

BGP SR Policy Extension for Template

draft-zhang-idr-sr-policy-template-04

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Motivation & Problem Statement

- In deployment of SR Policy, a set of features need to be enabled on candidate paths. These features are only meaningful between the controller and head-end nodes.
- For BGP SR Policy, using template for such features can shield information that BGP does not need to understand
- Features may change frequently, using template can avoid BGP protocol from changing frequently
- SR Policy candidate paths with the same set of features can reuse the same template, thus can simplify configuration and improve maintainability

SR Policy

Endpoint 1.1.1.1 color 100(green)

Candidate Path

Preference 100

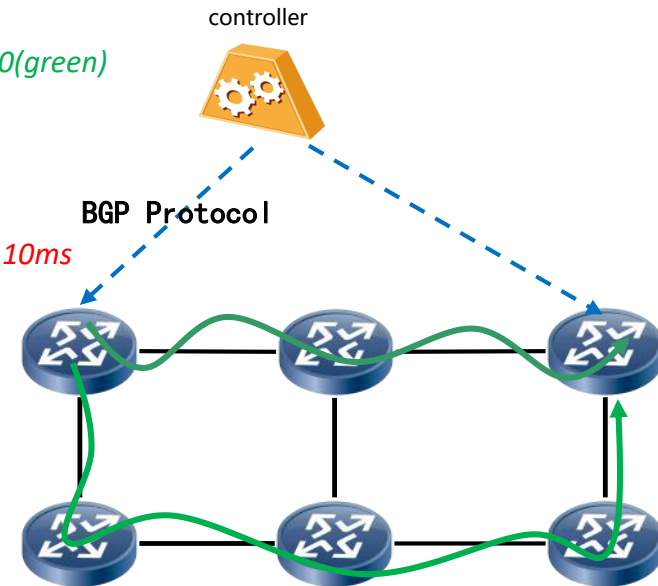
Backup Path enable

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 Process

A template defines:

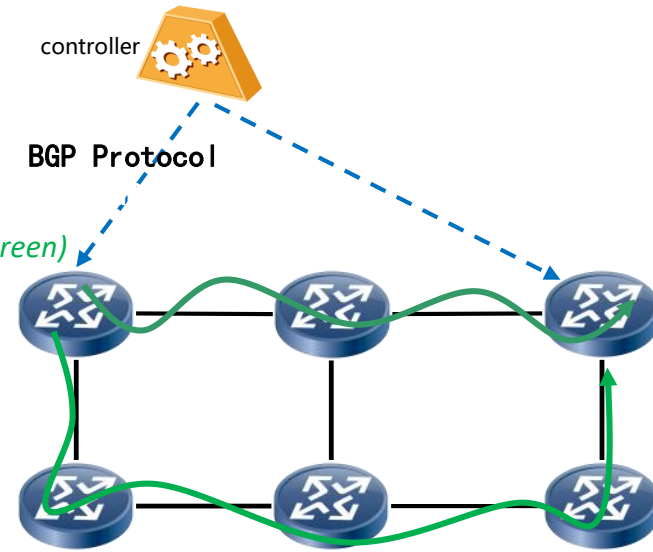
- A group of features to be used with SR policy candidate paths
- An identifier which is meaningful to the head-end node of SR Policy

Template process:

1. Configure the template ID and template contents on the headend of SR Policy (CLI or YANG)
2. PCE calculates path of SR Policy, and advertises path information using BGP SR Policy 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.

SR Policy
Endpoint 1.1.1.1 color 100(green)
Candidate Path
Preference 100
template 1
Segment List1

SR Policy
Endpoint 1.1.1.1 color 100(green)
Candidate Path
Preference 200
template 2
Segment List2



template 1
backup hot-standby enable
traffic-statistics enable
bfd seamless enable
bfd min-tx-interval 10
template 2
traffic-statistics enable
bfd seamless enable
bfd min-tx-interval 20

