          TLV support for BMP Route Monitoring and Peer Down Messages
                        draft-ietf-grow-bmp-tlv-00

Abstract

   Most of the message types defined by the BGP Monitoring Protocol
   (BMP) do provision for optional trailing data; however Route
   Monitoring message (to provide a snapshot of the monitored Routing
   Information Base) and Peer Down message (to indicate that a peering
   session was terminated) do not. Supporting optional data in TLV
   format across all BMP message types allows for an homogeneous and
   extensible surface that would be useful for the most different use-
   cases that need to convey additional data to a BMP station. While
   this document does not want to cover any specific utilization
   scenario, it defines a simple way to support optional TLV data in all
   message types.

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 March 6, 2020.

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1. Introduction

The BGP Monitoring Protocol (BMP) is defined in [RFC 7854](RFC 7854) [RFC7854].

The Route Monitoring message consists of:

o Common Header

o Per-Peer Header

o BGP Update PDU

The Peer Down Notification message consists of:

o Common Header

o Per-Peer Header

o Reason

o Data (only if Reason code is 1, 2 or 3)

This means that both Route Monitoring and Peer Down messages have a
non-extensible format. In the Route Monitoring case this is limiting
if wanting to transmit characteristics of transported NLRIs (ie. to
help stateless parsing) or vendor-specific data; in the Peer Down
case this is limiting if wanting to match TLVs shipped with the Peer
Up. The proposal of this document is to bump the BMP version, for
backward compatibility, and allow all message types to provision for
trailing TLV data.

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

TLV data type is already defined in Section 4.4 of [RFC7854] for the
Initiation and Peer Up message types. A TLV consists of:

o 2 octets 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
  +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
  |        Type (2 octets)        |      Length (2 octets)        |
  +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
  |        Value (variable, between, 0 and 65535 octets)         |
  +-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+-+
```
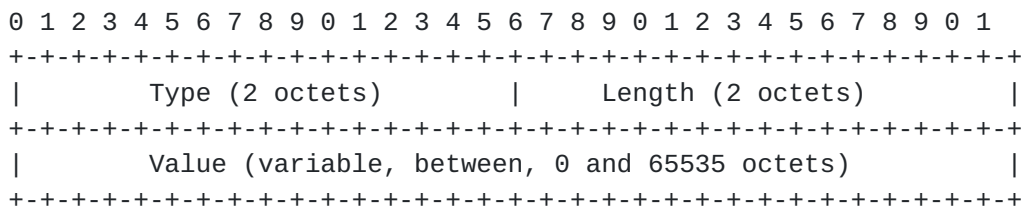
Figure 1

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. BMP Message Format

4.1. Common Header

   Section 4.1 of [RFC7854] defines the Common Header. While the
   structure remains unaltered, the following two definitions are
   changed:

   o Version: Indicates the BMP version. This is set to '4' for all
      messages.

   o Message Length: Length of the message in bytes (including headers,
      data, encapsulated messages and TLV data if any)

4.2. TLV data in Route Monitoring

   The Route Monitoring message type is defined in Section 4.6 of
   [RFC7854]. The BGP Update PDU Section 4.3 of [RFC4271] MAY be
   followed by TLV data. This document defines the following new codes
   to help stateless parsing of BGP Update PDUs:

   o Type = TBD1: the BGP Update PDU is encoded with support for
      4-octet AS number capability RFC 6793 [RFC6793], value MUST be
      boolean.

   o Type = TBD2: the BGP Update PDU is encoded with ADD-PATH
      capability RFC 7911 [RFC7911], value MUST be boolean.

   o Type = TBD3: the BGP Update PDU is encoded with Multiple Labels
      capability RFC 8277 [RFC8277], value MUST be boolean.

4.3. TLV data in Peer Down

   The Peer Down Notification message type is defined in Section 4.9 of
   [RFC7854]. TLV data MAY now follow any Reason code.

4.4. TLV data in other BMP messages

   All other message types defined in RFC7854 [RFC7854] do already
   provision for TLV data. It is RECOMMENDED that all future BMP
   message types will provision for trailing TLV data.

5. Security Considerations

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

6. IANA Considerations

   This document defines the following new TLV types for BMP Route
   Monitoring and Peer Down messages (Section 4.2):

   o Type = TBD1: Support for 4-octet AS number capability. The value
      field contains a boolean value. 1 if the BGP Update PDU enclosed
      in the Route Monitoring message was encoded according to the
      capability.

   o Type = TBD2: ADD-PATH capability. The value field contains a
      boolean value. 1 if the BGP Update PDU enclosed in the Route
      Monitoring message was encoded according to the capability.

   o Type = TBD3: Multiple Labels capability. The value field contains
      a boolean value. 1 if the BGP Update PDU enclosed in the Route
      Monitoring message was encoded according to the capability.

7. Normative References

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