BGP SR Policy Extensions for Segment List Identifier

draft-lin-idr-sr-policy-seglist-id

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Motivation

draft-ietf-idr-segment-routing-te-policy specifies a mechanism by using BGP to distribute SR Policy to headend node. But there is **no identifier for segment list** in BGP SR Policy, and it may cause inconvenience in some scenarios:

For example:

✓ **Reporting traffic forwarding statistic**

Headend nodes collect traffic forwarding statistics per segment list and report statistic data to controller. Because there is no identifier for segment list,
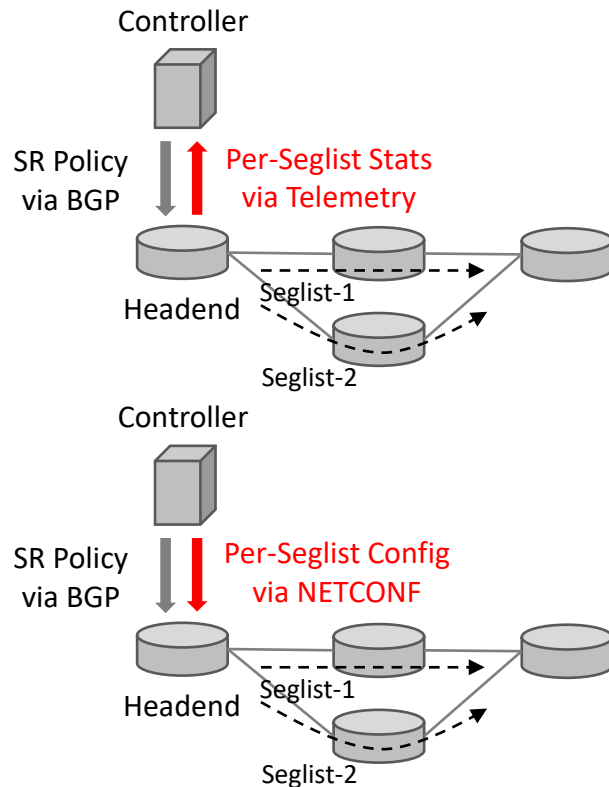
– **headend**: report whole segment list along with statistic

– **controller**: compare the SID one by one to identify the segment list

✓ **Distributing configuration of segment list**

SR Policy is distributed by BGP, and configuration of segment list is distributed by NETCONF. Because there is no identifier for segment list,

– **controller** : distribute whole segment list along with configuration

– **headend** : compare the SID one by one to identify the segment list

A simple identifier for segment list can be helpful to improve efficiency.

Controller

SR Policy via BGP   Per-Seglist Stats via Telemetry

Headend   Seglist-1

Seglist-2

Controller

SR Policy via BGP   Per-Seglist Config via NETCONF

Headend   Seglist-1

Seglist-2

Existing Segment List Identifier in PCEP and YANG

- PCEP (draft-ietf-pce-multipath)

A segment list is identified by "Path ID", which is a 4-octet identifier.

- YANG (draft-ietf-spring-sr-policy-yang)

 A segment-list is keyed by its "name", which is a string.

New Segment List Identifier in BGP SR Policy

This draft defines the extensions to BGP SR Policy to specify the identifier of segment list.

Segment list Identifier could be:

✓ **4 octets number**

    Segment List ID Sub-TLV is defined

✓ **Name**

    Segment List Name sub-TLV is defined

Both the two forms are provided to achieve better flexibility.

```
SR Policy SAFI NLRI: <Distinguisher, Policy-Color, Endpoint>
Attributes:
    Tunnel Encaps Attribute (23)
        Tunnel Type: SR Policy
            Binding SID
            SRv6 Binding SID
            Preference
            Priority
            Policy Name
            Policy Candidate Path Name
            Explicit NULL Label Policy (ENLP)
            Segment List
                Weight
                Segment List Identifier
                Segment
                Segment
                ...
        ...
```
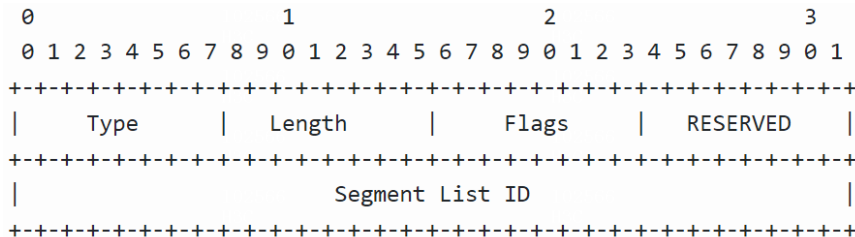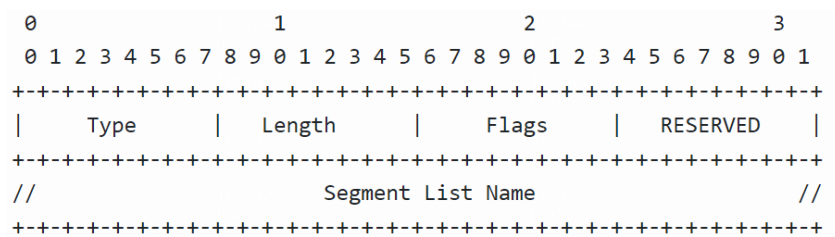
Sub-TLVs for Segment List Identifier

- **Segment List ID Sub-TLV**

The Segment List ID sub-TLV specifies the identifier of the segment list by a **4-octet number**.

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|     Type      |    Length     |     Flags     |   RESERVED    |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                       Segment List ID                        |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

- **Segment List Name Sub-TLV**

The Segment List Name sub-TLV specifies the identifier of the segment list by a **name**.

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|     Type      |    Length     |     Flags     |   RESERVED    |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
//                     Segment List Name                      //
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

Next Steps

- Any questions or comments are Welcomed
- Seeking for feedback

Thank You