BGP SR Policy Extensions For Template

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

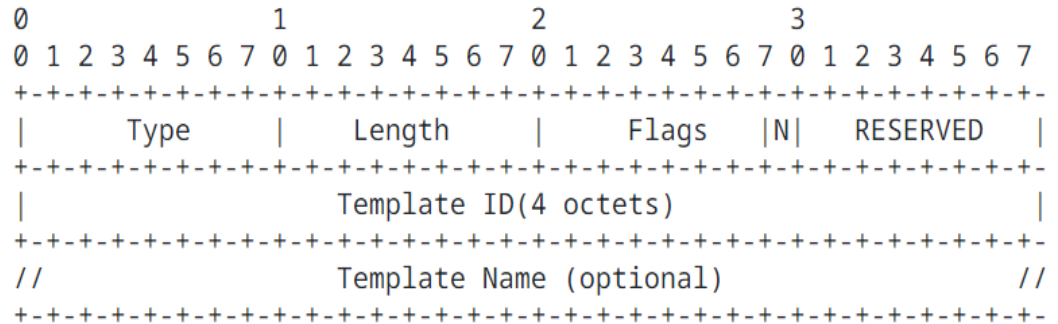
Weight

Segment

Segment

...

...



Where:

Type: TBD.

Flags: 1 octet of flags. N flag indicates the presence of the template name.

Template ID: a 4-octet value.

Template Name: Optional, MUST not be considered as identifier of the template.

BGP SR Policy Operations with Template ID

- **Advertisement of SR Policy with Template ID**
 - Template ID is carried with candidate paths advertised using BGP.
 - Depending on the attributes required by SR Policy, different candidate paths of the same SR Policy may have different template IDs or the same template ID.
 - This document does not change the procedure of BGP based SR Policy advertisement.
- **Processing of BGP SR Policy with Template ID**
 - SR Policy is only processed by the SR Policy headend, and is being incorporated in an SR Policy Module(SRPM).
 - The SRPM checks the local configured templates using template ID, gets the group of features that are included in the template, and enables the features on the candidate paths.
 - If there is no corresponding template found, the SRPM should ignore the template ID and use the candidate path as if there is no template ID.

Comments Received on IETF 119

- **What is the scope of the template ID? Who allocates it?**

Answer: The template ID is managed by the controller, so its scope is network wide. The template ID and content of the template are configured via CLI or controller on the headend nodes. The same template can be used on multiple head-end nodes.

- **Clarify the content and usage of template.**

Answer: A template defines a group of features to be applied to a candidate path, e.g. , protection, BFD and OAM parameters, etc.

A template does not contain or change attributes of the path (BSID, ENLP, segment lists, etc.) Will clarify this in next revision.

Shepherd Review Comments

1. Why should BGP be passing a configuration template plan?

Answer: the configuration of template content is done via CLI or YANG, BGP is extended to only carry the template ID of SR Policy candidate paths

2. How does BGP validate a SR Policy template?

Answer: Template ID is an optional TLV of SR Policy candidate path attribute, it does not change the validation procedure of BGP SR Policy.

3. Why are the constraints based on Route-Target constraints (RTCs) valid for this use case?

Answer: Template ID does not change the distribution of SR Policy. It can be either via direct BGP sessions or based on RTC when RR is used

4. Has Spring approved the template approach?

Answer: It was not discussed there yet, would like to seek feedback from SPRING WG on the template approach.

Shepherd Review Comments (Cont.)

5. Processing of SR Policy with Template ID on RR?

Answer: RR is not aware of the content of the template, it should propagate the SR Policy routes as defined in draft-ietf-idr-sr-policy-safi

6. Processing of SR Policy with Template ID on headend nodes?

Answer: Headend nodes check the local configured templates based on the templated ID, if the template can be found, the features included in the template are enabled for the candidate path. If there is no matching templates, the template ID is ignored.

7. Precedence between template and “no templates”

Answer: The existence of template ID does not change the precedence of the candidate path.

8. Update the references with draft-ietf-idr-sr-policy-safi and draft-ietf-idr-bgp-sr-segtypes-ext.

Answer: Will update the references to these documents

Next Steps

- Collect feedbacks from SPRING on the template approach
- Update the draft to address shepherd review comments

Thank you!