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Peer Address Setting for BGP Monitoring Protocol (BMP) Loc-RIB~~: Peer address~~

draft-ietf-grow-bmp-loc-peer-00

Abstract

BMP Loc-RIB lets a BMP publisher set the Peer Address value of a path information to zero. This document introduces the option to communicate the actual peer from which a path was received when advertising that path with BMP Loc-RIB.

Commenté [MB1]: I suggest to use the same terms used in the base BMP spec

Requirements Language

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

Status of This Memo

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1. Introduction

Using BMP Loc-RIB [RFC9069], the Peer Address field of a Per-Peer header is Zero-filled. This prevents a collector from knowing from which peer a path selected as best was received. The next-hop~~nexthop~~ attribute of a path is indeed not an identifier of the peer from which the path was received. Knowing the peer address is also especially useful when Loc-RIB paths come from Add-Path [RFC7911] enabled peers as the path ~~ID~~ identifier space of paths are defined per peer.

When virtual routing and forwarding (VRFs) are in use, the peer address information can only be interpreted in the VRF context within which the corresponding peering is taking place.

This document introduces a BMPv4 [I-D.ietf-grow-bmp-tlv] TLV describing the address of the peer that announced the path to the current router, and ~~BMPv4~~ other TLVs describing the VRF context in which ~~the~~ a path was received.

2. ~~BMPv4~~ TLV Based Behavior

~~In t~~This section~~, we~~ describes a solution based on BMPv4 TLVs. Section 2.1 describes a BMPv4 TLV used to convey the peer address. Section 2.2 introduces optional TLVs for the case of paths imported from another VRF.

2.1. Rx Peer-Address TLV

Commenté [MB2]: Do you refer to this part «Zero-filled. The remote peer address is not applicable. The V flag is not applicable with the Loc-RIB Instance Peer Type considering addresses are zero-filled.»?

If so, clarify the «not applicable» part

Commenté [MB3]: Which one from BMP perspective?

~~In BMPv4, TLV's~~BMP TLVs ~~can be used to~~ provide optional information along
with monitored paths. Peer Address information can be included using one such TLV.

~~A TLV type~~The "Rx Peer-Address TLV" TLV type is TBD14~~needs to be reserved from the BMP Route Monitoring TLVs registry~~ (see IANA section). The value of the TLV is the "Address Type" ~~code~~ followed by the address of the peer from which the monitored path was received. The address type 0 is reserved and MUST NOT be used. A set of address types is described in the following subsections.

~~The value of the type field of this TLV is TBD1.~~

The length field is one (for the "Address Type" field) plus the length of the "Rx Peer Address" field. The "Index" field is, as described by [I-D.ietf-grow-bmp-tlv], not included in the length.

The TLV structure is illustrated in Figure 1.

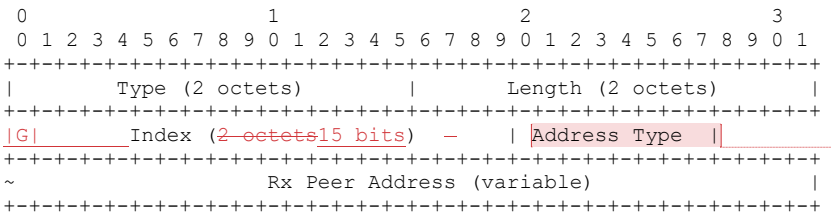


Figure 1: Rx Peer-Address TLV

2.1.1. Self-Originated

The "Rx Peer-Address TLV" may describe a ~~self~~ self-originated path by setting the value of the "Address Type" to 1. The "Rx Peer Address" is empty. The "Length" is thus set to 1.

2.1.2. IPv4 Peer Address

In case of a BGP peering established using IPv4, the "Address Type" is set to 2. The "Rx Peer Address" is the 4 bytes IPv4 Address of the peer. The "Length" is thus set to 5.

