S-BFD Path Consistency over SRv6

draft-lin-sbfd-path-consistency-over-srv6-00

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IETF-113

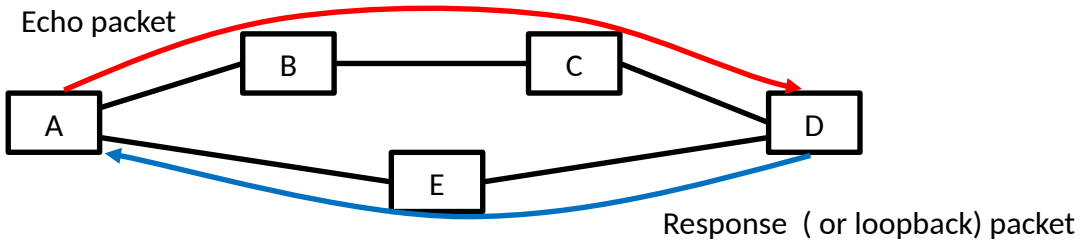
Background

- Bidirectional Forwarding Detection (BFD) can be used to monitor paths between nodes.
- Seamless BFD (S-BFD) provides a simplified mechanism which is suitable for monitoring of paths that are setup dynamically and on a large scale network, with supporting verification on reflector
- Monitoring SRv6 Policy

BFD/S-BFD could be used to monitor SRv6 Policy, a session associated with a segment list.

Requirement of path consistency

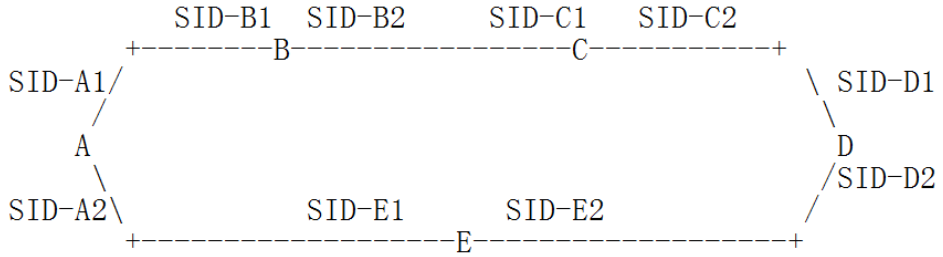
- Path inconsistency may cause false positive issue
- To the issue, The consistency of forward and reverse path of the same session should be guaranteed
- This draft describes how to realize the bidirectional path consistency of packet when monitoring SRv6 policy by S-BFD



Correlating bidirectional path using Path Segment

- Path Segment is defined to identify an SR path in [draft-ietf-spring-srv6-path-segment]
- [draft-ietf-idr-sr-policy-path-segment] extends BGP SR Policy

```
SR Policy SAFI NLRI: <Distinguisher, Policy-Color, Endpoint>
    Attributes: Tunnel Encaps Attribute (23)
    Tunnel Type: SR Policy
        Binding SID
        Preference
        Priority
        Policy Name
        Explicit NULL Label Policy (ENLP)
        Segment List
            Weight
            Path Segment
            Segment
            Segment
            ...
            Reverse Segment List
                Path Segment
                Segment
                Segment
                ...
```



NodeA:

```
SRv6 Policy A-D
  Candidate Path1
   Segment list1
       SID-A1, SID-B2, SID-C2
       Path Segment: SID-Path-A1
       Reverse Path Segment:
          SID-Path-D1
   Segment list2
       SID-A2, SID-E2
       Path Segment: SID-Path-A2
       Reverse Path Segment:
         SID-Path-D2
```

