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Commenté [MB1]: Also update the TLV spec

Support for Enterprise-specific TLVs in the BGP Monitoring Protocol
(BMP)

draft-ietf-grow-bmp-tlv-ebit-06

Abstract

Message types defined by the BGP Monitoring Protocol (BMP) do provision for data in ~~TLV~~ Type, Length, Value (TLV) format, either in the shape of a TLV message body ~~(, i.e.g., -Route Mirroring and Stats Reports)~~, or optional TLVs at the end of a BMP message ~~(e.g., , i.e. Peer Up and Peer Down)~~. However, ~~the space for Type value is unique and governed by IANA. To allow the usage of~~there is no support for vendor-specific TLVs, ~~a mechanism to define per-vendor Type values is required. In this~~This document ~~we~~introduces an Enterprise Bit ~~(, or E-bit,)~~ for such purpose.

This document updates RFC 7854 and ~~XXX~~.

Commenté [MB2]: Check if the TLV spec has also to be updated.

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1. Introduction

The BGP Monitoring Protocol (BMP) ~~is defined in RFC 7854~~ [RFC7854] ~~includes support for TLV-structured data for a subset of the message types.~~ Generalized Support TLV-structured data support for TLV data is extended by TLV support for BMP Route Monitoring and Peer Down Messages introduced in [I-D.ietf-grow-bmp-tlv].

Vendors need the ability to define proprietary Information Elements information for various reasons such as delivering a pre-standard product. This aligns with Section 4.1 of [RFC8126].

Also for code point type assignment to be eligible, an IETF document needs to be adopted at a Working Group and in a stable condition. In this context E-bit helps during early development phases where interoperability among vendors is tested and shipped to network operators for testing. This aligns with Section 4.2 of [RFC8126].

This document re-defines the format of IANA-registered-maintained TLVs in a backward compatible manner with respect to previous documents and existing-current IANA allocations. The document also defines the format for newly introduced enterprise-specific TLVs.

The concept of an E-bit, or Enterprise Bit, is not new. For example, such mechanism is defined in Section 3.2 of [RFC7011] for a very similar purpose.

2. Terminology

Commenté [MB3]: Not sure which part you are referring to.

For example, I'm not sure «delivering a ... product» is aligned with «Private Use is for private or local use only, with the type and purpose defined by the local site. ». Not sure

Commenté [MB4]: I'm afraid this is not true given that there is an FCF5 range.

Commenté [MB5]: There are 4 exp types. Do you think these are not sufficient for this case?

a mis en forme : Surlignage

Commenté [MB6]: Sure. The question is why is this useful in the BMP context

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 RFC 2119 [RFC2119] RFC 8174 [RFC8174] when, and only when, they appear in all capitals, as shown here.

The document uses the terms defined in [RFC7854].

3. TLV Encoding

3.1. IANA-registered TLV Encoding

~~Existing~~The TLV encodings ~~for BMP are~~is defined in Section 4.4 of [RFC7854] (Information TLVs), Section 4.7 of [RFC7854] (Route Mirroring TLVs), Section 4.8 of [RFC7854] (Stats Reports TLVs), ~~draft-ietf-grow-bmp-tlv~~[I-D.ietf-grow-bmp-tlv], and ~~draft-ietf-grow-bmp-peer-up~~ [I-D.ietf-grow-bmp-peer-up] and are updated as follows:

- * 1 bit to flag an enterprise-specific TLV, set to zero. The TLV Type value must have been defined in IANA-BMP [IANA-BMP]
- * 15 bits of TLV Type,
- * 2 octets of TLV Value length,
- * 0 or more octets of TLV Value.

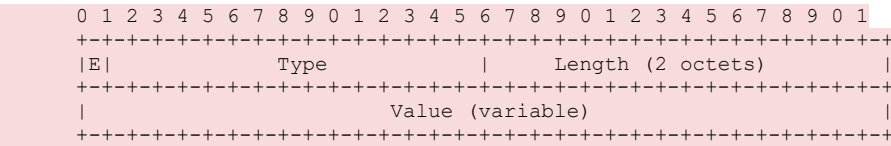


Figure 1: Enterprise TLV Format

3.2. Enterprise-specific TLV encoding

Enterprise-specific TLV encoding is defined as follows:

- * 1 bit to flag an enterprise-specific TLV, set to one
- * 15 bits of TLV Type,
- * 2 octets of TLV length. Comprising length of IANA PEN plus TLV value,
- * 4 octets of IANA Private Enterprise Number IANA-PEN [IANA-PEN]
- * 0 or more octets of TLV Value.

