Network Working Group
Internet-Draft
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June 22, 2021

Commenté [BMT1]: Given that assigning new values is "Expert Review", we will be challenged why is this "Standards Track".

Please note that we don't have any normative text in the core text.

Export of MPLS Segment Routing Label Type Information in IP Flow Information Export (IPFIX)
draft-ietf-opsawg-ipfix-mpls-sr-label-type-02

Abstract

This document introduces new IP Flow Information Export (IPFIX) code points to identify which traffic is being forwarded based on which MPLS control plane protocol ~~is in use~~ within a Segment Routing domain. In particular, this document defines four code points for the IPFIX mplsTopLabelType Information Element for IS-IS, OSPFv2, OSPFv3, and BGP MPLS Segment Routing extensions.

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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1. Introduction

Four new routing protocol extensions, OSPFv2 Extensions [RFC8665], OSPFv3 Extensions [RFC8666], IS-IS Extensions [RFC8667] and BGP Prefix Segment Identifiers (Prefix-SIDs) [RFC8669] have been defined as routing protocols that are able to propagate Segment Routing (SR) labels for the MPLS data plane [RFC8660].

Also [I-D.ali-spring-sr-traffic-accounting] describes how IP Flow Information Export [RFC7012] can be leveraged to account traffic to MPLS Segment Routing label dimensions within a Segment Routing domain.

In [RFC7012], the ~~information~~ Information ~~element~~ Element (IE) mplsTopLabelType(46) ~~describes~~identifies which MPLS control plane protocol allocated the top-of-stack label in the MPLS label stack. Section 7.2 of [RFC7012] ~~describes~~ creates the "IPFIX MPLS label type (Value 46)" ~~sub-~~subregistry [IANA-IPFIX-IE46] where new MPLS label types~~code points~~ should be added. This document defines new code points to address typical use cases that are discussed in Section 2.

2. MPLS Segment Routing Top Label Type

By introducing four new code points to the IPFIX ~~information element~~IE mplsTopLabelType(46) for IS-IS, OSPFv2, OSPFv3, and BGP Prefix-SID, ~~when Segment Routing with one of these four routing protocols is deployed~~, it is possible to identify ~~into~~ which traffic is being forwarded based upon which MPLS control plane protocol ~~is in use~~.

A typical use case ~~scenario~~ is to monitor MPLS control plane migrations from LDP to IS-IS (or OSPF) Segment Routing. Such a migration can be done node by node as described in Appendix A of [RFC8661] ~~Appendix A~~.

Commenté [BMT2]: As this acronym is used in the document

Commenté [BMT3]: As this is used in subsequent text.

Commenté [BMT4]: An attempt to shorten this long sentence. Please consider splitting it into smaller sentences, if possible.

Another use case ~~scenario~~ is to monitor MPLS control plane migrations from dynamic BGP labels [RFC8277] to BGP Prefix-SIDs ~~[RFC8669]~~ in the context of Seamless MPLS SR described in Section 4.6 of [I-D.hegde-spring-mpls-seamless-sr].

Both use cases can be verified by using mplsTopLabelType(46), mplsTopLabelIPv4Address(47), mplsTopLabelIPv6Address(140), mplsTopLabelStackSection(70), and forwardingStatus(89) IEs to infer:

- how many packets are forwarded or dropped,
- if dropped, for which reasons, and
- the MPLS provider edge loopback address and label protocol.

By looking at the MPLS label value itself, it is not always clear as to which label protocol it belongs. This because ~~, since~~ they ~~could~~ may ~~potentially~~ share the same label allocation range. This is, for example, the case for IGP-Adjacency ~~SID's~~SIDs, LDP, and dynamic BGP labels.

3. IANA Considerations

This document requests IANA ~~is requested~~ to allocate ~~four~~ the following code points in the existing sub-registry "IPFIX MPLS label type (Value 46)" ~~of~~ under the "IPFIX Information Elements" registry ~~for IS-IS, OSPFv2, OSPFv3 and BGP Prefix-SID Segment Routing extensions~~available at [IANA-IPFIX].

~~| Value | Description | Reference | Requester |~~
~~| TBD1 | OSPFv2 Segment Routing | RFC8665 | [RFC-to-be] |~~
~~| TBD2 | OSPFv3 Segment Routing | RFC8666 | [RFC-to-be] |~~
~~| TBD3 | IS-IS Segment Routing | RFC8667 | [RFC-to-be] |~~
~~| TBD4 | BGP Segment Routing Prefix-SID | RFC8669 | [RFC-to-be] |~~

Value	Description	Reference	Requester
TBD1	OSPFv2 Segment Routing	RFC8665	[RFC-to-be]
TBD2	OSPFv3 Segment Routing	RFC8666	[RFC-to-be]
TBD3	IS-IS Segment Routing	RFC8667	[RFC-to-be]

Commenté [BMT5]: Already cited.

Commenté [BMT6]: Please add this informative reference:

[IANA-IPFIX]
IANA, "IP Flow Information Export (IPFIX) Entities", <https://www.iana.org/assignments/ipfix/ipfix.xhtml>.

