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Validity of SR Policy Candidate Path
draft-chen-spring-sr-policy-cp-validity-05

Abstract

An SR Policy comprises one or more candidate paths (CP) of which at a given time one and only one may be active (i.e., installed in forwarding and usable for steering of traffic). Each CP in turn may have one or more SID-List of which one or more may be active; when multiple SID-List are active then traffic is load balanced over them. However, a candidate path is valid when at least one SID-List is active. This candidate path validity criterion cannot meet the needs of some scenarios.

This document defines the new candidate path validity criterion.

Status of This Memo

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1. Introduction

SR Policy architecture are specified in [RFC9256]. An SR Policy comprises one or more candidate paths (CP) of which at a given time one and only one may be active (i.e., installed in forwarding and usable for steering of traffic). Each CP in turn may have one or more SID-List of which one or more may be active; when multiple SID-List are active then traffic is load balanced over them. However, a candidate path is valid when at least one SID-List is active. This candidate path validity criterion cannot meet the needs of some scenarios.

This document defines the new candidate path validity criterions based on [RFC9256]. For the segment list invalidation rules, refer to [RFC9256] and [I-D.liu-spring-sr-policy-flexible-path-selection]. This document does not change the segment list invalidation rules.

1.1. Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "NOT RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in BCP 14 [RFC2119] [RFC8174] when, and only when, they appear in all capitals, as shown here.

2. Motivation

The candidate path validity criterion defined in [RFC9256] can't meet the needs of the following scenarios:

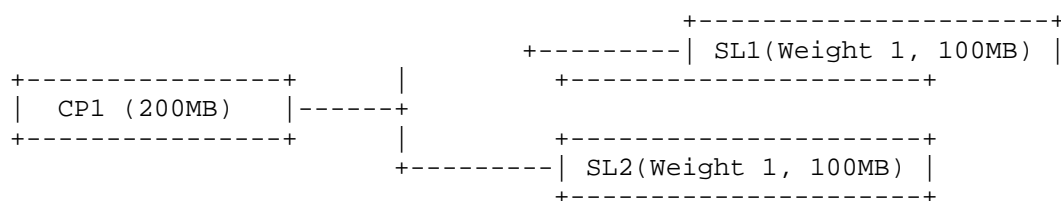


Figure 1

The SR Policy POL1 has two candidate paths: CP1 and CP2, and CP1 is the active candidate path (it is valid and has the highest Preference). The two segment lists (SL1 and SL2) of CP1 are installed as the forwarding instantiation of SR Policy POL1.

The CP1 carries a total of 200MB of traffic. Within the POL1, the flow-based hashing over its each SL with a ratio 50%, that is each SL carry 100MB of traffic. At this time, Use the segment list invalidity rule defined in RFC9256, if it is determined that one of the segment list is invalid, the remaining Segment List cannot carry 200MB of traffic. However, the CP1 is still active.

3. Validity of a Candidate Path

A headend MAY be informed about the validity control parameters of a candidate path for an SR Policy <Color, Endpoint> by various means including: via configuration, PCEP, or BGP. The detailed protocol extension will be described in a separate document.

This document defines the following validity control parameters under candidate Path to control the validity judgment of candidate Path:

- * valid SL count: 8-bit value, The value is 1-0xff.

Indicates the minimum number of valid segment Lists under the active candidate path. When the number of valid segment Lists under candidate path is greater than or equal to this field, the candidate path is considered valid.

0xff indicates that the candidate path is considered valid only if all the segment Lists are valid.

- * valid SL weight: 32-bit value, The value is 0-0xffffffff.

Indicates the minimum value of the sum of the weights of the valid segment List under the active candidate Path.

When the sum of the weights of the valid segment Lists under the candidate path is greater than or equal to this field, the candidate Path is considered valid.

0 indicates no requirement for weight.

0xffffffff indicates that the candidate path is considered valid only if all the segment Lists are valid.

Candidate path is considered valid only if both validity control parameters are satisfied.

4. IANA Considerations

This document makes no request of IANA.

5. Security Considerations

The security considerations of segment routing in [RFC9256] are applicable to this document.

6. Acknowledgements

The authors would like to thank Joel Halpern, Samuel Sidor and Changwang Lin for their review and discussion of this document.

7. References

7.1. Normative References

- [RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <<https://www.rfc-editor.org/info/rfc2119>>.

- [RFC8174] Leiba, B., "Ambiguity of Uppercase vs Lowercase in RFC 2119 Key Words", BCP 14, RFC 8174, DOI 10.17487/RFC8174, May 2017, <<https://www.rfc-editor.org/info/rfc8174>>.
- [RFC9256] Filsfils, C., Talaulikar, K., Ed., Voyer, D., Bogdanov, A., and P. Mattes, "Segment Routing Policy Architecture", RFC 9256, DOI 10.17487/RFC9256, July 2022, <<https://www.rfc-editor.org/info/rfc9256>>.

7.2. Informative References

- [I-D.liu-spring-sr-policy-flexible-path-selection]
Liu, Y., Lin, C., Peng, S., Chen, R., Mishra, G. S., and Y. Qiu, "Flexible Candidate Path Selection of SR Policy", Work in Progress, Internet-Draft, draft-liu-spring-sr-policy-flexible-path-selection-10, 30 June 2025, <<https://datatracker.ietf.org/doc/html/draft-liu-spring-sr-policy-flexible-path-selection-10>>.

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