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
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

**Node A:**

```
Path Segment
SID-Path-A1
SID-Path-A2

Reverse Path Segment
SID-Path-D1
SID-Path-D2

segment List
→ SID-A1, SID-B2, SID-C2
→ SID-A2, SID-E2
```

**Node D:**

```
Path Segment
SID-Path-D1
SID-Path-D2

Reverse Path Segment
SID-Path-A1
SID-Path-A2

segment List
→ SID-D1, SID-C1, SID-B1
→ SID-D2, SID-E1
```
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
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

```
D ---------> C ---------> B ---------> A

SA=D’s IPv6Addr
DA=SID-D1
SL=3 P-Flag=0
A’s IPv6Addr
SID-B1
SID-C1
SID-D1
sbfd-payload

SA=D’s IPv6Addr
DA=A’s IPv6Addr
SL=0 P-Flag=0
A’s IPv6Addr
SID-B1
SID-C1
SID-D1
sbfd-payload
```
Next Steps

• Any questions or comments are Welcomed
• Seeking for feedback
Thank You