

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

draft-liu-bess-srv6-evpn-validation

Yao Liu

ZTE

BESS WG

IETF#120

Jul, 2024

# Background and Motivation

## MPLS EVPN

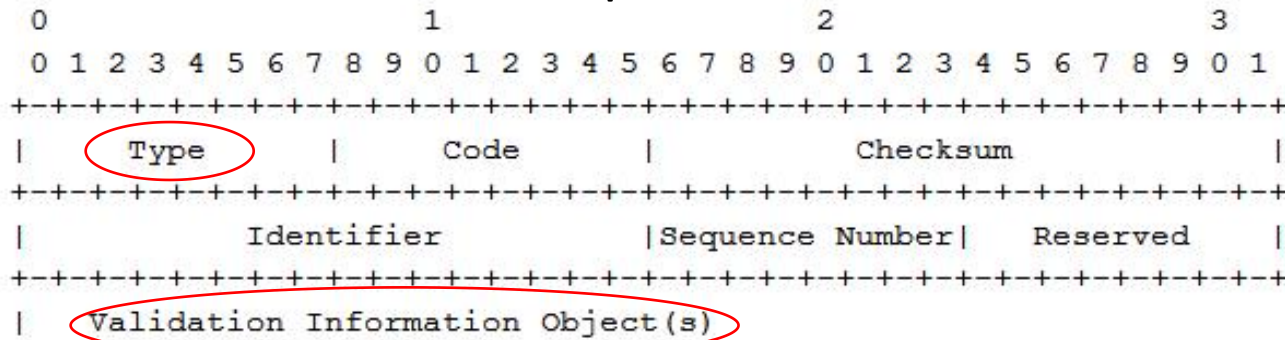
- [RFC9489]: data plane failures of MPLS EVPN&PBB-EVPN can be detected using MPLS LSP Ping
- new Target FEC Stack Sub-TLVs defined for the corresponding EVPN scenario
- Main procedures:
  - echo request sent from ingress PE to egress PE
  - egress PE validates the EVPN related info in FEC sub-TLVs
 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

## SRv6 EVPN [RFC9252]

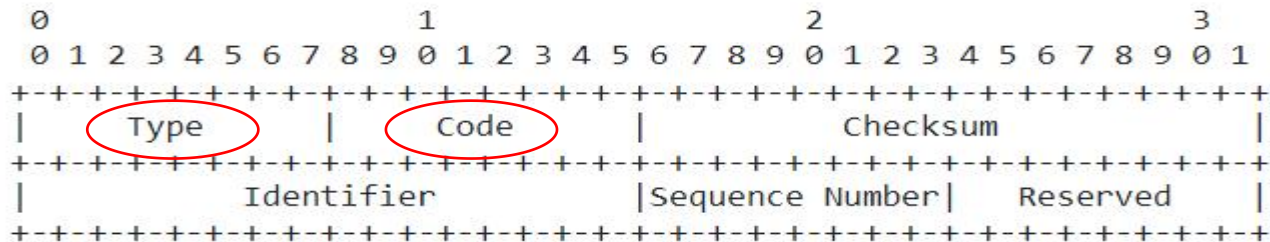
- many implementations
- the requirement for data plane failure detection is similar to MPLS EVPN
- No similar mechanism like MPLS LSP Ping, only ping(ICMPv6) for dataplane connection validation in SRv6

# New ICMPv6 Messages

## ICMPv6 Validation Request



## ICMPv6 Validation Reply



Code:

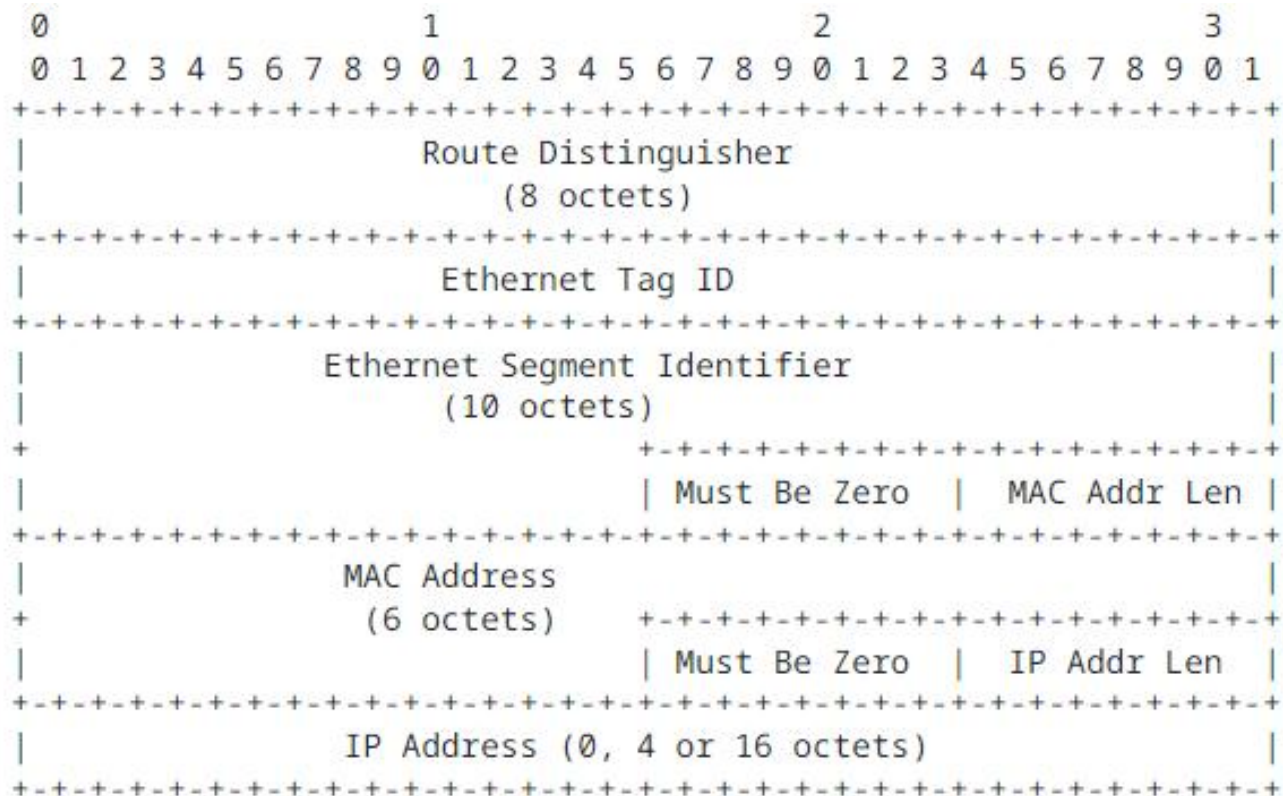
(0) Validation passed

(1) Malformed request received

(2) One or more of the objects were not understood

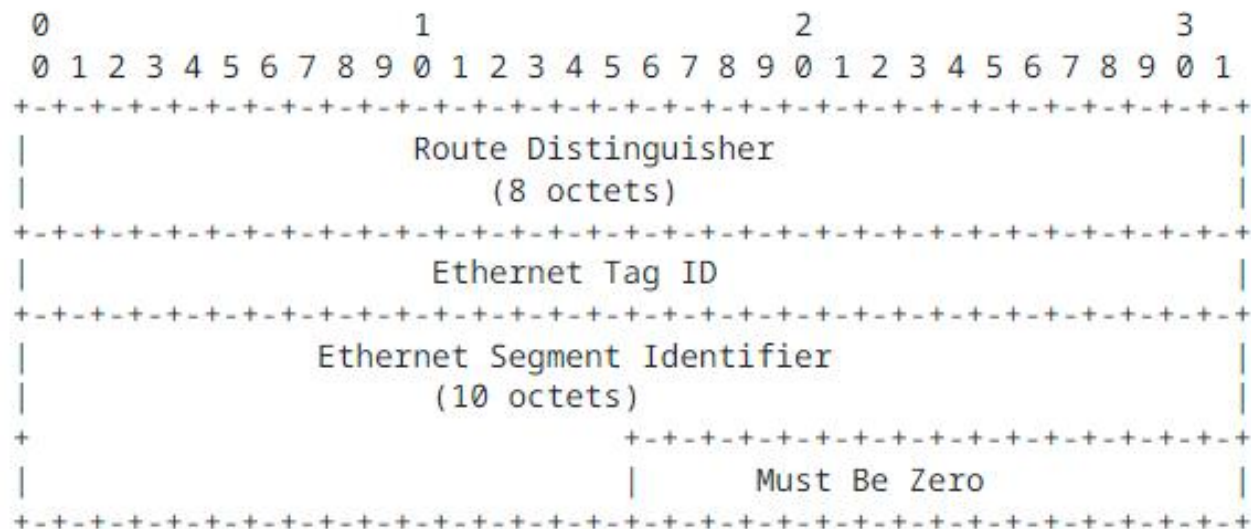
(3) Information mismatch

