Encapsulation of BFD for SRv6 Policy

draft-liu-bfd-srv6-policy-encap-02

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Introduction

• BFD mechanisms can be used for failure detection of SR Policy
• BFD detecting the hierarchical relationship of SR policy:
  – BFD session down ---\> **Segment List** fail
  – All Segment List fail ---\> **Candidate Path** fail
  – All Candidate Path fail ---\> **SR Policy** fail
• On IPv6 data plane (SRv6 Policy), BFD packet needs to carry a Segment Routing Header(SRH), which contains a list of SRv6 SID associated with the BFD session.
• This draft describes the encapsulation method of BFD for SRv6 Policy. It can be applied for seamless BFD and echo BFD.
Encapsulation of BFD packet for SRv6 Policy

- **Transport Mode**
  - an SRH is inserted after the IPv6 header of a BFD packet
  - Reduce header overhead and reduce detection packet bandwidth when the detection interval is very short (e.g.<10ms)

- **Encap Mode**
  - an outer IPv6 header with an SRH is encapsulated
  - preserve the original complete BFD packet, only modified outer IPv6 header
Ensure BFD Packets Reach Tail-end

The last SID in SRv6 Policy may not belong to the tail-end: e.g. End.X SID of penultimate hop

Unidirectional Packet

Echo Packet

Encap Mode

Transport Mode
Special handling of UDP checksum

✓ Transport mode

Calculate UDP checksum using the source address of IPv6 Header and segment list[0] of SRH as destination addresses

✓ Encap mode

Calculate UDP checksum using the source and destination addresses of the inner IPv6 header
Lab Interop-test Status

Hardware devices and software implementations which have passed BFD for SRv6 Policy interoperability tests of both encapsulations hosted by China Mobile in 2022:

Huawei NE40E and NE5000E
H3C CR16010H-FA and CR19000-8
ZTE M6000-8S Plus and M6000-3S
Ruijie RG-N8010-R
Next Steps

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