Data Plane Failure Detection Mechanisms for EVPN and PBB-EVPN over SRv6

draft-liu-bess-srv6-evpn-validation

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Background and Motivation

MPLS EVPN

- [RFC9489]: data plane failures of MPLS EVPN&PBB-EVPN can be detected using MPLS LSP Ping
- new Target FEC Stack Sub-TLVs defined for the corresponding EVPN scenario
- Main procedures:
  - echo request sent from ingress PE to egress PE
  - egress PE validates the EVPN related info in FEC sub-TLVs
  - egress PE sends the results of the validation in an Echo Reply

SRv6 EVPN [RFC9252]

- many implementations
- the requirement for data plane failure detection is similar to MPLS EVPN
- No similar mechanism like MPLS LSP Ping, only ping(ICMPv6) for dataplane connection validation in SRv6
New ICMPv6 Messages

ICMPv6 Validation Request

Code:
(0) Validation passed
(1) Malformed request received
(2) One or more of the objects were not understood
(3) Information mismatch

ICMPv6 Validation Reply
EVPN MAC/IP Object

- similar to EVPN MAC/IP Sub-TLV in [RFC9489]
- identifies the target MAC, MAC/IP binding for ARP/ND, or IP address for an EVI under test at an egress PE
EVPN Ethernet Auto-Discovery (A-D) Object

- similar to EVPN Ethernet Auto-Discovery (A-D) Sub-TLV in [RFC9489]
- identified based on the EVPN Ethernet A-D route advertisement
EVPN IP Prefix Object

- similar to EVPN IP Prefix Sub-TLV in [RFC9489]
- identifies the IP prefix for an EVI under test at a peer PE
Processing Procedures

① Sending Validation Request
SRv6 Service SID to be verified as the last segment (SA, DA)(SID C, SID B, SID A; SL=2)(ICMPv6 Val Req)

② Receiving Validation Request
DA is locally configured as a segment or local interface (SL=0);
Verify the information encoded in the Validation Information Object

③ Sending Validation Reply
Return code set based on the verification result;
IP routed

Ping Mode
On PE3, an operator performs a connectivity check for the B-MAC1 on PE1
- The ICMPv6 Validation Request packet is sent with the \{SRv6 segment list to reach PE1, SRv6 Service SID1\}, carry RD1 and B-MAC1 in the EVPN MAC/IP Object
- PE1 checks the connectivity for B-MAC1 and returns the ICMPv6 Validation Reply with the code indicating the validation result.
Next Steps

• Add procedures for multicast connectivity state validation in SRv6 EVPN.
• Do you have similar requirements in your network?
• Welcome feedback, comments and cooperation!
Thank You !