Commenté [MB7]: Another encoding approach for vendor-options is defined in <https://datatracker.ietf.org/doc/html/rfc8415#section-21.17>.
May check that one and see which encoding makes things simple.

Commenté [MB8]: Why not simply reasoning about assigning
one or few types
Or even a range from
0-32767 Standards Action

Commenté [MB9]: Redundant with the text right before figure 1

Figure 4: XXXX

While the ~~proposed~~-encoding is not per-se backward compatible, there is no existing IANA-allocated Type value that makes use of the most significant bit (which is being used in this document to define the E-bit), except the experimental and reserved ones mentioned in Section 10.5 of [RFC7854], Section 10.6 of [RFC7854], and Section 10.9 of [RFC7854]. Of these, the Experimental values are being suppressed in favor of using the E-bit mechanism described in this document; the Reserved value is instead excluded by the E-bit mechanism such that no PEN will be included as part of the TLV.

a mis en forme : Surlignage

Future BMP Message Types MUST make use of the TLV encoding defined in this document.

Commenté [MB10]: A reason to move this to the TLV spec

This document refers to TLV support for BMP Route Monitoring and Peer Down Messages [I-D.ietf-grow-bmp-tlv] for any recommendations regarding the use of TLVs (ie. repetitions, ordering, etc.).

Commenté [MB11]: I guess you meant that the processing is per the TLV spec.

The current text should worked.

Commenté [MB12]: A pointer to base bmp/TLV specs should be included.

4. Security Considerations

This document does not add any additional security considerations.

Commenté [MB13]: How this is shared so that the monitoring/monitored entities have a common understanding?

5. Operational Considerations

It is recommended that vendors making use of the Enterprise Bit extension have a well-defined internal registry for privately assigned code points that is also exposed to the public.

6. IANA Considerations

The TLV Type values used by BMP are managed by IANA as are the Private Enterprise Numbers used by enterprise-specific Type values IANA-PEN [IANA-PEN].

This document requests to remove the Experimental allocation from BMP Initiation and Peer Up Information TLVs, BMP Termination Message TLVs and BMP Route Mirroring TLVs registries as the equivalent action (ie. expressing experimental values) will be instead performed as described in this document, ie. by setting the E-bit and defining the relevant PEN.

XXX

Commenté [MB14]: Also there is an impact on the ranges that are allowed for allocation

7. References

7.1. Normative References

[I-D.ietf-grow-bmp-peer-up]
Scudder, J. and P. Lucente, "BMP Peer Up Message Namespace", Work in Progress, Internet-Draft, draft-ietf-grow-bmp-peer-up-05, 2 October 2024,
<<https://datatracker.ietf.org/doc/html/draft-ietf-grow-bmp-peer-up-05>>.

- [I-D.ietf-grow-bmp-tlv]
Lucente, P. and Y. Gu, "BMP v4: TLV support for BMP Route Monitoring and Peer Down Messages", Work in Progress, Internet-Draft, draft-ietf-grow-bmp-tlv-14, 18 March 2024, <<https://datatracker.ietf.org/doc/html/draft-ietf-grow-bmp-tlv-14>>.
- [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>>.
- [RFC7854] Scudder, J., Ed., Fernando, R., and S. Stuart, "BGP Monitoring Protocol (BMP)", RFC 7854, DOI 10.17487/RFC7854, June 2016, <<https://www.rfc-editor.org/info/rfc7854>>.
- [RFC8126] Cotton, M., Leiba, B., and T. Narten, "Guidelines for Writing an IANA Considerations Section in RFCs", BCP 26, RFC 8126, DOI 10.17487/RFC8126, June 2017, <<https://www.rfc-editor.org/info/rfc8126>>.
- [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>>.

7.2. Informative References

- [IANA-BMP] IANA, "BGP Monitoring Protocol (BMP) Parameters", 2016, <<https://www.iana.org/assignments/bmp-parameters/bmp-parameters.xhtml>>.
- [IANA-PEN] IANA, "Private Enterprise Numbers", 1982, <<http://www.iana.org/assignments/enterprise-numbers/>>.
- [RFC7011] Claise, B., Ed., Trammell, B., Ed., and P. Aitken, "Specification of the IP Flow Information Export (IPFIX) Protocol for the Exchange of Flow Information", STD 77, RFC 7011, DOI 10.17487/RFC7011, September 2013, <<https://www.rfc-editor.org/info/rfc7011>>.

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