Routing area
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Label Switched Path (LSP) Ping/Traceroute for Segment Routing (SR) Egress Peer engineering Segment Identifiers (SIDs) with MPLS Data Planes

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Abstract

Egress Peer Engineering is an application of Segment Routing to solve the problem of egress peer selection. The SR-based BGP-EPE solution allows a centralized (Software Defined Network, SDN)controller to program any egress peer. The EPE solution requires a node to program PeerNodeSID, PeerAdjSID, PeerSetSID as described in [I-D.ietf-spring-segment-routing-central-epe].This document provides Target FEC stack TLV definitions as defined in [RFC8029] for the EPE SIDs.

Requirements Language

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 RFC 2119 [RFC2119].

Status of This Memo

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

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This Internet-Draft will expire on April 19, 2019.

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1. Introduction

Egress Peer Engineering (EPE) as defined in [I-D.ietf-spring-segment-routing-central-epe] is an effective mechanism to select the egress peer link based on different criteria. The EPE SIDs provide means to represent egress peer links. Many network deployments have built their networks consisting of multiple Autonomous Systems either for ease of operations or as a result of network mergers and acquisitons. The egress links connecting the two Autonomous Systems could be managed using EPE-SIDs in this case as well. It is important to be able to validate the control plane to forwarding plane synchronization for these SIDs so that any anomaly can be detected easily by the operator.

This document provides Target FEC stack TLV definitions for EPE SIDs. Other procedures for mpls ping and traceroute as defined in [RFC8287] are applicable for EPE-SIDs as well.

2. FEC Definitions

As described in [RFC8287] sec 5, 3 new type of segment IDs are defined for the Target FEC stack TLV corresponding to each label in the label stack

2.1. PeerNodeSID/PeerAdjSID

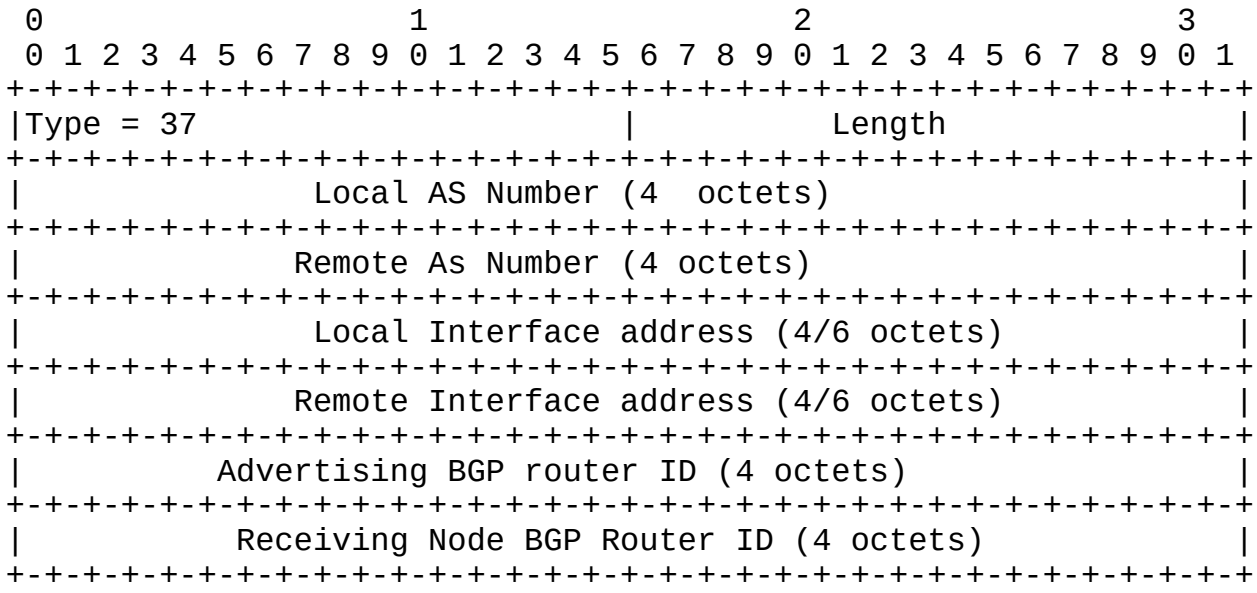

Figure 1: Peer Node/Adj Segment ID Sub TLV

Type: 37 (TBD)

Length: variable based on ipv4/ipv6 interface address

AS Number: 4 octet unsigned integer representing the Member ASN inside the Confederation.[RFC5065]

Interface Address: BGP session IPv4/IPv6 local/remote address.

BGP Router ID: 4 octet unsigned integer representing the BGP Identifier as defined in [RFC4271] and [RFC6286].

