      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.


```
    0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |E|             Type            |         Length (2 octets)     |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
   |                         Value (variable)                     |
   +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```

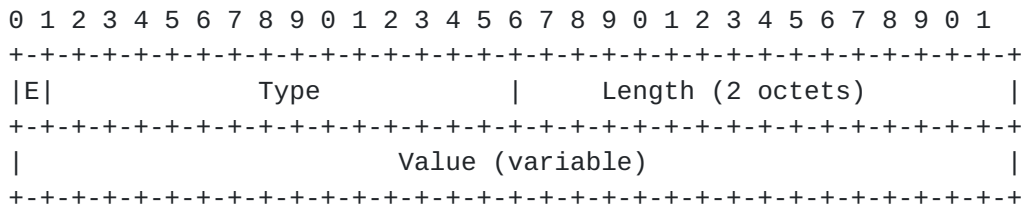
                                Figure 1

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.

```
 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1 2 3 4 5 6 7 8 9 0 1
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|E|            Type            |         Length (2 octets)      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                        Enterprise number                     |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
|                        Value (variable)                      |
+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
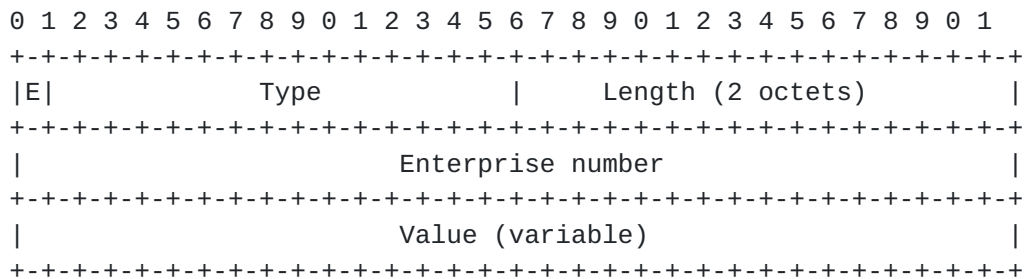
Figure 2

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

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[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate
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6.2. Informative References

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