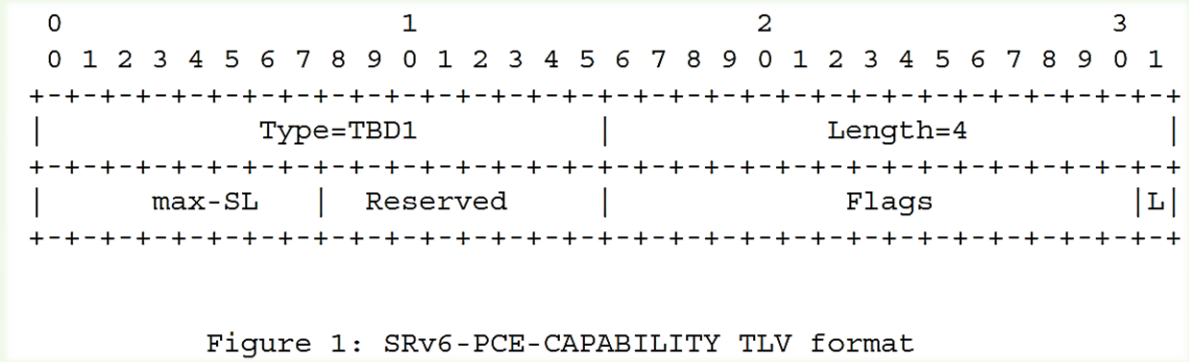

Figure 1: SRv6-PCE-CAPABILITY TLV format

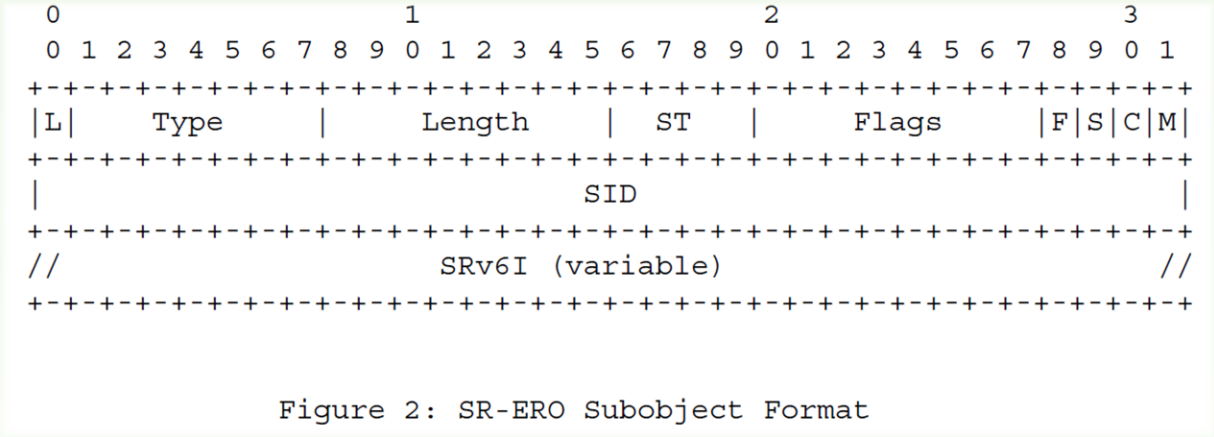

Figure 2: SR-ERO Subobject Format

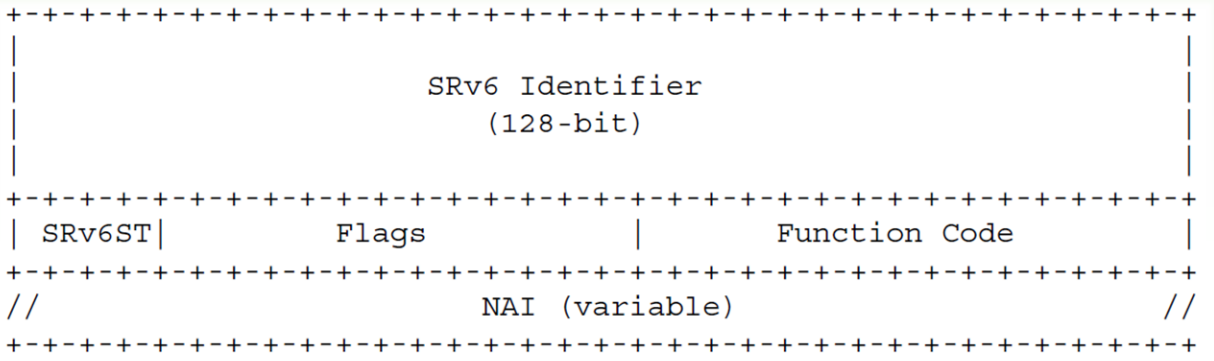

Figure 3: SR-ERO Subobject's SRv6I Format

Next Steps

- With this draft, we are making sure that the PCE and the PCEP can be used for both modes of SR
  - Straight forward extension to existing SR work in PCEP
- What does the WG think?
- Comments?


THANK YOU