

SRv6 Midpoint Protection

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Motivations and Goals

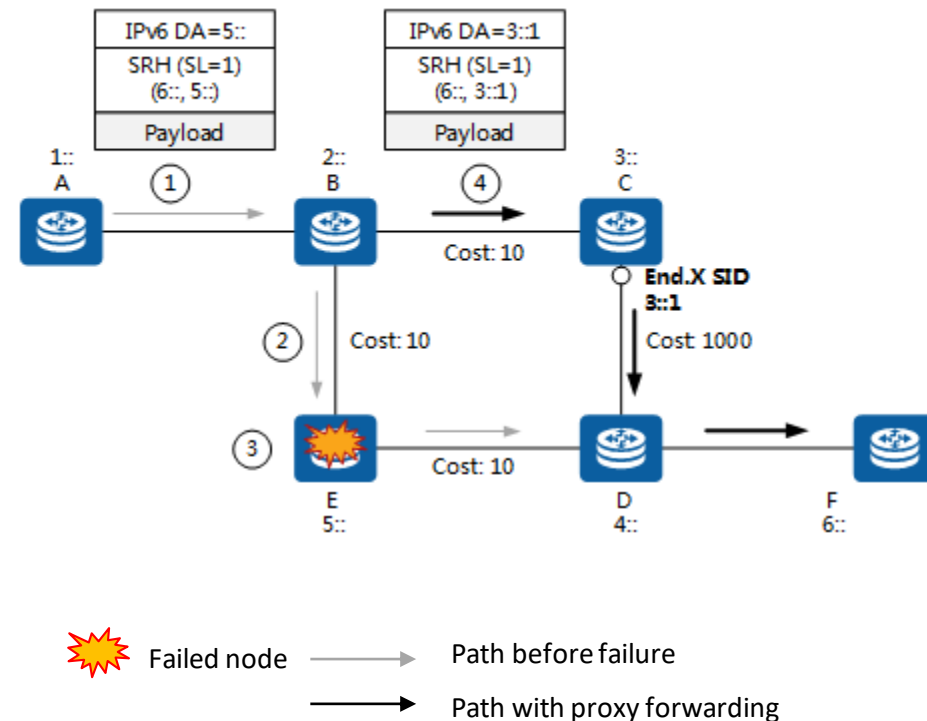
Motivations

- **Scenario:** When an SRv6 Endpoint failed, the existing FRR mechanism cannot be used to restore the reachability;
- **Requirement:** SRv6 E2E protection could work, but a simpler and faster local repair mechanism is also requested;
- **Existing work:** The mechanism defined in [draft-ietf-spring-segment-protection-sr-te-paths] is able to provide endpoint protection for SR MPLS endpoint protection;

Goals: This document introduces a SRv6 midpoint protection mechanism: when an SRv6 endpoint fails, an SRv6 proxy forwarding node can replace the failed endpoint to perform SRv6 end function.

SRv6 Midpoint Protection Mechanism

- If a loose SR TE path fails, The convergence could be divided into 2 periods:
 - 1st Period : Before IGP convergence, the faulty adjacent node is a PLR node, perform proxy forwarding and send packet to the next end point in the segment list.
 - 2nd Period: After IGP convergence, any upstream node, that has been converged and deleted the FIB to E, will be the PLR node and perform the proxy forwarding action.
- After SRv6 Policy convergence, The node forwards the packet along the converged path



SRv6 Midpoint Protection Behavior

When the Repair Node is a transit node or an endpoint node, the protection behavior is defined as:

```
IF the primary outbound interface used to forward the packet failed
  IF NH = SRH && SL != 0 and
    the failed endpoint is directly connected to Repair Node THEN
    SL decreases*; update the IPv6 DA with SRH[SL];
    FIB lookup on the updated DA;
    forward the packet according to the matched entry;
  ELSE
    forward the packet according to the backup nexthop;
ELSE IF there is no FIB entry for forwarding the packet THEN
  IF NH = SRH && SL != 0 THEN
    SL decreases*; update the IPv6 DA with SRH[SL];
    FIB lookup on the updated DA;
    forward the packet according to the matched entry;
  ELSE
    drop the packet;
ELSE
  forward accordingly to the matched entry;
```

When the Repair Node is an endpoint x node, the protection behavior is defined as:

```
IF the primary outbound interface used to forward the packet failed
  IF NH = SRH && SL != 0 and
    the failed endpoint is directly connected to Repair Node THEN
    SL decreases; update the IPv6 DA with SRH[SL];
    FIB lookup on the updated DA;
    forward the packet according to the matched entry;
  ELSE
    forward the packet according to the backup nexthop;
ELSE IF there is no FIB entry for forwarding the packet THEN
  IF NH = SRH && SL != 0 THEN
    SL decreases; update the IPv6 DA with SRH[SL];
    FIB lookup on the updated DA;
    forward the packet according to the matched entry;
  ELSE
    drop the packet;
ELSE
  forward accordingly to the matched entry;
```

Plan

The document is stable and has been fully discussed, so the authors plan to:

- Collect feedback in SPRING
- Ask WG Adoption in RTGWG

Any questions or comments are welcome.

Thanks