# EVPN MAC/IP Object



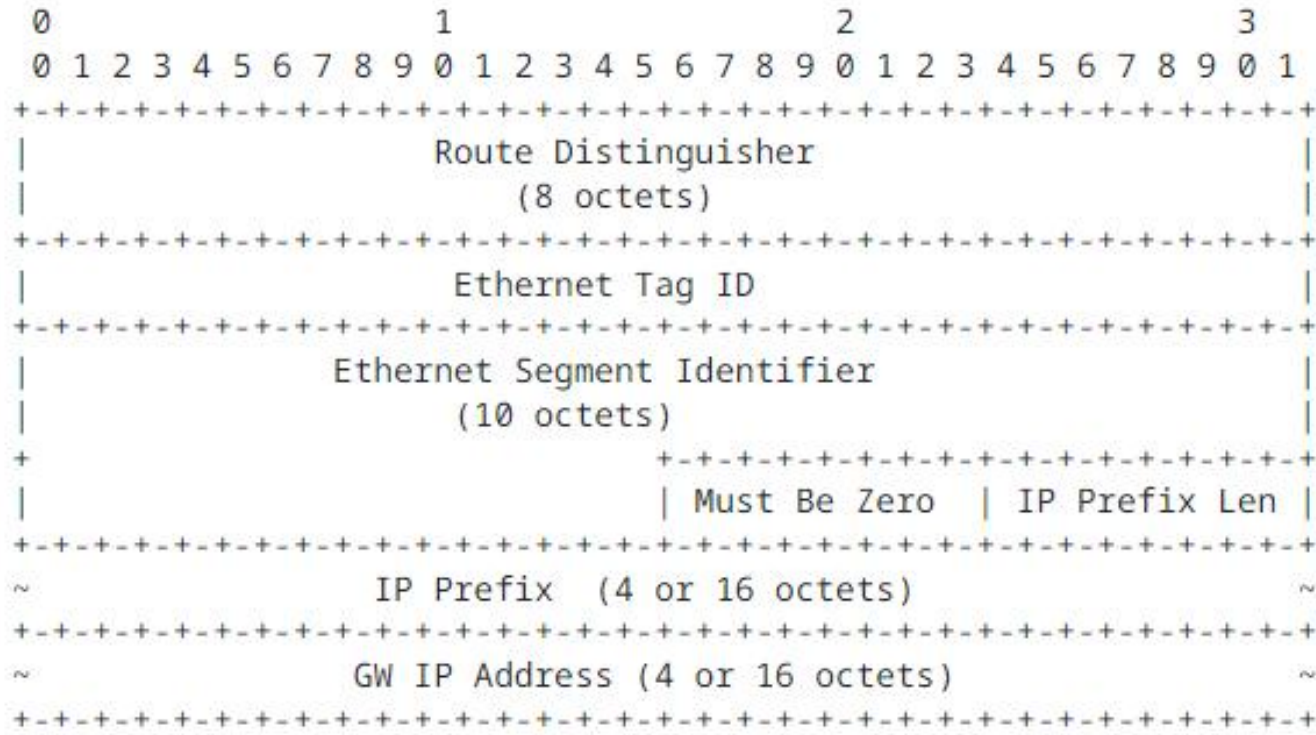
- similar to EVPN MAC/IP Sub-TLV in [RFC9489]
- identifies the target MAC, MAC/IP binding for ARP/ND, or IP address for an EVI under test at an egress PE

