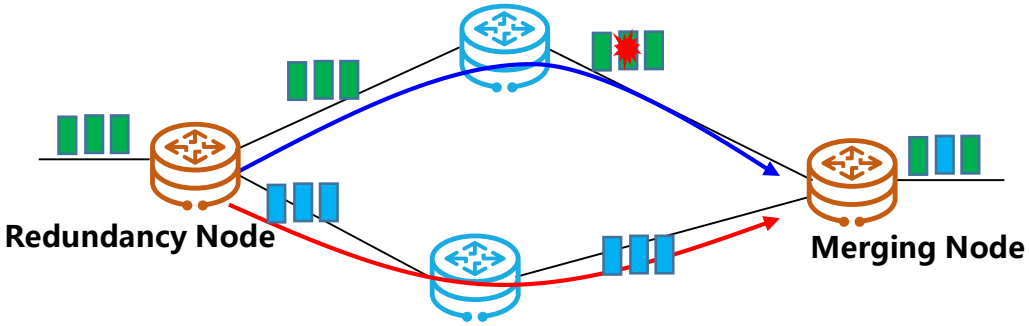
Advertising Redundancy Policy in BGP

draft-yang-idr-bgp-redundancy-policy-00

Fan Yang, Xuesong Geng, Tianran Zhou @**Huawei**

Background



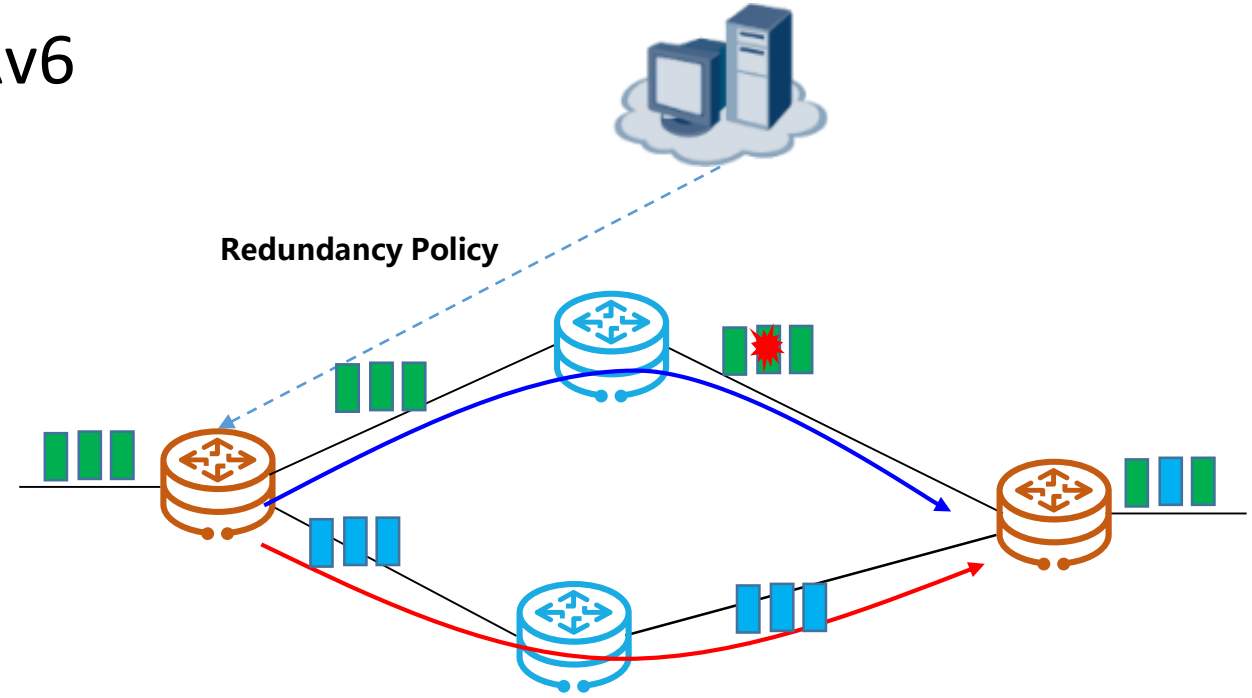
Redundancy protection is a generalized protection mechanism by

- replicating the service packets on redundancy node
- transmitting copies of flow packets over multiple different and disjoint paths
- eliminating the redundant packets at merging node

- *draft-ietf-spring-redundancy-protection-01* introduces **Redundancy SID (R SID**) and **Merging SID (M SID)** to execute replication and elimination behavior **in data plane**
- *draft-geng-spring-redundancy-policy-04* introduces **Redundancy Policy** to instruct multiple redundancy forwarding paths **in control plane**
- *draft-yang-pce-pcep-redundancy-policy-00* introduces **PCEP extensions to request path computation and protection method, advertise Candidate Path Flag sub-TLV in control plane**
- *This I-D* introduces **BGP extensions to advertise Redundancy Policy attribute in control plane**

What is Redundancy Policy?

