

# BGP SR Policy Extension for Template

[draft-zhang-idr-sr-policy-template](#)

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# Background

- BGP can be used to propagate the SR Policy candidate paths to the headend nodes in the network.

The 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**

**Segment List**

**Weight**

**Segment**

...

...

- Basic attributes of the candidate path are defined in this protocol.

# Motivation & Problem Statement

Reasons to use template in SR Policy:

- In application, the head-end routers may need to apply many features to the candidate path. Some features are only meaningful to controller and head-end nodes, BGP does not need to know them, use template can shield that information from BGP
- Features may change frequently, template can be used to avoid BGP protocol changing too frequently
- Different SR Policies with the same feature can use the same template, thus can simplify configuration and improve maintainability

SR Policy

Endpoint 1.1.1.1 color 100(green)

Candidate Path

Preference 100

*Backup Path enable*

*Seamless BFD enable*

*BFD minimum tx interval 10ms*

*Traffic statistics enable*

Segment List1

SR Policy

Endpoint 1.1.1.1 color 100(green)

Candidate Path

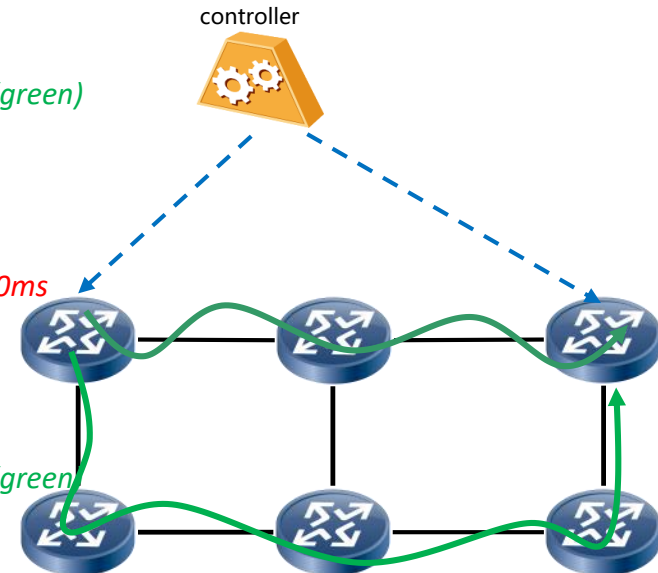
Preference 200

*Seamless BFD enable*

*BFD minimum tx interval 20ms*

*Traffic statistics enable*

Segment List2



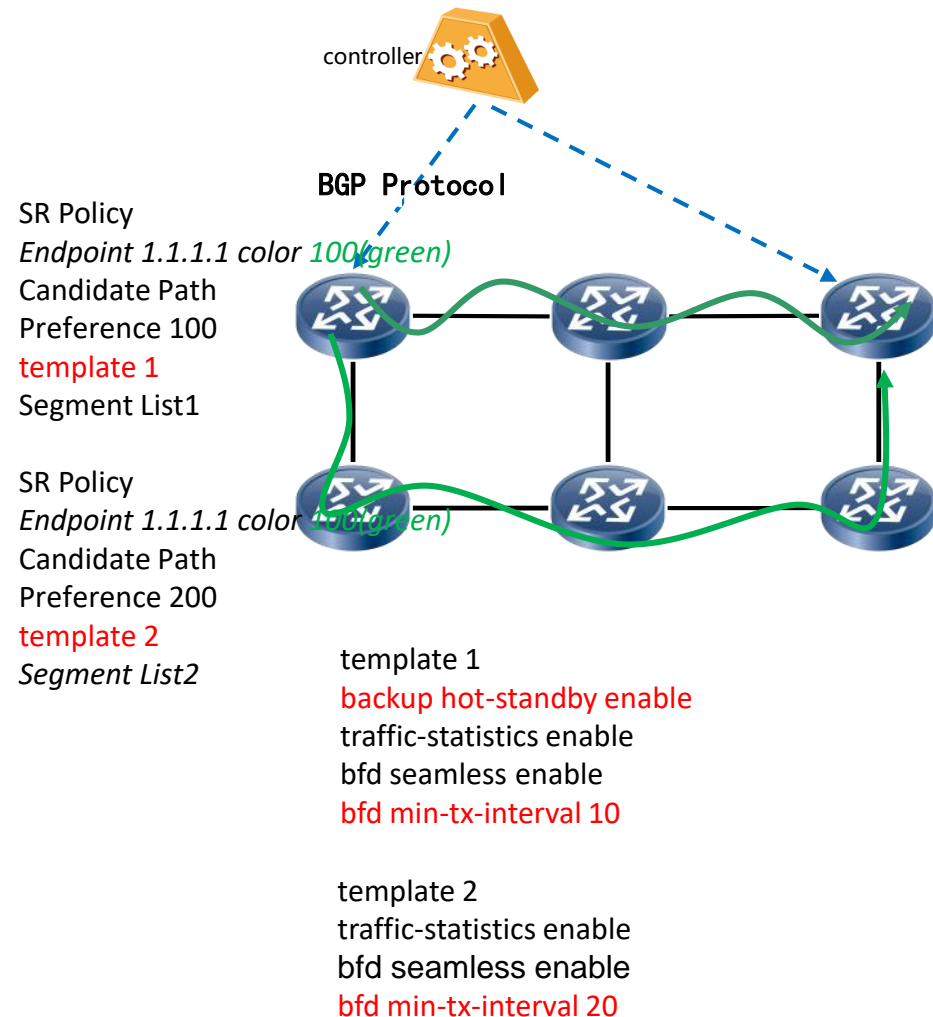
# Template Procedure

## Define a template:

- A group of features for sr policy candidate path
- Use an identifier which is meaningful to the head-end node of SR Policy, the identifier is configured by user or controller and is only valid on the head-end locally.

## Template process:

1. Configure template with template ID and template contents on the headend of SR Policy
2. Controller calculate path of SR Policy and update the path information using BGP update message which carries the template ID in SR Policy candidate path attributes
3. SR Policy head-end nodes find the contents of template using template ID and setup path with the features defined in the template.



# BGP SR Policy Extension

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)

**Template ID**

Segment List

Weight

