SRv6 Path Egress Protection

draft-ietf-rtgwg-srv6-egress-protection

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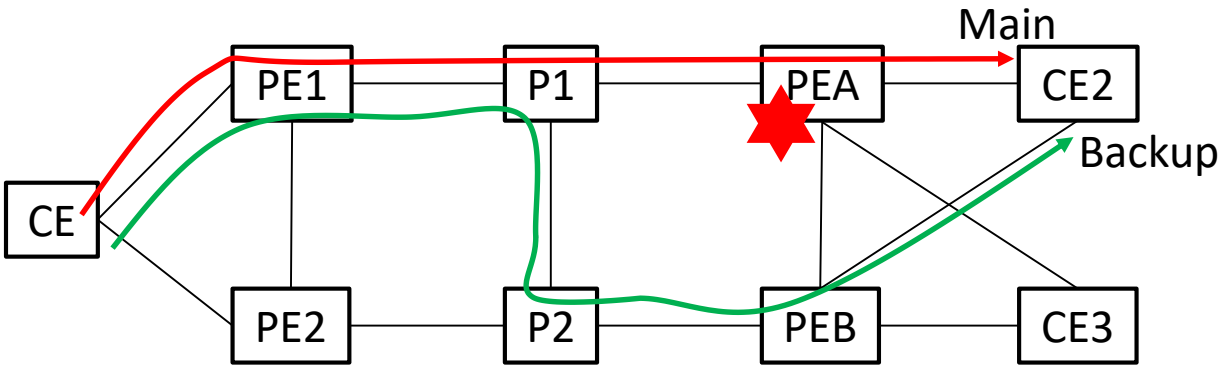
Introduction

- Abstract
  - This document describes protocol extensions for fast protecting the egress node and link of a Segment Routing for IPv6 (SRv6) path.

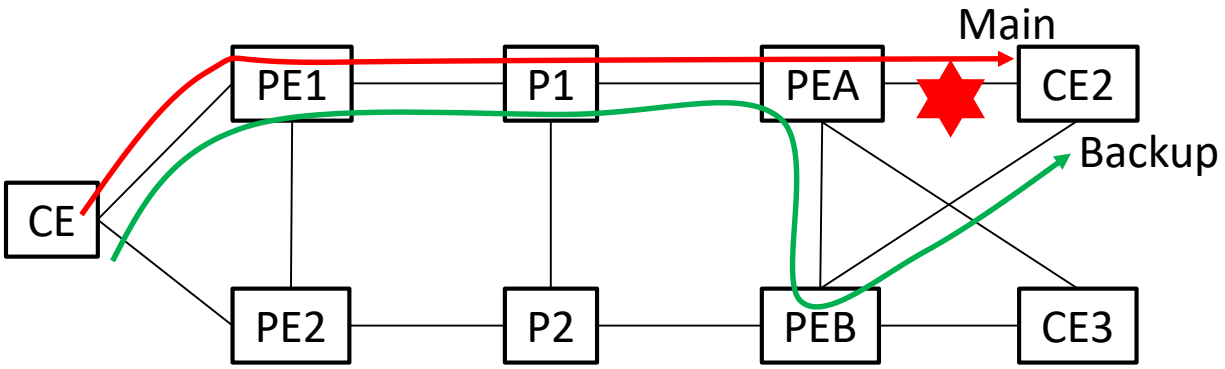
- Progress
  - This document was first proposed in March 2019 and was transformed into a working group document in May 2020. Then, Many revisions were made based on the experts' opinions. Now, It’s the version 18 of WG draft.

SR Path Egress Node Protection



- Three Path:
  - Main Path:CE->PE1->P1->PEA->CE2;
  - Backup Path:CE->PE1->P1->P2->PEB->CE2
  - SR Path:PE1->P1->PEA,PE1->P1->P2->PEB
- The egress node PEB provide the fast protection for egress node PEA.
- PEB must advertise the information which is represented by <PEB, PEA, Mirror SID>, and as a PLR, P1 pre-computes a Repair List toward P2 after receiving <PEB, PEA,Mirror SID>.
- <PEB, PEA, Mirror SID> indicates that PEB protects PEA with Mirror SID.
- When PEA failed, P1 detects failure and encaps mirror sid forwards packet to P2 via backup path.
- When PEB receives packet, it map the local VPN sid and sends the packet to the same CE2.