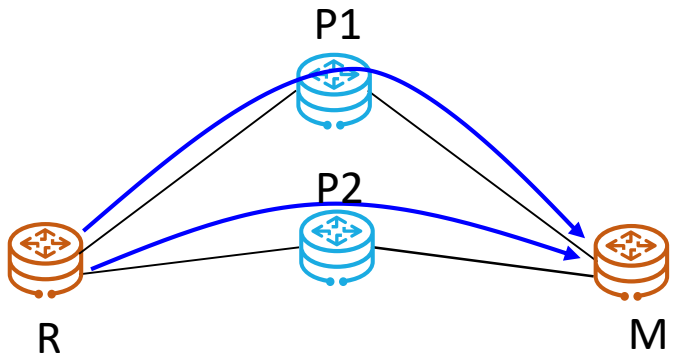
- is a variant of SR Policy with minimum changes
- to instruct the replication of service packets and assign more than one redundancy forwarding paths
- applies to both SR-MPLS and SRv6



BGP Encoding Structure of Redundancy Policy

- Information model structure

Redundancy policy POL1 <R Node= R, Color = 1, M Node = M>
Candidate-path CP1 <protocol-origin = 20, originator = 100:1.1.1.1, discriminator = 1>
Flag Redundancy
Preference 200
SID-List1 <R, P1, M>
SID-List2 <R, P2, M>

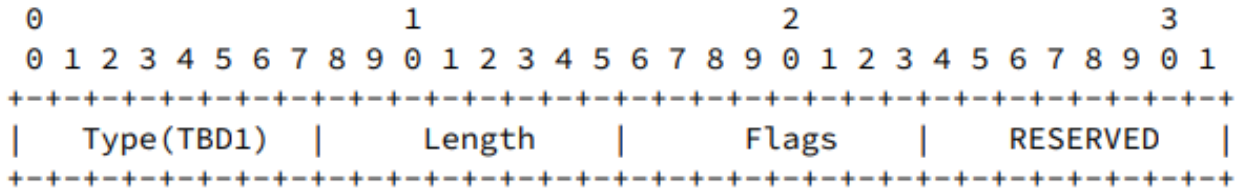


- BGP encoding structure

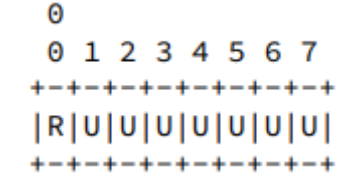
SR Policy SAFI NLRI: <Distinguisher, Policy-Color, Endpoint>
Attributes:
Tunnel Encaps Attribute (23)
Tunnel Type: SR Policy
Binding SID
SRv6 Binding SID
Redundancy Flag
Preference
Priority
Policy Name
Policy Candidate Path Name
Explicit NULL Label Policy (ENLP)
Segment List 1
~~Weight~~
Segment R
Segment P1
Segment M
Segment List 2
~~Weight~~
Segment R
Segment P2
Segment M

Flag Sub-TLV

- A new Flag sub-TLV is attached at the candidate path level.
- The Flag sub-TLV is optional and MUST NOT appear more than once in the Redundancy Policy encoding.



Candidate Path Flag Sub-TLV



Candidate Path Flags

- Type: to be allocated by IANA.
- Length: specifies the length of the value field not including Type and Length fields.
- Flags: 1 octet of flags. It is requested to IANA to create a new registry "SR Policy Candidate Path Flags". One flag R is defined at this writing.
- RESERVED: 1 octet of reserved bits.

Redundancy Policy with a BSID

- Redundancy policy can be **optionally** associated with a Binding Segment, which can only be Redundancy Segment
- Redundancy Segment is required to be distributed by the Binding SID Sub-TLV or SRv6 Binding SID Sub-TLV under BGP SR Policy SAFI (37) defined in *draft-ietf-idr-segment-routing-te-policy*
- In SRv6, the endpoint behavior End.R of Redundancy Segment is required to be distributed with SRv6 Binding SID Sub-TLV at the same time

Redundancy Protection Protocol Extensions

- Data Plane:
  - **Redundancy SID (R SID), Merging SID (M SID)**: draft-ietf-spring-redundancy-protection
- Control Plane:
  - **Redundancy Policy**: draft-geng-spring-redundancy-policy-04
  - **IGP advertisement of R SID and M SID**: IANA allocation
  - **BGP for Redundancy Policy**: draft-yang-idr-bgp-redundancy-policy-00
  - **PCEP for Redundancy Policy**: draft-yang-pce-pcep-redundancy-policy-00

Next step

1. Discussion on mailing list
2. Keep align with progress in SPRING

As always, comments and suggestions are greatly welcome!
Thank you for listening!