SRv6-based BGP Service Capability

draft-lz-bess-srv6-service-capability

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Backgroud

➢ SRv6 based BGP services [I-D.ietf-bess-srv6-services]

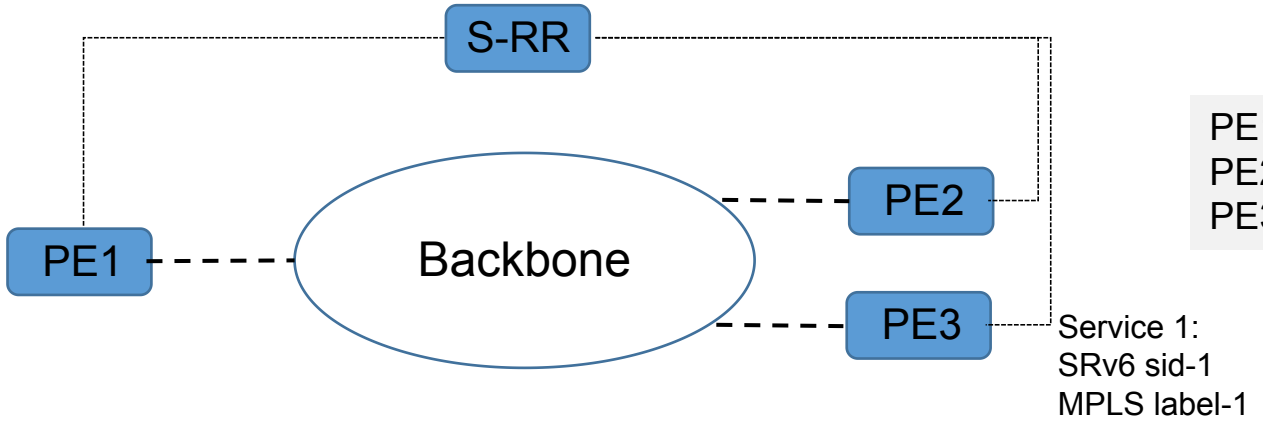
- leverages the existing AFI/SAFIs of MPLS-based services
- SRv6 Service SID: SID associated with the service-specific Endpoint behavior on PE, enclosed in SRv6 Service TLV(s) within the BGP Prefix-SID Attribute attached to MP-BGP NLRIs

MP-BGP NLRI
BGP Prefix-SID Attribute
SRv6 Service TLV(SRv6 Service SID)

➢ Encoding of SRv6 service SIDs:

- SRv6 Service SIDs encoded as a whole in the SRv6 Services TLVs, the MPLS Label field(s) of the NLRI set to Implicit NULL
- locator carried in SRv6 Services TLV, function and/or argument in the MPLS Label field of the NLRI

the Co-existence Scenario



PE1: legacy device, only MPLS VPN
PE2: only SRv6 VPN
PE3: both SRv6 & MPLS VPN

Advertising SRv6-based service routes to legacy devices may result in service failure and/or abnormal extra traffic flows in the network.

PE1----PE3

➢ Control Plane
- PE3: advertises both SRv6 VPN route and MPLS VPN route
- PE1: discards the SRv6 Service TLV, treats the SRv6-based route as a MPLS-based route --> two MPLS VPN routes for the same service on PE1

➢ Data Plane
- PE1: chooses the wrong route and uses the label field in the NLRI of SRv6 route as MPLS VPN label for packet encapsulation
- PE3: sends packets to the wrong service instance/ drops them

Advertisement of SRv6 Service Routes

"Implementations SHOULD provide a mechanism to control advertisement of SRv6-based BGP service routes on a per neighbor and per service basis." *[I-D.ietf-bess-srv6-services]*

General configuration steps :

- Get each PE's capability for SRv6-based service routes.
- Config on PEs or S-RR based on their capabilities (per neighbor).
  - PEs: Specify which neighbors can the SRv6 service routes be advertised to when configuring SRv6 services on the PEs.
  - S-RR: SRv6 service routes would not be reflected to legacy devices that don't support SRv6.

Disadvantages :

- The per neighbor configuration needs to vary with the device capability.
- Additional steps increase the possibility of faults and the difficulty of troubleshooting.
- Possible interconnection problems among multiple vendors.

SRv6-based BGP Service Capability

- The Capabilities Optional Parameter *[RFC5492]* in the BGP OPEN message allows BGP speakers to communicate capabilities.

- A new Capability Code for SRv6-based BGP service capability.

- A BGP speaker MUST NOT send any UPDATE message that includes the SRv6 service TLVs, unless it has sent the SRv6-based BGP service capability in its BGP OPEN message , or it has received the SRv6-based BGP service capability in the BGP OPEN message from its peer.
- If the capability for SRv6-based services is enabled or removed, an established session needs to be reset to resend the OPEN message.

The advertisement of SRv6-based BGP service routes is controlled without per neighbor configuration, which makes it easier to implement and manage SRv6-based services in the network.

Next Steps

- Request feedbacks and comments

Thank You !