

Advertising S-BFD Discriminators in BGP

<https://datatracker.ietf.org/doc/draft-wang-bess-sbfd-discriminator>

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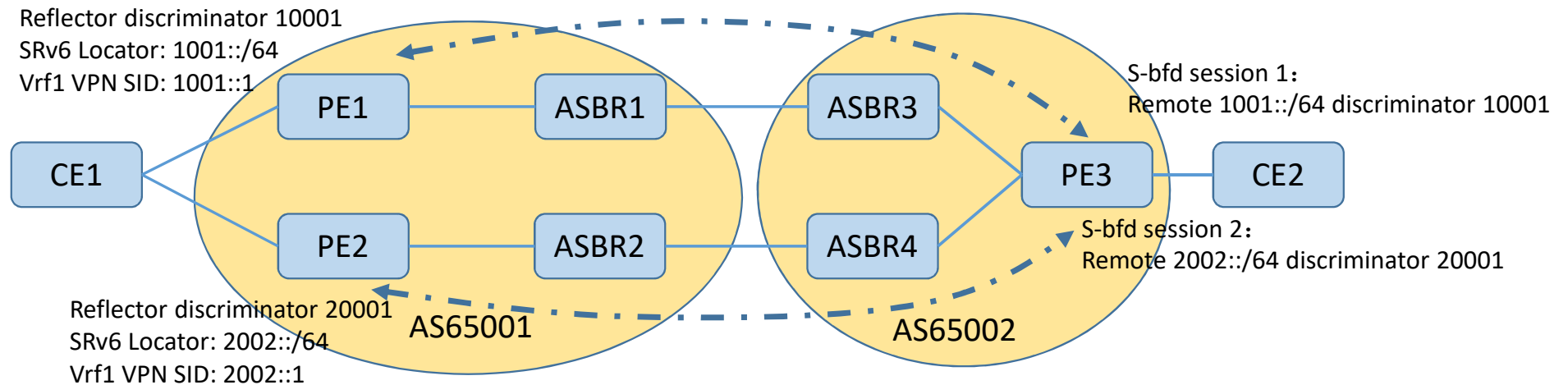
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Motivation

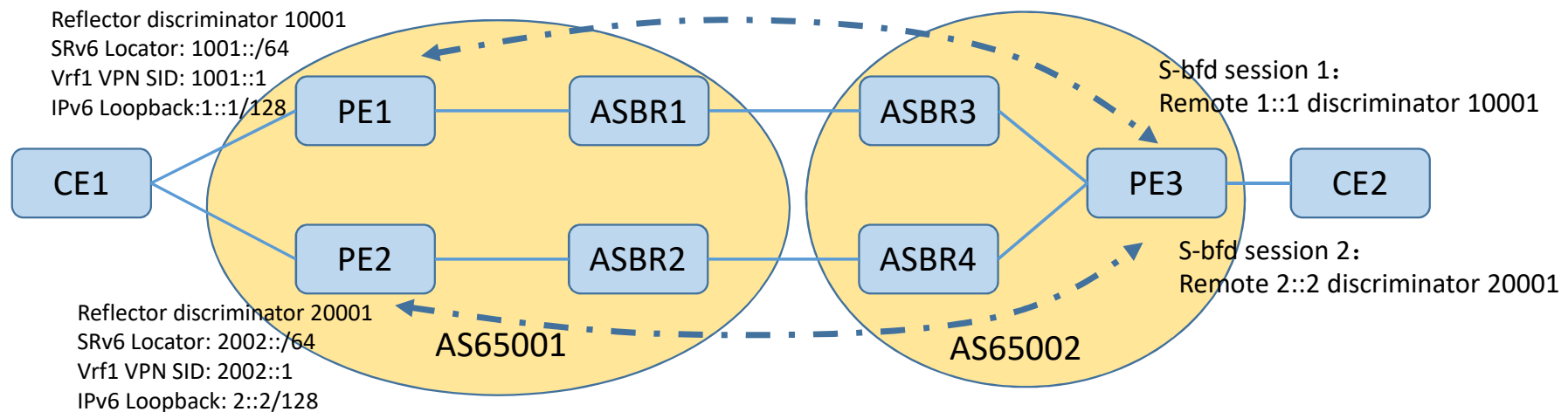
- [RFC7880] defines Seamless Bidirectional Forwarding Detection (S-BFD) mechanism
- We may use S-BFD to detect the PE failure quickly
- For the deployment of S-BFD in IPv4 network, the reflector can use the LSR-ID address as the discriminator, which can simplify operator's configuration
- For IPv6 network, the discriminator for each destination PE has to be configured
- [[RFC7883](#)] [[RFC7884](#)] defines IS-IS and OSPF extensions to flood the S-BFD discriminators in network, but can only be used for intra-domain, and may create un-necessary S-BFD sessions