# 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

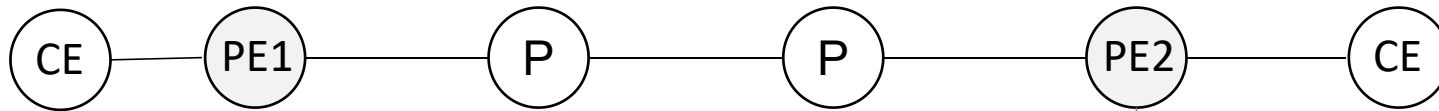
# EVPN IP Prefix Object



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

# Processing Procedures

Ping Mode



## 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)

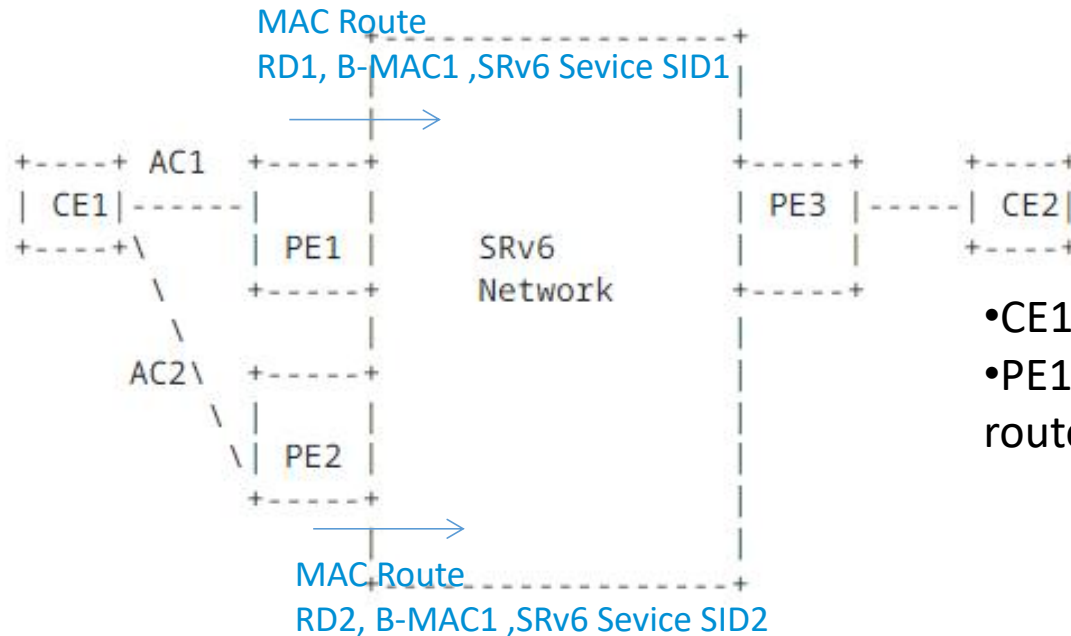
## ② Receiving Validation Request

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

# Processing Procedures



- CE1 dual-homed to PE1 and PE2
- PE1 and PE2 both announced a MAC route, with different SRv6 service SIDs

- 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 !