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**BGP SR Policy Extensions for Virtual Transport Network
draft-dong-idr-sr-policy-vtn-00**

Abstract

Segment Routing (SR) Policy is a set of candidate paths, each consisting of one or more segment lists and the associated information. The header of a packet steered in an SR Policy is augmented with an ordered list of segments associated with that SR Policy. In scenarios where multiple Virtual Transport Networks (VTNs) exist in the network, the VTN in which the SR policy is instantiated may also need to be specified, so that the header of packet can also be augmented with the information associated with the VTN. An SR Policy candidate path can be distributed using BGP SR Policy. This document defines extensions to BGP SR policy to specify the VTN associated with the SR policy.

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Table of Contents

1.	Introduction	2
2.	Specification of Requirements	3
3.	VTN Information Encoding in SR Policy	3
4.	Procedures	4
5.	Security Considerations	5
6.	IANA Considerations	5
7.	Acknowledgments	5
8.	References	5
8.1.	Normative References	5
8.2.	Informative References	6
	Authors' Addresses	6

[1.](#) Introduction

The concept of Segment Routing (SR) policy is defined in [[I-D.ietf-spring-segment-routing-policy](#)]. An SR Policy is a set of candidate paths, each consisting of one or more segment lists. The head end of an SR Policy may learn multiple candidate paths for an SR Policy. The header of a packet steered in an SR Policy is augmented with an ordered list of segments associated with that SR Policy. The BGP extensions to distribute SR Policy candidate paths is defined in [[I-D.ietf-idr-segment-routing-te-policy](#)].

The concept of Virtual Transport Network (VTN) is introduced in [[I-D.ietf-teas-enhanced-vpn](#)]. A VTN is a virtual underlay network which has customized network topology and a set of dedicated or shared network resources. In a network, different VTNs may be created to meet different service requirements, and different services can be mapped to different VTNs.

In scenarios where multiple virtual networks (VTNs) exist in the network, the identifier of VTN in which the SR policy is instantiated may also need to be specified, so that the header of data packet can also be augmented with the information of the associated VTN. This document defines the BGP extensions to specify the VTN ID associated with a candidate path of SR policy.

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

Attributes:

- Tunnel Encaps Attribute (23)
 - Tunnel Type: SR Policy
 - Binding SID
 - Preference
 - Priority
 - Policy Name
 - Explicit NULL Label Policy (ENLP)
 - VTN
 - Segment List
 - Weight
 - Segment
 - Segment
 - ...
 - ...

4. Procedures

When a candidate path of SR policy is associated with a specific VTN, the originating node of SR policy SHOULD include the associated VTN in the BGP Tunnel Encapsulation Attribute of the BGP SR policy. The setting of other fields and attributes in BGP SR policy SHOULD follow the mechanism as defined in [\[I-D.ietf-idr-segment-routing-te-policy\]](#).

When a BGP speaker receives an SR Policy which is acceptable and usable according to the rules as defined in [\[I-D.ietf-idr-segment-routing-te-policy\]](#), and the SR Policy candidate path selected as the best candidate path is associated with a VTN, the BGP speaker SHOULD encapsulate VTN-specific information to the header of packets steered to the SR policy. For SR Policy with IPv6 data plane, the possible approach is to encapsulate the VTN-ID to the packets using the mechanism defined in [\[I-D.dong-6man-enhanced-vpn-vtn-id\]](#). For SR Policy with MPLS data plane, the usage of the VTN information is similar, the mechanism will be defined in a separate document and is out of the scope of this document.

Although the proposed mechanism allows that different candidate paths in one SR policy be associated with different VTNs, in normal network scenarios it is considered that the mapping between service to VTN is consistent, in such case all candidate paths of one SR policy are associated with the same VTN.

5. Security Considerations

The security considerations of BGP and BGP SR policy apply to this document.

6. IANA Considerations

This document requests IANA to allocate a new sub-TLV type as defined in [Section 3](#) from "BGP Tunnel Encapsulation Attribute sub-TLVs" registry.

Value	Description	Reference

TBA	VTN	This document

7. Acknowledgments

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8. References

8.1. Normative References

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8.2. Informative References

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