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**Support for Enterprise-specific TLVs in the BGP Monitoring Protocol
draft-lucente-grow-bmp-tlv-ebit-00**

Abstract

Message types defined by the BGP Monitoring Protocol (BMP) do provision for optional trailing data in TLV - Type, Length, Value - format; however the space for Type value is unique and governed by IANA. To allow the usage of vendor-specific TLVs, a mechanism to define per-vendor Type values is required. With this document we want to introduce an Enterprise Bit, or E-bit, for such purpose.

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[1.](#) Introduction

The BGP Monitoring Protocol (BMP) is defined in [RFC 7854](#) [[RFC7854](#)]. Support for trailing TLV data is extended by TLV support for BMP Route Monitoring and Peer Down Messages [[I-D.ietf-grow-bmp-tlv](#)].

Vendors need the ability to define proprietary Information Elements, because, for example, they are delivering a pre-standards product, or the Information Element is in some way commercially sensitive.

This document re-defines the format of IANA-registered TLVs in a backward compatible manner with respect to previous documents and existing IANA allocations; it 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

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.

3. TLV encoding

3.1. IANA-registered TLV encoding

Existing TLV encoding defined in [Section 4.4 of \[RFC7854\]](#) is reviewed as follows:

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

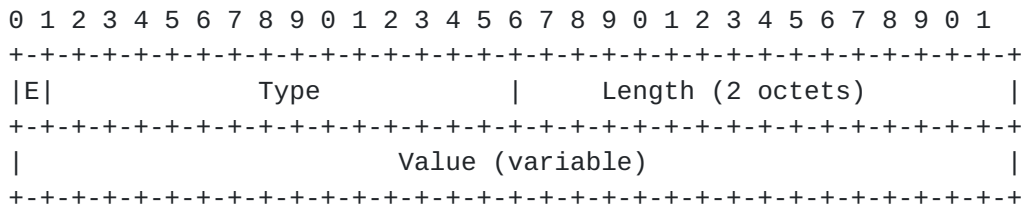


Figure 1

3.2. Enterprise-specific TLV encoding

Enterprise-specific TLV encoding is defined as follows:

- o 1 bit to flag an enterprise-specific TLV set to one
- o 15 bits of TLV Type,
- o 2 octets of TLV Length,
- o 4 octets of IANA enterprise number IANA-PEN [[IANA-PEN](#)]
- o 0 or more octets of TLV Value.

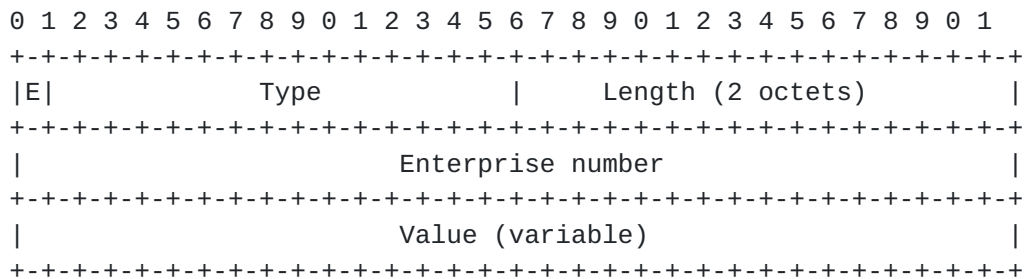


Figure 2

3.3. TLV encoding remarks

The encoding specified in this document applies to all existing BMP Message Types and their namespaces defined in [RFC 7854](#) [[RFC7854](#)], TLV support for BMP Route Monitoring and Peer Down Messages [[I-D.ietf-grow-bmp-tlv](#)] and BMP Peer Up Message Namespace [[I-D.ietf-grow-bmp-peer-up](#)]. 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).

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

TLVs SHOULD be sorted by their code point. Multiple TLVs of the same type can be repeated as part of the same message and it is left to the specific use-cases whether all, any, the first or the last TLV should be considered.

4. Security Considerations

It is not believed that this document adds any additional security considerations.

5. 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 makes no changes to these registries.

6. References

6.1. Normative References

- [I-D.ietf-grow-bmp-peer-up]
Scudder, J., "BMP Peer Up Message Namespace", [draft-ietf-grow-bmp-peer-up-00](#) (work in progress), July 2019.
- [I-D.ietf-grow-bmp-tlv]
Lucente, P., Gu, Y., and H. Smit, "TLV support for BMP Route Monitoring and Peer Down Messages", [draft-ietf-grow-bmp-tlv-01](#) (work in progress), October 2019.
- [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>>.
- [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>>.

6.2. 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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