2.2. PeerSetSID

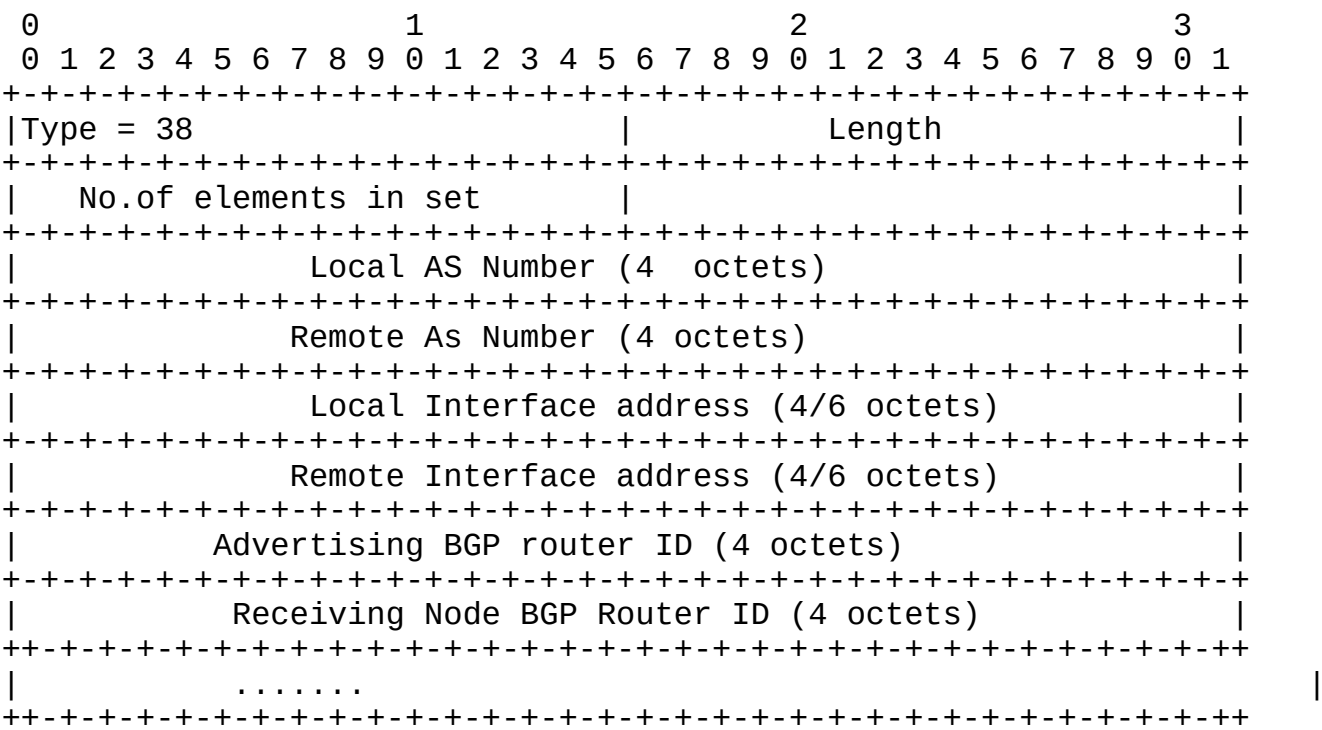

Figure 2: Peer set SID Segment ID Sub TLV

Type : 38 (TBD)

Length : variable based on ipv4/ipv6 interface address

No.of elements in set : Number of links in the set.

AS Number : 4 octet unsigned integer representing the Member ASN inside the Confederation.[RFC5065]

Interface Address : BGP session IPv4/IPv6 local/remote address.

BGP Router ID : 4 octet unsigned integer representing the BGP Identifier as defined in [RFC4271] and [RFC6286]

3. Security Considerations

TBD

4. IANA Considerations

New Target FEC stack sub-TLV from the "sub-TLVs for TLV types 1,16 and 21" subregistry of the "Multi-Protocol Label switching (MPLs) Label Switched Paths 9LSPs) Ping parameters" registry

PeerNode/PeerAdjSID segment ID Sub-TLV : 37 (suggested)

PeerSetSID segment ID Sub-TLV : 38 (suggested)

5. Acknowledgments

6. References

6.1. Normative References

[I-D.ietf-spring-segment-routing-central-epe] Filsfils, C., Previdi, S., Dawra, G., Aries, E., and D. Afanasiev, "Segment Routing Centralized BGP Egress Peer Engineering", draft-ietf-spring-segment-routing-central-epe-10 (work in progress), December 2017.

[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>.

6.2. Informative 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>.

[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>.

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