

IDR Working Group
Internet-Draft
Intended status: Standards Track
Expires: July 14, 2017

J. Tantsura
U. Chunduri
G. Mirsky
Individual
S. Sivabalan
Cisco
January 10, 2017

**Signaling Maximum SID Depth using Border Gateway Protocol Link-State
draft-tantsura-idr-bgp-ls-segment-routing-msd-02**

Abstract

This document discusses use of BGP-LS to expose node and/or link on a node MSD "Maximum SID Depth" to a centralized controller (PCE/SDN).

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 <http://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 July 14, 2017.

Copyright Notice

Copyright (c) 2017 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 (<http://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
1.1.	Conventions used in this document	2
1.1.1.	Terminology	2
1.1.2.	Requirements Language	3
2.	Problem Statement	3
3.	MSD supported by a node	3
4.	MSD supported on a link	4
5.	IANA Considerations	4
6.	Security Considerations	4
7.	Acknowledgements	4
8.	References	4
8.1.	Normative References	4
8.2.	Informative References	5
	Authors' Addresses	6

[1.](#) Introduction

When Segment Routing tunnels are computed by a centralized controller, it is crucial that the controller knows MSD "Maximum SID Depth" of the node or link SR tunnel exits over, so it doesn't download a path with SID (label stack) of a depth more than the node or link configured is capable of imposing. This document describes how to use BGP-LS to expose the MSD of the node or link configured to a centralized controller.

[1.1.](#) Conventions used in this document

[1.1.1.](#) Terminology

BGP-LS: Distribution of Link-State and TE Information using Border Gateway Protocol

MSD: Maximum SID Depth

PCC: Path Computation Client

PCE: Path Computation Element

PCEP: Path Computation Element Protocol

SID: Segment Identifier

SR: Segment routing

1.1.2. 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 [\[RFC2119\]](#).

2. Problem Statement

In existing technology only PCEP has extension to signal the MSD (SR PCE Capability TLV/ METRIC Object as defined in [\[I-D.ietf-pce-segment-routing\]](#), If PCEP is not supported by the node (head-end of the SR tunnel) controller has no way to learn the MSD of the node/link configured. OSPF and IS-IS extensions are defined in:

[\[I-D.ietf-ospf-segment-routing-msd\]](#)

[\[I-D.ietf-isis-segment-routing-msd\]](#)

3. MSD supported by a node

Node MSD is encoded in a new Node Attribute TLV, as defined in [\[RFC7752\]](#)

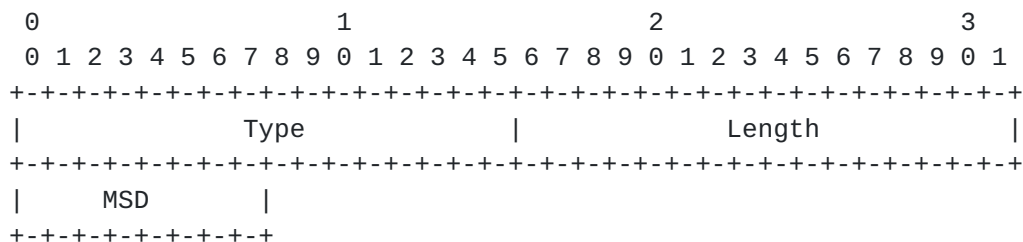


Figure 1: Node attribute format

Type : A 2-octet field specifying code-point of the new TLV type.
 Code-point: TBA (suggested 1050) from BGP-LS Node Descriptor, Link Descriptor, Prefix Descriptor, and Attribute TLVs registry

Length: A 2-octet field that indicates the length of the value portion

MSD: Node MSD is a number in the range of 0-254. The value of 0 represents lack of ability to push MSD of any depth, any other value represents that of the node.