SR Path Egress Link Protection



- Three Path:
  - Main Path:CE->PE1->P1->PEA->CE2;
  - Backup Path:CE->PE1->P1->PEA->PEB->CE2
  - SR Path:PE1->P1->PEA,PE1->P1->PEA->PEB
- The egress link PEB to CE2 provide the fast protection for egress link PEA to CE2.
- PEB must advertise the information which is represented by <PEB, PEA, Mirror SID> throught IGP, and as a PLR, PEA pre-computes a Repair List toward PEB after receiving <PEB, PEA,Mirror SID>.
- When PEA to CE2 failed, PEA detects failure and encaps mirror sid forwards packet to PEB via backup path.
- When PEB receives packet, it map the local VPN sid and sends the packet to the same CE2.

Protocol Extensions

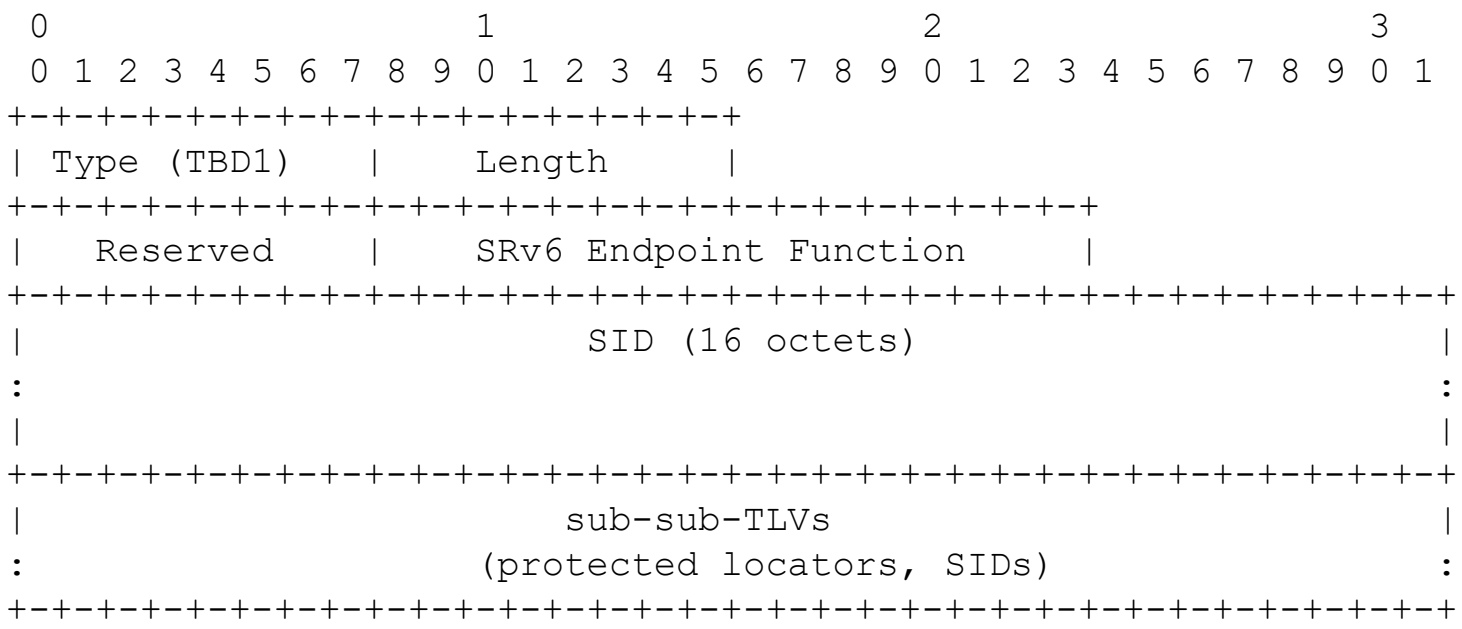
Extensions to IS-IS and OSPF

- To advertise information about SRv6 path egress protection

Extensions to IS-IS (1/2)

New IS-IS SRv6 Mirror SID sub-TLV in SRv6 locator TLV

- Advertise SRv6 Mirror SID and the locators of the nodes to be protected.
- The SRv6 Mirror SID inherit the topology/algorithm from the parent locator.