Commenté [BMT7]: Idnits indicates the following:

Checking nits according to https://www.ietf.org/id-info/checklist :

** There are 10 instances of too long lines in the document, the longest one being 2 characters in excess of 72.

Below an attempts to fix this. Please run idnits before submitting the revised version

| TBD4 | BGP Segment Routing Prefix-SID | RFC8669 | [RFC-to-be] |

~~Figure~~ Table 1: Updates to "IPFIX MPLS label type (Value 46)" SubRegistry

~~Note to IANA:~~

~~o Please assign TBD1 to 4 to the next available numbers according to the "IPFIX MPLS label type (Value 46)" sub-registry [IANA-IPFIX-IE46] procedure.~~

Commenté [BMT8]: Unless you have recommended values, this note will be followed anyway by IANA.

~~o Please replace the [RFC-to-be] with the RFC number assigned to this document.~~

Note to the RFC ~~e~~ Editor:

o Please replace TBD1 - TBD4 with the values allocated by IANA.
o Please replace the [RFC-to-be] with the RFC number assigned to this document.

~~o Please remove above two IANA notes.~~

4. Operational Considerations

In the ~~information element~~ IE mplsTopLabelType(46), the BGP code point 4
refers to the label value in MP_REACH_NLRI path attribute described in Section 2 of [RFC8277], ~~and~~ while the BGP Segment Routing Prefix-SID
code point TBD4 corresponds to the label index value in the Label-Index TLV
described in Section 3.1 of [RFC8669]. These values are thus used for distinct purposes.

5. Security Considerations

There exists no extra security considerations regarding the allocation of these new IPFIX ~~information elements~~IEs compared to [RFC7012].

6. Acknowledgements

I would like to thank to the IE doctors, Paul Aitken and Andrew Feren, as well Benoit Claise, Loa Andersson, Tianran Zhou, Pierre Francois, Bruno Decreane, Paolo Lucente, Hannes Gredler, Ketan Talaulikar, Sabrina Tanamal, Erik Auerswald, Sergey Fomin, Mohamed Boucadair, Tom Petch, and Qin Wu for their review and valuable comments.

7. References

7.1. Normative References

[RFC7012] Claise, B., Ed. and B. Trammell, Ed., "Information Model for IP Flow Information Export (IPFIX)", RFC 7012, DOI 10.17487/RFC7012, September 2013, <https://www.rfc-editor.org/info/rfc7012>.

7.2. Informative References

[I-D.ali-spring-sr-traffic-accounting]
Filsfils, C., Talaulikar, K., Sivabalan, S., Horneffer, M., Raszuk, R., Litkowski, S., Voyer, D., and R. Morton, "Traffic Accounting in Segment Routing Networks", draft-ali-spring-sr-traffic-accounting-05 (work in progress), April 2021.

[I-D.hegde-spring-mpls-seamless-sr]
Hegde, S., Bowers, C., Xu, X., Gulko, A., Bogdanov, A., Uttaro, J., Jalil, L., Khaddam, M., Alston, A., and L. M. Contreras, "Seamless SR Problem Statement", draft-hegde-spring-mpls-seamless-sr-05 (work in progress), February 2021.

[IANA-IPFIX-IE46]
IANA, "~~IANA~~ IPFIX MPLS label type (Value 46)~~IP Flow Information Export (IPFIX) Information Element #46 SubRegistry~~", <https://www.iana.org/assignments/ipfix/ipfix.xhtml#ipfix-mpls-label-type>.

[RFC8277] Rosen, E., "Using BGP to Bind MPLS Labels to Address Prefixes", RFC 8277, DOI 10.17487/RFC8277, October 2017, <https://www.rfc-editor.org/info/rfc8277>.

[RFC8660] Bashandy, A., Ed., Filsfils, C., Ed., Previdi, S., Decraene, B., Litkowski, S., and R. Shakir, "Segment Routing with the MPLS Data Plane", RFC 8660, DOI 10.17487/RFC8660, December 2019, <https://www.rfc-editor.org/info/rfc8660>.

[RFC8661] Bashandy, A., Ed., Filsfils, C., Ed., Previdi, S., Decraene, B., and S. Litkowski, "Segment Routing MPLS Interworking with LDP", RFC 8661, DOI 10.17487/RFC8661, December 2019, <https://www.rfc-editor.org/info/rfc8661>.

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[RFC8666] Psenak, P., Ed. and S. Previdi, Ed., "OSPFv3 Extensions for Segment Routing", RFC 8666, DOI 10.17487/RFC8666, December 2019, <https://www.rfc-editor.org/info/rfc8666>.

[RFC8667] Previdi, S., Ed., Ginsberg, L., Ed., Filsfils, C., Bashandy, A., Gredler, H., and B. Decraene, "IS-IS Extensions for Segment Routing", RFC 8667, DOI 10.17487/RFC8667, December 2019, <https://www.rfc-editor.org/info/rfc8667>.

[RFC8669] Previdi, S., Filsfils, C., Lindem, A., Ed., Sreekantiah, A., and H. Gredler, "Segment Routing Prefix Segment Identifier Extensions for BGP", RFC 8669, DOI 10.17487/RFC8669, December 2019, <https://www.rfc-editor.org/info/rfc8669>.

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