4. MSD supported on a link

Link MSD is encoded in a New Link Attribute TLV, as defined in [\[RFC7752\]](#)

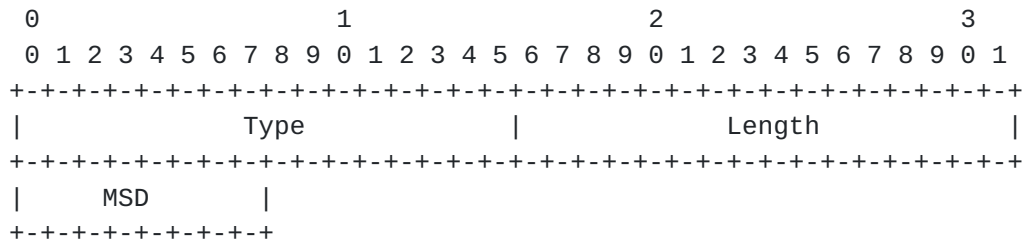


Figure 2: Link attribute format

Type : A 2-octet field specifying code-point of the new TLV type.
 Code-point: TBA (suggested 1110) from BGP-LS Node Descriptor, Link Descriptor, Prefix Descriptor, and Attribute TLVs registry

Length: A 2-octet field that indicates the length of the value portion

MSD: Link MSD is a number in the range of 0-254. The value of 0 represents lack of ability to push MSD of any depth, any other value represents that of the link.

5. IANA Considerations

This document requests assigning 2 new code-points from the BGP-LS Node Descriptor, Link Descriptor, Prefix Descriptor, and Attribute TLVs registry as specified in sections [3](#) and [4](#).

6. Security Considerations

This document does not introduce security issues beyond those discussed in [\[RFC7752\]](#)

7. Acknowledgements

We like to thank Nikos Triantafyllis for the valuable comments.

8. References

8.1. Normative References

[I-D.ietf-isis-segment-routing-msd]

Tantsura, J. and U. Chunduri, "Signaling MSD (Maximum SID Depth) using IS-IS", [draft-ietf-isis-segment-routing-msd-00](#) (work in progress), November 2016.

[I-D.ietf-ospf-segment-routing-msd]

Tantsura, J. and U. Chunduri, "Signaling MSD (Maximum SID Depth) using OSPF", [draft-ietf-ospf-segment-routing-msd-00](#) (work in progress), November 2016.

[I-D.ietf-pce-segment-routing]

Sivabalan, S., Medved, J., Filsfils, C., Crabbe, E., Raszuk, R., Lopez, V., Tantsura, J., Henderickx, W., and J. Hardwick, "PCEP Extensions for Segment Routing", [draft-ietf-pce-segment-routing-08](#) (work in progress), October 2016.

[I-D.ietf-spring-segment-routing-mpls]

Filsfils, C., Previdi, S., Bashandy, A., Decraene, B., Litkowski, S., Horneffer, M., Shakir, R., jeffrant@gmail.com, j., and E. Crabbe, "Segment Routing with MPLS data plane", [draft-ietf-spring-segment-routing-mpls-05](#) (work in progress), July 2016.

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

[RFC7752] Gredler, H., Ed., Medved, J., Previdi, S., Farrel, A., and S. Ray, "North-Bound Distribution of Link-State and Traffic Engineering (TE) Information Using BGP", [RFC 7752](#), DOI 10.17487/RFC7752, March 2016, <<http://www.rfc-editor.org/info/rfc7752>>.

8.2. Informative References

[I-D.ietf-isis-segment-routing-extensions]

Previdi, S., Filsfils, C., Bashandy, A., Gredler, H., Litkowski, S., Decraene, B., and j. jeffrant@gmail.com, "IS-IS Extensions for Segment Routing", [draft-ietf-isis-segment-routing-extensions-09](#) (work in progress), October 2016.

[I-D.ietf-ospf-segment-routing-extensions]

Psenak, P., Previdi, S., Filsfils, C., Gredler, H.,
Shakir, R., Henderickx, W., and J. Tantsura, "OSPF
Extensions for Segment Routing", [draft-ietf-ospf-segment-routing-extensions-10](#) (work in progress), October 2016.

Authors' Addresses

Jeff Tantsura
Individual

Email: jefftant.ietf@gmail.com

Uma Chunduri
Individual

Email: uma.chunduri@gmail.com

Greg Mirsky
Individual

Email: gregimirsky@gmail.com

Siva Sivabalan
Cisco

Email: msiva@cisco.com