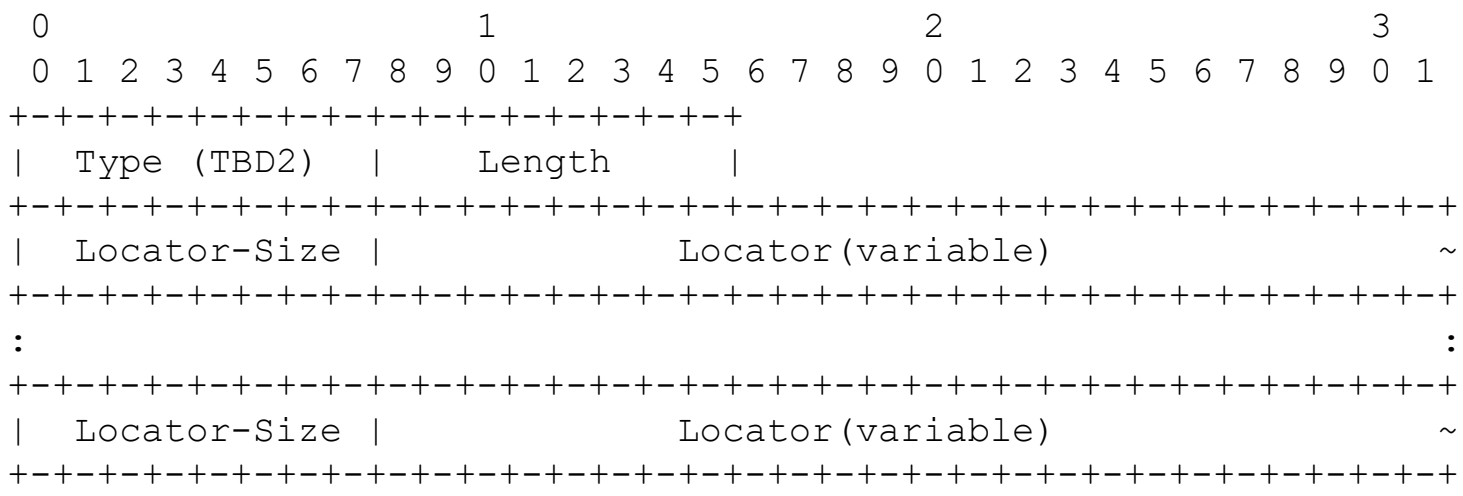


IS-IS SRv6 Mirror SID sub-TLV

Extensions to IS-IS (2/2)