2.1.3. IPv6 Global ~~Link~~ Unicast Address (GUA)

In case of a BGP peering established using an IPv6 Global Link Address, the "Address Type" is set to 3. The "Rx Peer Address" is the 16 bytes IPv6 Global Link Address of the peer. The "Length" is thus set to 17.

2.1.4. IPv6 Address with Interface ID

Commenté [MB4]: This is redundant with the IANA actions

Commenté [MB5]: This can be useful if other types can be defined in the future.

If not, this field can be avoided as the type can be inferred from the length.

Commenté [MB6]: An explicit address type can be used as this one can be inferred from the length

Commenté [MB7]: Why not simplify by avoiding the address type for IPv4 addresses (if present) to be encoded a IPv4-mapped IPv6 addresses?

«When the address field holds an IPv4 address, an IPv4-mapped IPv6 address [RFC4291] is used (::ffff:0:0/96). »

In some ~~scenarii~~scenarios, for example, in the case ~~case~~ of a BGP ~~peering~~session established using IPv6 Link Local Addresses (LLA), an interface identifier is needed to disambiguate the address. The "Address Type" is set to 4. The "Rx Peer Address" is the 16 bytes IPv6 Address of the peer, followed by an interface ID of a variable size S. The "Length" is thus set to 1 + 16 + S.

2.1.5. IPv6 Address with Interface Name

~~In the same cases as~~Similar to Section 2.1.4 but with interfaces identified using a name instead of an ID, the "Address Type" is set to 5. The "Rx Peer Address" is the 16 bytes IPv6 Address of the peer, followed by an interface name of a variable size S, encoded in UTF-8 without specific termination characters. The "Length" is thus set to 1 + 16 + S.

2.2. VRF Import TLVs

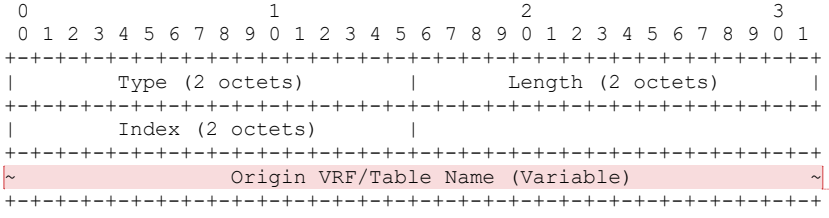
Path information advertised through BMP Loc-RIB might be related to a path imported from another VRF. In ~~that~~ such a scenario, the sole knowledge of the remote peer IP address is not sufficient to ~~obtain a clear picture~~unambiguously the origin of ~~of where~~ this path ~~was coming from~~.

2.2.1. Origin VRF TLV

~~A TLV type "Origin VRF TLV" needs to be reserved from the BMP Route Monitoring TLVs registry.~~ ~~It~~ The Origin VRF TLV describes the VRF context in which this path was received from a peer or where it was self-originated. It contains a variable length field matching the definition of VRF/ Table name from [RFC9069].

The value of the type field of this TLV is TBD2.

The length field of this ~~BMPv4~~ TLV is the length, in bytes, of the UTF-8 string of the VRF name. When this TLV is present, the Rx Peer-Address TLV associated with that path refers to the IP address of the peer from which it was received, in the VRF context ~~refered~~referred in this TLV. ~~This~~ The format of the Origin VRF TLV is ~~illustrated~~ shown in Figure 2.



Commenté [MB8]: Correct but ...:-)

Commenté [MB9]: Shouldn't these two be handled per https://datatracker.ietf.org/doc/html/rfc6874? (zone id)?

Commenté [MB10]: Add a ref

Commenté [MB11]: Should be in IANA cons section

Commenté [MB12]: Cite an authoritative ref

Commenté [MB13]: Indicate the max or recommended max if any.