Segment

Segment

...

...

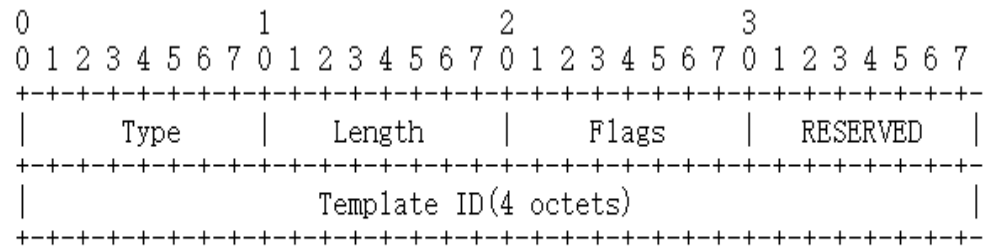


Figure 1: Template ID Sub-TLV

Where:

**Type:** Template ID, 1 octet, TBD.

**Length:** 6.

**Flags:** 1 octet of flags. None are defined at this stage.

**Template ID:** a 4-octet value.

# Operational Considerations

## **Advertisement of SR Policy**

- When BGP advertises an SR Policy, different candidate paths of the same SR Policy may have different template IDs or the same template ID, depending on the attributes required by the candidate paths of the SR Policy.

## **Reception of an SR Policy**

- SR Policy is only to be processed on the SR Policy headend, and is being incorporated in an SR Policy Module(SRPM).
- The SRPM find the local configured template by template ID, and get all the attributes that is configured in the template, and then process the candidate path with these attributes. For example, if the template configure seamless bfd, then the SRPM can create sbfd sessions for each Segment List in the candidate path.
- If there is no template find, the SRPM should ignore the template ID and use the candidate path as there is no template ID.

# Latest Changes

- **Template ID: global or local? How to coordinate multiple routers?**

Template ID is an local identifier, just to use on the head-end of the SR Policy. And it's a local configured identifier, need to be unique only on one device. We need no further process to coordinate the template ID between multiple routers.

- **How does this work when the SR policy is sent via reflectors? Does this require the template ID be synchronized globally within the reflector domain?**

SR Policy is only to be processed on the SR Policy headend, reflectors just need to reflect the route of SR Policy, no need to process it. To make this possible, an attribute needs to be attached to the advertisement that enables a BGP speaker to determine whether it is intended to be a headend for the advertised policy. This is done by attaching one or more Route Target Extended Communities to the advertisement [RFC4360]. This procession is defined in draft-ietf-idr-segment-routing-te-policy. Template ID does not add any extra process in this case.

# Next Step

- Welcome questions and comments

Thank you!