Protected locators sub-sub-TLV

- Carry the Locators to be protected by the SRv6 mirror SID

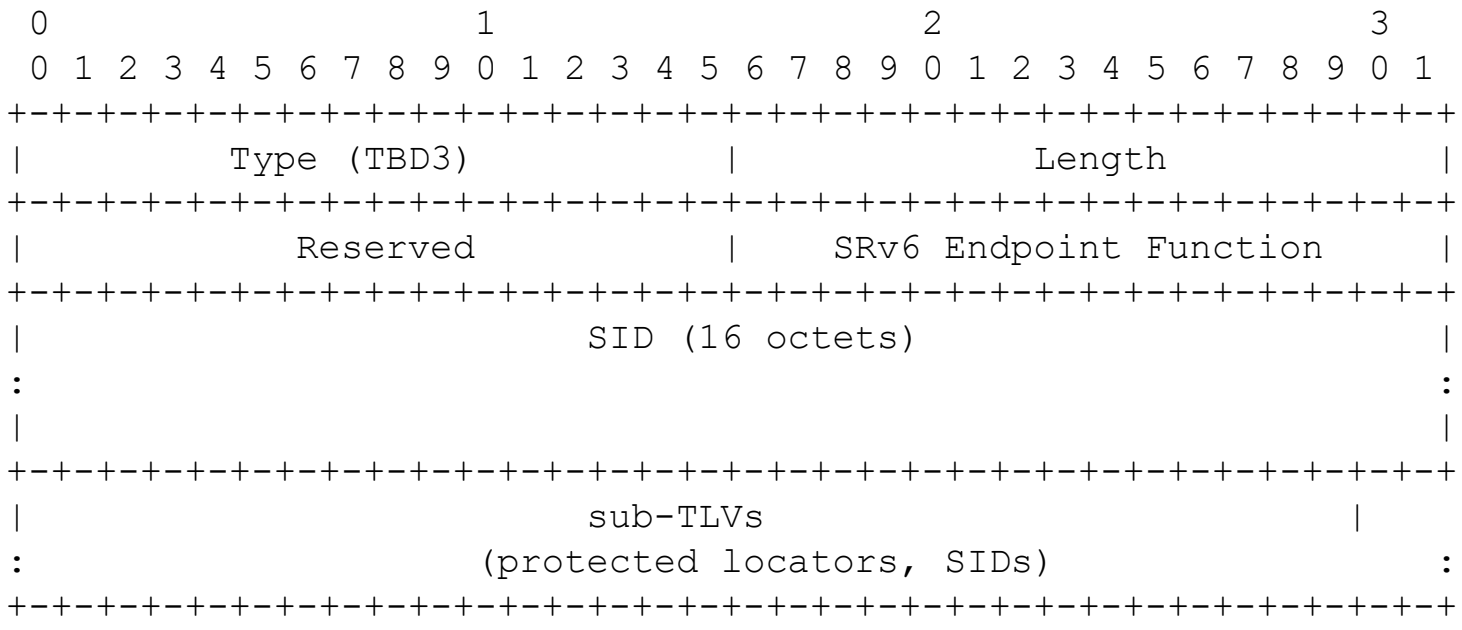


IS-IS Protected Locators sub-sub-TLV

Extensions to OSPF (1/2)

New OSPF SRv6 Mirror SID sub-TLV in SRv6 locator TLV

- Advertise SRv6 Mirror SID and the locators of the nodes to be protected.

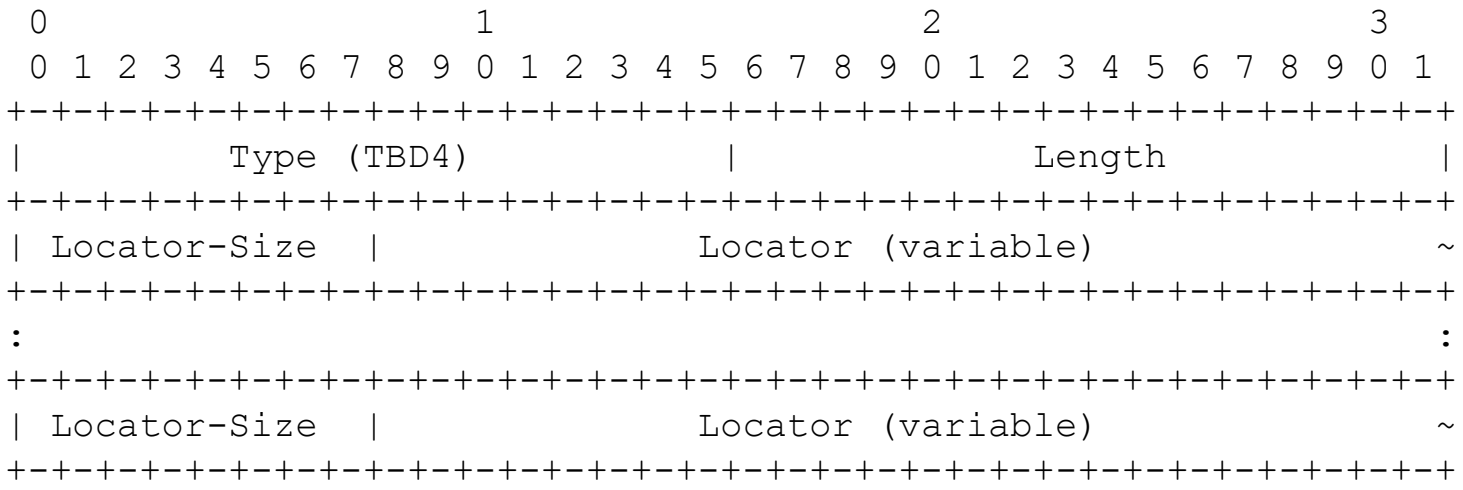


OSPF SRv6 Mirror SID sub-TLV

Extensions to OSPF (2/2)

Protected locators sub-TLV

- Carry the Locators to be protected by the SRv6 mirror SID



OSPF Protected Locators sub-TLV

Next Steps

- All the issues has been solved in the latest verison.
- Getting the document ready for WGLC.