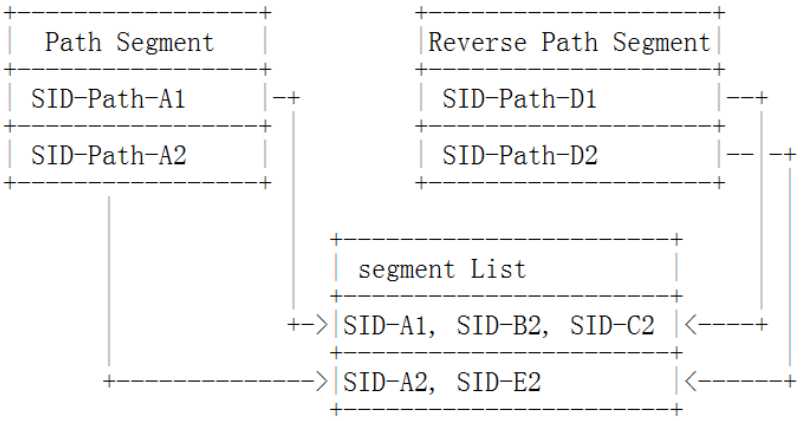
NodeD:

```
SRv6 Policy D-A
   Candidate Path1
    Segment list1
     SID-D1, SID-C1, SID-B1
     Path Segment: SID-Path-D1
     Reverse Path Segment:
        SID-Path-A1
    Segment list2
      SID-D2, SID-E1
      Path Segment: SID-Path-D2
      Reverse Path Segment:
           SID-Path-A2
```

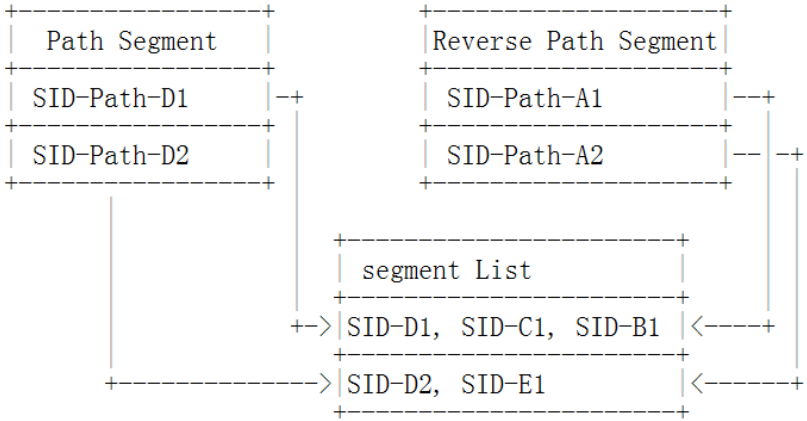
Correlating bidirectional path using Path Segment(2)

- Using path segment and reverse path segment to establish a mapping table
- Using the mapping table to get segment list by reverse Path segment

NodeA:



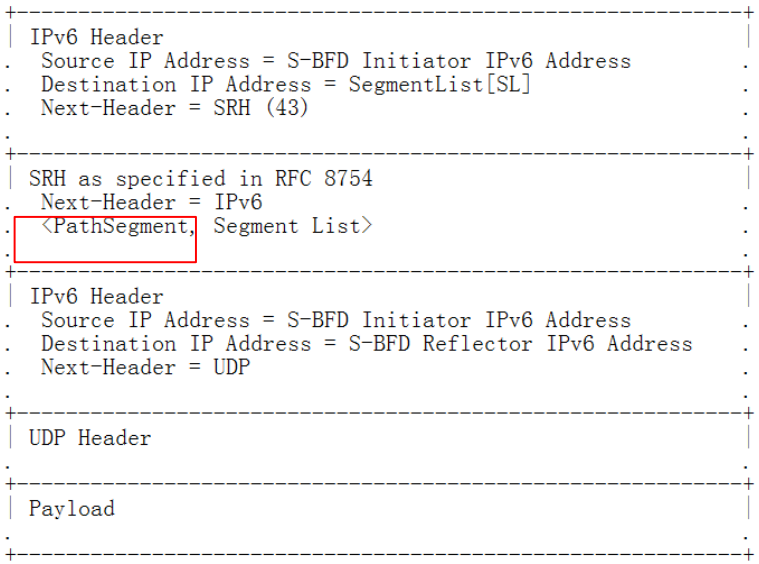
NodeD:

