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PCEP Extensions for sid verification for SR-MPLS
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Abstract

This document defines a new flag for indicating the headend is explicitly requested to verify SID(s) by the PCE.

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Table of Contents

1. Introduction	2
1.1. Requirements Language	2
2. SID verification flag(V-Flag)	3
2.1. V-Flag in SR-ERO Subobject	3
2.2. V-Flag in SR-RRO Subobject	3
2.3. SID verification Processing	3
3. Acknowledgements	3
4. IANA Considerations	3
4.1. SR-ERO Subobject	3
5. Security Considerations	4
6. Normative References	4
Authors' Addresses	5

1. Introduction

[RFC9256] describes the "SID verification" bit usage. SID verification is performed when the headend is explicitly requested to verify SID(s) by the controller via the signaling protocol used. Implementations MAY provide a local configuration option to enable verification on a global or per policy or per candidate path basis.

[RFC8664] specifies extensions to the Path Computation Element Communication Protocol (PCEP) that allow a stateful PCE to compute and initiate Traffic-Engineering (TE) paths, as well as a Path Computation Client (PCC) to request a path subject to certain constraints and optimization criteria in SR networks.

This document defines a new flag for indicating the headend is explicitly requested to verify SID(s) by the PCE.

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. SID verification flag(V-Flag)

2.1. V-Flag in SR-ERO Subobject

Section 4.3.1 in Path Computation Element Communication Protocol (PCEP) Extensions for Segment Routing [RFC8664] describes a new ERO subobject referred to as the "SR-ERO subobject" to carry a SID and/or NAI information. A new flag is proposed in this document in the SR-ERO Subobject [RFC8664] for indicating the pcc is explicitly requested to verify SID(s) by the PCE.

V(1bit TBD): When the V-Flag is set then PCC MUST consider the "SID verification".

2.2. V-Flag in SR-RRO Subobject

The format of the SR-RRO subobject is the same as that of the SR-ERO subobject, but without the L-Flag, per [RFC8664].

The V flag has no meaning in the SR-RRO and is ignored on receipt at the PCE.

2.3. SID verification Processing

On receiving an SR-ERO with the V-flag is set, a PCC MUST verify SID(s) as described in Section 5.1 in [RFC9256].

If a PCC "Verification fails" for a SID, it MUST report this error by including the LSP-ERROR-CODE TLV with LSP error-value "SID Verification fails" in the LSP object in the PCRpt message to the PCE.

3. Acknowledgements

We would like to thank Dhruv Dhody and John Scudder for their useful comments and suggestions.

4. IANA Considerations

4.1. SR-ERO Subobject

This document defines a new bit value in the sub-registry "SR-ERO Flag Field" in the "Path Computation Element Protocol (PCEP) Numbers" registry.

Bit	Name	Reference
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TBD	SID verification(V)	This document

5. Security Considerations

The security considerations described in [RFC5440], [RFC8231], [RFC8281], and [RFC8664] are applicable to this specification. No additional security measures are required.

6. Normative References

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- [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>>.
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- [RFC8281] Crabbe, E., Minei, I., Sivabalan, S., and R. Varga, "Path Computation Element Communication Protocol (PCEP) Extensions for PCE-Initiated LSP Setup in a Stateful PCE Model", RFC 8281, DOI 10.17487/RFC8281, December 2017, <<https://www.rfc-editor.org/info/rfc8281>>.
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- [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>>.

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