Figure 2: VRF Import TLV Format

2.2.2. Previous VRF TLV

A TLV typeThe "Previous VRF VRF" TLV" needs to be reserved from the BMP Route Monitoring TLVs registry. It describes the VRF from which this path was imported. It contains a variable length field matching the definition of VRF/Table name from [RFC9069].

The value of the type field of this TLV is TBD3.

The length field of this is the length, in bytes, of the UTF-8 string of the VRF name. This The format of the Previous VRF TLV is illustrated shown in Figure 3.

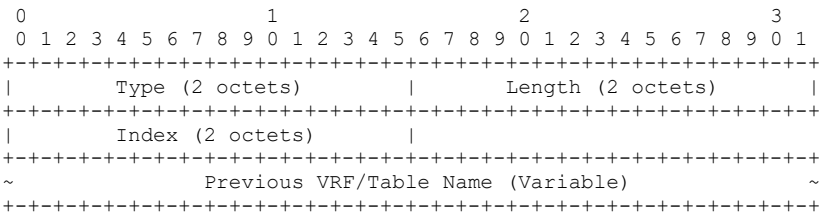


Figure 3: Previous VRF TLV Format

As an exampleFor example, if BMP Loc-RIB describes a path P in VRF C, which was received from a peer I in VRF A, imported into VRF B, and finally imported from VRF B into VRF C, the Origin VRF Name is A, the Previous VRF Name is B, the VRF/Table Name TLV (as per [RFC9069] is C, and the Rx Peer-Adress TLV is I.

2.2.3. Previous VRF Sequence TLV

A TLV typThee "Previous VRF Sequence" needs to be reserved from the BMP Route Monitoring TLVs registry. It describes the entire chain of VRFs through which this path was imported before landing in the current VRF. The list starts with the previous VRF, and ends with the Origin VRF in which this path was received or originated. One entry of this list has the format described in Figure 4. The length field is an 8 8-bitbit value capturing the length, in bytes, of the Name field. The name field is the VRF name of the described VRF of the sequence, matching the definition of VRF/Table name from [RFC9069].

A complete Previous VRF Sequence TLV structure is illustrated in Figure 54.

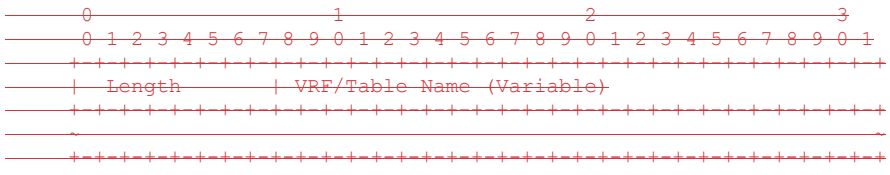


Figure 4: Previous VRF Sequence Entry

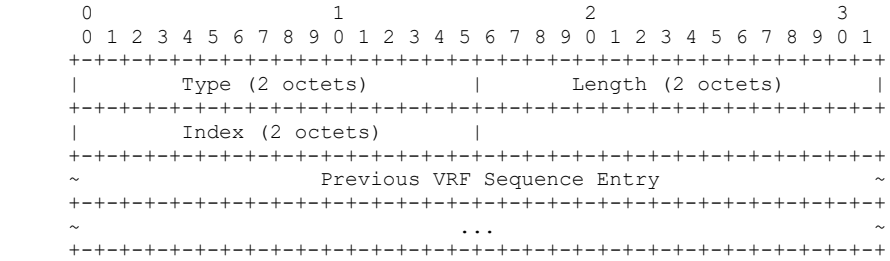


Figure 54: Previous VRF Sequence TLV

The format of each entry is shown in Figure 5

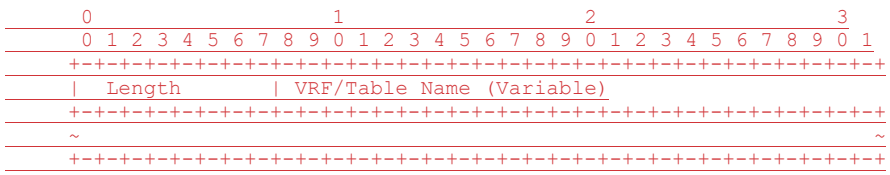


Figure 5: Previous VRF Sequence Entry

The value of the type field of this TLV is TBD4.

