

Path Segment/ID in BGP/BGP-LS

draft-li-idr-sr-policy-path-segment-distribution
draft-li-idr-bgp-ls-sr-policy-path-segment

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Background

- The extension of BGP to advertise the SR Policy is defined in [draft-ietf-idr-segment-routing-te-policy](#).
- To support use cases like performance measurement, path identification is required.
- In SR-MPLS, the egress node cannot determine from which SR path the packet comes
 - since no label or only the last label may be left in the MPLS label stack when the packet reaches the egress node.
- [draft-cheng-spring-mpls-path-segment](#) introduces a new segment to uniquely identify an SR path called Path Segment.
- For easier identifying an SRv6 path, the Path ID that identifies an SRv6 path is proposed in [draft-li-spring-passive-pm-for-srv6-np-00](#).
- For advertising path ID information within an BGP SR policy , new extension is needed.
- Also, for collecting path ID information within an BGP SR policy, new extension in BGP-LS is needed.

Drafts

- **draft-li-idr-sr-policy-path-segment-distribution-00**
 - defines extensions to BGP to distribute SR policies with Path segment and bi-directional path information.
 - based on the extension described in [draft-ietf-idr-segment-routing-te-policy](#).
- **draft-li-idr-bgp-ls-sr-policy-path-segment-00**
 - specifies the way of collecting configuration and states of SR policies carrying path ID and bi-directional path information by using BPG-LS.
 - based on the extension described in [draft-ietf-idr-te-lsp-distribution](#).

Structure of Path Segment/ID in BGP SR Policy

- [draft-ietf-idr-segment-routing-te-policy](#) defines the SR Policy structure in BGP.
- [draft-li-idr-sr-policy-path-segment-distribution-00](#) introduced a path segment to identify an SR path, so the SR policy structure becomes:
 - SR Policy SAFI NLRI: <Distinguisher, Policy-Color, Endpoint>
 - Attributes: Tunnel Encaps Attribute (23)
 - Tunnel Type: SR Policy
 - Binding SID
 - Preference
 - Segment List
 - Weight
 - **Path ID**
 - Segment ...

Path ID TLV

- G-Flag: Global flag.
 - Set when the Path segment/ID is global within an SR domain.
- E-Flag: Egress flag for local segment/IDs.
 - Set when a path segment/ID is a local segment/ID allocated by the egress node.
 - When G-flag is set, this flag should be ignored.
- PIT: Path ID type, specifies the type of the Path ID, and it has following types:
 - 0: SR-MPLS Path Label
 - 1: 4-octets integer Path ID
- Path ID: The Path ID of an SR path.

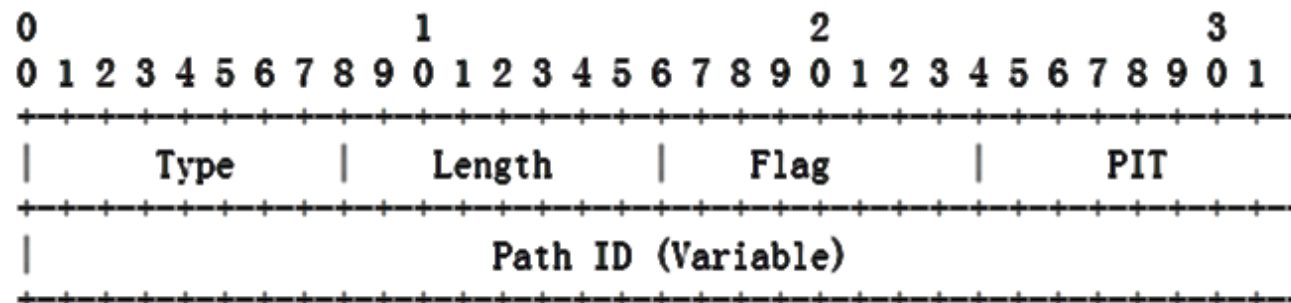


Figure 1. Path ID sub-TLV

SR Policy for Bidirectional Path

- In SR, a bidirectional path can be represented as a binding of two unidirectional SR paths.
- New sub-TLVs are defined to describe an SR bi-directional path in SR Policy.

