Network Work group
Internet-Draft
Updates: 8287 (if approved)
Intended status: Standards Track
Expires: December 19, 2018

N. Nainar
C. Pignataro
F. Iqbal
Cisco Systems, Inc.
A. Vainshtein
ECI Telecom
June 17, 2018

RFC8287 Sub-TLV Length Clarification
draft-nainar-mpls-rfc8287-errata-00

Abstract

RFC8287 defines the extensions to MPLS LSP Ping and Traceroute for Segment Routing IGP-Prefix and IGP-Adjacency Segment Identifier (SIDs) with an MPLS data plane. RFC8287 proposes 3 Target FEC Stack Sub-TLVs. While the standard defines the format and procedure to handle those Sub-TLVs, it does not sufficiently clarify how the length of the Segment ID Sub-TLVs should be computed to include in the Length field of the Sub-TLVs which may result in interoperability issues.

This document updates RFC8287 by clarifying the length of each Segment ID Sub-TLVs defined in RFC8287.

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at https://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on December 19, 2018.

Copyright Notice

Copyright (c) 2018 IETF Trust and the persons identified as the document authors. All rights reserved.

This document is subject to BCP 78 and the IETF Trust's Legal Provisions Relating to IETF Documents (https://trustee.ietf.org/license-info) in effect on the date of publication of this document. Please review these documents carefully, as they describe your rights and restrictions with respect to this document. Code Components extracted from this document must include Simplified BSD License text as described in Section 4.e of the Trust Legal Provisions and are provided without warranty as described in the Simplified BSD License.

Table of Contents

1. Introduction 2
2. Terminology 2
3. Requirements notation 3
4. Length field clarification for Segment ID Sub-TLVs 3
  4.1. IPv4 IGP-Prefix Segment ID Sub-TLV 3
  4.2. IPv6 IGP-Prefix Segment ID Sub-TLV 3
  4.3. IGP-Adjacency Segment ID Sub-TLV 4
5. IANA Considerations 5
6. Security Considerations 5
7. Contributors 5
8. Acknowledgement 5
9. Normative References 5
Authors' Addresses 6

1. Introduction

[RFC8287] defines the extensions to MPLS LSP Ping and Traceroute for Segment Routing IGP-Prefix and IGP-Adjacency Segment Identifier (SIDs) with an MPLS data plane. [RFC8287] proposes 3 Target FEC Stack Sub-TLVs. While the standard defines the format and procedure to handle those Sub-TLVs, it does not sufficiently clarify how the length of the Segment ID Sub-TLVs should be computed to include in the Length field of the Sub-TLVs which may result in interoperability issues.

This document updates [RFC8287] by clarifying the length of each Segment ID Sub-TLVs defined in [RFC8287].

2. Terminology

This document uses the terminologies defined in [I-D.ietf-spring-segment-routing], [RFC8029], [RFC8287] and so the readers are expected to be familiar with the same.

3. Requirements notation

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

4. Length field clarification for Segment ID Sub-TLVs

Section 5 of [RFC8287] defines 3 different Segment ID Sub-TLVs that will be included in Target FEC Stack TLV defined in [RFC8029]. The length of each Sub-TLVs MUST be calculated as defined in this section.

4.1. IPv4 IGP-Prefix Segment ID Sub-TLV

The Sub-TLV length for IPv4 IGP-Prefix Segment ID MUST be set to 8 as shown in the below TLV format:

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|Type = 34 (IPv4 IGP-Prefix SID)|          Length = 8           |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                          IPv4 prefix                          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|Prefix Length  |    Protocol   |              Reserved         |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

4.2. IPv6 IGP-Prefix Segment ID Sub-TLV

The Sub-TLV length for IPv6 IGP-Prefix Segment ID MUST be set to 20 as shown in the below TLV format:

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|Type = 35 (IPv4 IGP-Prefix SID)|          Length = 20          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                                                               |
|                                                               |
|                       IPv6 Prefix                             |
|                                                               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|Prefix Length  |    Protocol   |              Reserved         |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

4.3. IGP-Adjacency Segment ID Sub-TLV

The Sub-TLV length for IGP-Adjacency Segment ID varies depending on the Adjacency Type and Protocol. In any of the allowed combination of Adjacency Type and Protocol, the sub-TLV length MUST be calculated by including 2 octets of Reserved field. Below is a table that list the length for different combinations.

Protocol	Length for Adj.Type		
	Parallel	IPv4	IPv6
OSPF	20	20	44
ISIS	24	24	48
Any	20	20	44

For example, when the Adj. Type is set to Parallel Adjacency and the Protocol is set to 0, the Sub-TLV will be as below:

```
 0                   1                   2                   3
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|Type = 36 (IGP-Adjacency SID)  |          Length = 20          |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
| Adj. Type = 1 | Protocol =0   |          Reserved             |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|               Local Interface ID (4 octets)                   |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|              Remote Interface ID (4 octets)                   |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|          Advertising Node Identifier (4 octets)               |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|           Receiving Node Identifier (4 octets)                |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

5. IANA Considerations

This document does not introduce any IANA consideration.

6. Security Considerations

This document updates [RFC8287] and does not introduce any security considerations.

7. Contributors

The below individuals contributed to this document:

Zafar Ali, Cisco Systems, Inc.

8. Acknowledgement

To be Updated

9. Normative References

[I-D.ietf-spring-segment-routing]
Filsfils, C., Previdi, S., Ginsberg, L., Decraene, B., Litkowski, S., and R. Shakir, "Segment Routing Architecture", draft-ietf-spring-segment-routing-15 (work in progress), January 2018.

[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>.

[RFC8029] Kompella, K., Swallow, G., Pignataro, C., Ed., Kumar, N., Aldrin, S., and M. Chen, "Detecting Multiprotocol Label Switched (MPLS) Data-Plane Failures", RFC 8029, DOI 10.17487/RFC8029, March 2017, <https://www.rfc-editor.org/info/rfc8029>.

[RFC8287] Kumar, N., Ed., Pignataro, C., Ed., Swallow, G., Akiya, N., Kini, S., and M. Chen, "Label Switched Path (LSP) Ping/Traceroute for Segment Routing (SR) IGP-Prefix and IGP-Adjacency Segment Identifiers (SIDs) with MPLS Data Planes", RFC 8287, DOI 10.17487/RFC8287, December 2017, <https://www.rfc-editor.org/info/rfc8287>.

Authors' Addresses

Nagendra Kumar Nainar
Cisco Systems, Inc.
7200-12 Kit Creek Road
Research Triangle Park, NC 27709
US

Email: naikumar@cisco.com

Carlos Pignataro
Cisco Systems, Inc.
7200-11 Kit Creek Road
Research Triangle Park, NC 27709
US

Email: cpignata@cisco.com

Faisal Iqbal
Cisco Systems, Inc.
2000 Innovation Dr
Ottawa, ON 3E8
Canada

Email: faiqbal@cisco.com

Alexander Vainshtein
ECI Telecom
Israel

Email: vainshtein.alex@gmail.com