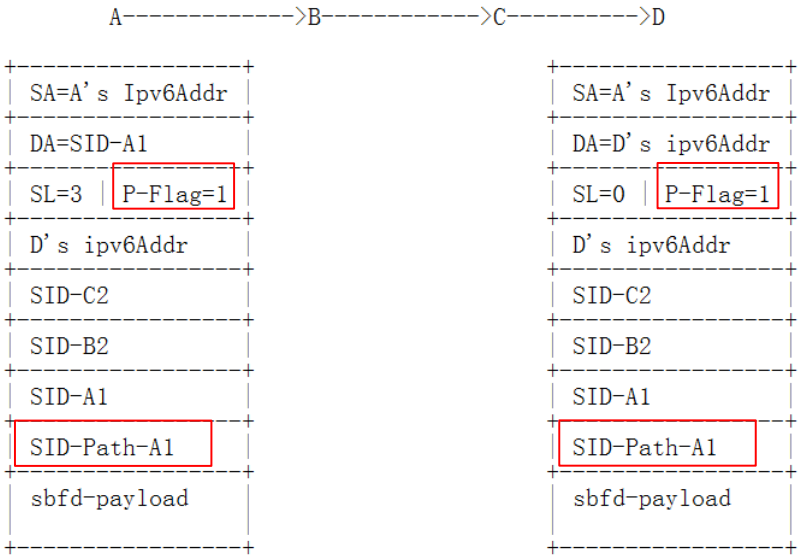


S-BFD Initiator procedure

- Encapsulating the segment list associated with SBFD-session session to SRH
- Encapsulating the path segment of segment list1 (i.e. SID-Path-A1) in SRH, and set SRH.P-Flag

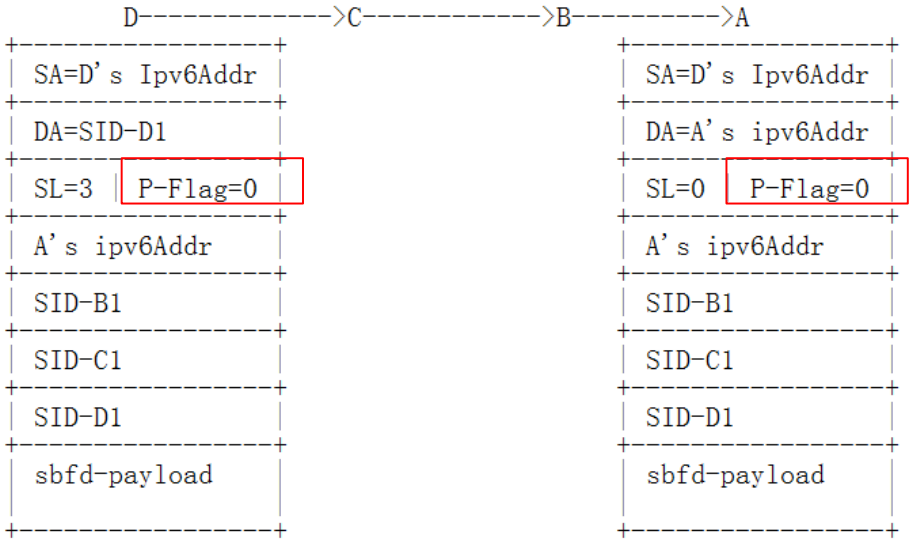
```
Segment list1
    SID-A1, SID-B2, SID-C2
    Path Segment: SID-Path-A1
    Reverse Path Segment:
       SID-Path-D1
```





S-BFD reflector procedure

- If SRH.P-flag is set, extracts the path segment (i.e. SID-Path-A1)of the forward path from SRH
- Get segment list of reverse path by the path segment as a reverse path segment from mapping table
- Encapsulating response packet with the reverse segment list



Next Steps

- Any questions or comments are Welcomed
- Seeking for feedback

Thank You