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Y. Liu
S. Peng
ZTE Corporation
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**SR Policy for Reverse Path
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Abstract

This document introduces a method of dynamically configuring the return path for an SR path.

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[1.](#) Introduction

Echo-BFD [[RFC5880](#)] can be used to monitor an SR Policy between the local and the remote BFD peers. As defined in [[RFC5880](#)], the remote BFD system does not process the payload of an Echo BFD.

A BSID can be used to specify the return path of an Echo BFD packet.

As introduced in [[I-D.ietf-spring-bfd](#)], the sender MAY use a Binding SID (BSID) [[RFC8402](#)] that has been bound with the SR Policy that ensures the return of a packet to that particular node and a BSID MAY be associated with the SR Policy that is the reverse to the SR Policy programmed onto the BFD Echo packet by the sender.

One way to implement this is through static configuration, e.g, configure the BSID corresponding to the return path for each segment list when enable BFD for an SR policy or an segment list.

This document introduces a method of dynamically configuring the return path for an SR path, which can be used to specify the return path in Echo BFD for SR, ICMPv6 for SRv6, etc.

[2.](#) SR Policy for Bidirectional Path

In order to specify the return path for an segment list when delivering the SR Policy, and the tail node can return the packet according to the specified return path, this document proposes extensions of SR Policy. It allows the segment list to have its own BSID.

When delivering SR policy, the BSID of the segment list and the corresponding BSID of the return segment list can be carried together.

Reverse Binding SID: the BSID of the reverse SR path. If it is encapsulated in the packet, the Reverse Binding SID must be the last segment to be processed.

The extended SR Policy Encoding structure is as follows:

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
      Binding SID
      Reverse Binding SID
      Weight
      Segment
      Segment
      ...

```

Whether to carry RBSID in the packet can be configured according to service requirements. For example, when echo BFD packets are encapsulated, RBSID is carried in segment list, while packets of other services do not carry RBSID by default. Thus BFD packets and common service packets can share the same SR Policy.

2.2. Illustration

```

+-+      +-+      +-+      +-+
|A|-----|B|-----|C|-----|D|
+-+      +-+      +-+      +-+

```

Figure 3: Reference Topology

The content of Segment List1 in SR Policy1 received by A is:

```

Segment List1
  Reverse Binding SID D1
  Segment B
  Segment C
  Segment D

```

The content of Segment List2 in SR Policy2 received by D is:

Segment List2

Binding SID D1

Segment C

Segment B

Segment A

The SID-List of the BFD ECHO sent by A is < B, C, D, D1 >.

After the packet arrives at node D, D1 is Segment List2 BSID. BFD packets are returned from node D according to segment list < C, B, A >.

2.3. Difference from Path Segment

TBD

3. Security Considerations

Procedures and protocol extensions defined in this document do not affect the security considerations discussed in [\[I-D.ietf-idr-segment-routing-te-policy\]](#) and [\[I-D.ietf-spring-segment-routing-policy\]](#).

4. IANA Considerations

TBD

5. Normative References

- [I-D.ietf-idr-segment-routing-te-policy]
Previdi, S., Filsfils, C., Talaulikar, K., Mattes, P., Rosen, E., Jain, D., and S. Lin, "Advertising Segment Routing Policies in BGP", [draft-ietf-idr-segment-routing-te-policy-11](#) (work in progress), November 2020.
- [I-D.ietf-spring-bfd]
Mirsky, G., Tantsura, J., Varlashkin, I., Chen, M., and J. Wenying, "Bidirectional Forwarding Detection (BFD) in Segment Routing Networks Using MPLS Dataplane", [draft-ietf-spring-bfd-00](#) (work in progress), September 2020.
- [I-D.ietf-spring-segment-routing-policy]
Filsfils, C., Talaulikar, K., Voyer, D., Bogdanov, A., and P. Mattes, "Segment Routing Policy Architecture", [draft-ietf-spring-segment-routing-policy-09](#) (work in progress), November 2020.

- [RFC5880] Katz, D. and D. Ward, "Bidirectional Forwarding Detection (BFD)", [RFC 5880](#), DOI 10.17487/RFC5880, June 2010, <<https://www.rfc-editor.org/info/rfc5880>>.
- [RFC8402] Filsfils, C., Ed., Previdi, S., Ed., Ginsberg, L., Decraene, B., Litkowski, S., and R. Shakir, "Segment Routing Architecture", [RFC 8402](#), DOI 10.17487/RFC8402, July 2018, <<https://www.rfc-editor.org/info/rfc8402>>.

Authors' Addresses

Liu Yao
ZTE Corporation
Nanjing
China

Email: liu.yao71@zte.com.cn

Peng Shaofu
ZTE Corporation
Nanjing
China

Email: peng.shaofu@zte.com.cn