SR Policy SAFI NLRI: <Distinguisher, Policy-Color, Endpoint>

Attributes: Tunnel Encaps Attribute (23)

Tunnel Type: SR Policy

Binding SID

Preference

Bi-directional Path

Segment List

Weight

Path ID

Segment

Segment

...

Reverse Segment List

Weight

Path ID

Segment

Segment

...

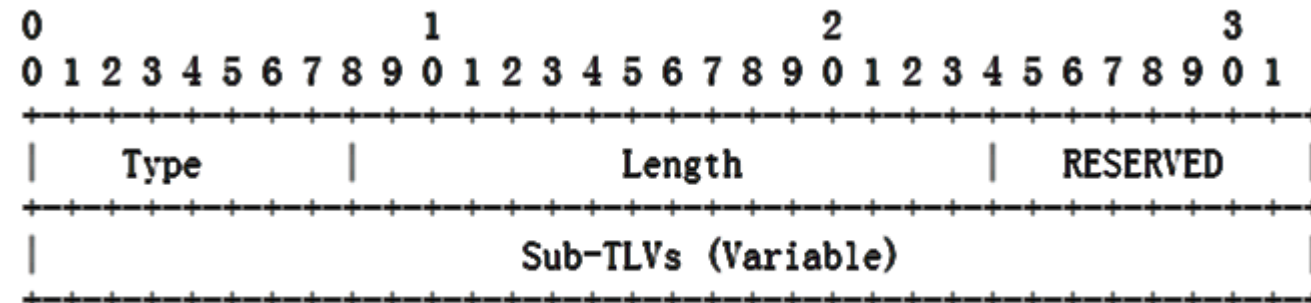


Figure 2. SR Bi-directional path sub-TLV

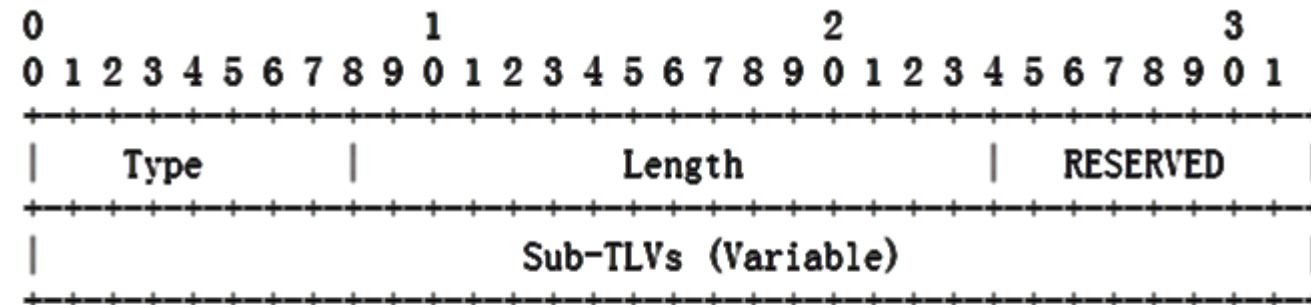


Figure 2. SR Reverse Path Segment List Sub-TLV

draft-li-idr-bgp-ls-sr-policy-path-segment-00

Path Segment/ID in BGP-LS

- Specifies the way of collecting configuration and states of SR policies carrying path ID and bi-directional path information by using BGP-LS.
- The characteristics of an SR policy can be described by a TE Policy State TLV defined in [draft-ietf-idr-te-lsp-distribution](#), which is carried in the "LINK_STATE Attribute" [[RFC7752](#)].
- Reuses the equivalent sub-TLVs as defined in [draft-li-idr-sr-policy-path-segment-distribution](#).

Next Steps

- Comments and contributions are welcome.

Thank you