Scenario1: Service Over SRv6 BE Use Case



- Inter-domain scenario with SRv6 BE for E2E
- PE1 and PE2 advertise their VPN routes which contain the SRv6 VPN SID to PE3
- Traffic arriving at PE3 will be forwarded to PE1 or PE2 based on SRv6 locator reachability
- PE3 needs to create S-BFD sessions to detect PE1 or PE2 locator's reachability
- For each S-BFD session, the remote ip-address and discriminator need to be configured
- Creating S-BFD sessions with a large number of PEs is complex
- IGP flooding of the S-BFD discriminator cannot cross the AS boundary
- Even within one AS, nodes may create redundant S-BFD sessions when receiving the IGP flooded discriminators

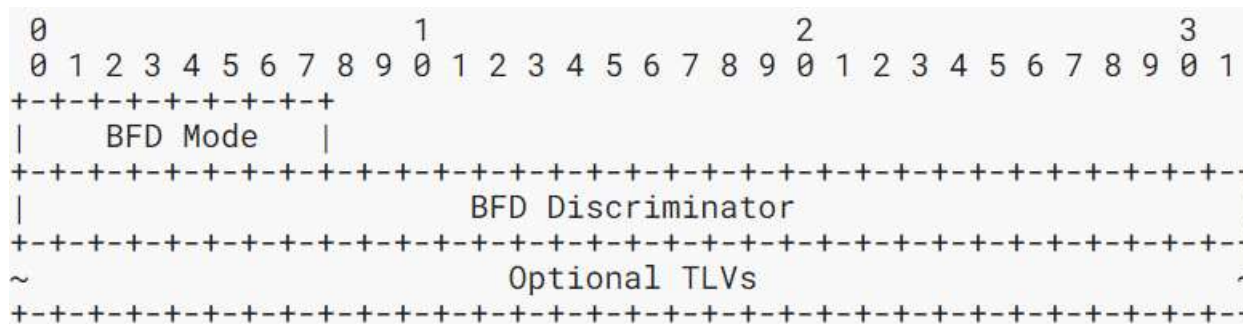
Scenario2: Service Over SRv6 Policy Use Case



- Inter-domain scenario (could also be intra-domain) with E2E SRv6 Policy
- PE1 and PE2 advertise their VPN routes with SRv6 VPN SIDs to PE3 and use their IPv6 loopback address as the nexthop
- Traffic arriving at PE3 will be forwarded based on SRv6 Policy reachability
- PE3 needs to create S-BFD sessions to detect PE1 or PE2 reachability
- For each S-BFD session, the remote ip-address and discriminator need to be configured
- In practice, this scenario is not limited to SRv6 policies. The same applies to MPLS.

BGP Extensions

- Reuse the “BFD Discriminators” attribute (RFC9026, Type 38)
- Two new BFD Modes are introduced:
 - Type TBD1: S-BFD for SRv6 Locator Session
 - Used to detect SRv6 Locator
 - Optional TLVs will contain Source IP Address TLV, which contain the SRv6 Locator address
 - Type TBD2: S-BFD for Common Session
 - Used to detect route’s next-hop. This mode can be used for both IPv4 and IPv6
 - Optional TLVs will contain Source IP Address TLV, which contain the next-hop address



Procedures

- Advertising BGP speaker:
 - BGP VPN routes are advertised with the local discriminator carried in the BFD Discriminators attribute, and the BFD mode is set to one of the new modes defined
- Receiving BGP speaker:
 - Use the discriminator to notify the BFD module to create an S-BFD session
 - For Mode type TBD1, the Locator carried in the Source IP Address TLV is used as the destination of the S-BFD session
 - For Mode type TBD2, the next-hop address carried in the Source IP Address TLV is used as the destination

Next steps

- Welcome more comments and discussion
- Revise the draft accordingly

Thank you!