The length of a "Previous VRF Sequence" TLV is the sum of the total lengths of each VRF entry in the sequence (1 byte for the length field + the value of the length field). This does not include the length of the Index field as defined in [I-D.ietf-grow-bmp-tlv].

In the example above Section 2.2, the sequence listed in the Previous VRF sequence would be [B, A].

Commenté [MB14]: Please check

3. IANA Considerations

This document requests that IANA assigns the following new parameters to the "BMP Route Monitoring TLVs" [I-D.ietf-grow-bmp-tlv] registry

* Type = TBD1: Rx Peer-Address TLV type. The value of this TLV is

defined in Section 2.1

* Type = TBD2: Origin VRF TLV type. The value of this TLV is defined in Section 2.2.1

* Type = TBD3: Previous VRF TLV type. The value of this TLV is defined in Section 2.2.2

* Type = TBD4: Previous VRF Sequence TLV type. The value of this TLV is defined in Section 2.2.3

This document also requests the definition of a "Local-RIB Peer Address" registry seeded as follows:

* Type = 1: Self-Originated address type. Set to 1 if the route described by the BGP PDU enclosed in the BMP Route Monitoring Message was originated from the BMP station (router).

* Type = 2: IPv4 address type. Set to 2 if the following Peer Address contained in the Rx Peer-Address TLV is an IPv4 address.

* Type = 3: Global Link IPv6 address type. Set to 3 if the following Peer Address contained in the Rx Peer-Address TLV is a Global Link IPv6 address.

* Type = 4: IPv6 + Interface ID address type. Set to 4 if the following Peer Address contained in the Rx Peer-Address TLV is an IPv6 address followed by a numerical interface ID of variable size.

* Type = 5: IPv6 + Interface Name address type. Set to 5 if the following Peer Address contained in the Rx Peer-Address TLV is an IPv6 address followed by an interface name encoded as an UTF-8 string of variable size.

4. Security Considerations

This document does not introduce new security considerations.

5. Acknowledgements

We would like to thank Camilo Cardona, Jeff Haas, for their valuable input on this document.

6. References

6.1. Normative References

[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-13, 23 October 2023, <https://datatracker.ietf.org/doc/html/draft-ietf-grow-bmp-tlv-13>.

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997,

Commenté [MB15]: Avoid using pointers to internal sections but provide the full description that will make it to the registry

Commenté [MB16]: Indicate with registration policy is needed to add new entries

Commenté [MB17]: You may at least call out that the new TLVs reveal internal chaining even within the same router, which may reveal some sensitive information.

Then say whether base bmp provision are sufficient or not to prevent these are leaked to unauthorized entities, etc.

<https://www.rfc-editor.org/info/rfc2119>.

[RFC7911] Walton, D., Retana, A., Chen, E., and J. Scudder, "Advertisement of Multiple Paths in BGP", RFC 7911, DOI 10.17487/RFC7911, July 2016, <https://www.rfc-editor.org/info/rfc7911>.

[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>.

[RFC9069] Evens, T., Bayraktar, S., Bhardwaj, M., and P. Lucente, "Support for Local RIB in the BGP Monitoring Protocol (BMP)", RFC 9069, DOI 10.17487/RFC9069, February 2022, <https://www.rfc-editor.org/info/rfc9069>.

Commenté [MB18]: This is provided as an example

6.2. Informative References

[RFC7911] Walton, D., Retana, A., Chen, E., and J. Scudder, "Advertisement of Multiple Paths in BGP", RFC 7911, DOI 10.17487/RFC7911, July 2016, <https://www.rfc-editor.org/info/rfc7911>.

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