Network Working Group
Internet-Draft
Intended status: Standards Track
Expires: 4 July 2026

L. Wang
N. Geng
L. Li
S. Zhuang
Huawei Technologies

31 December 2025

BGP Monitoring Protocol (BMP) Statistics Types Extension
draft-wang-grow-bmp-bgp-rib-stats-ext-00

Abstract

[RFC7854], [RFC8671] and [I-D.ietf-grow-bmp-bgp-rib-stats] define different BGP Monitoring Protocol (BMP) statistics message types to observe events that occur on a monitored router. This document defines some additional statistics type to monitor BMP Adj-RIB-In, Loc-RIB and Adj-RIB-Out Routing Information Bases (RIBs).

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

Table of Contents

1. Introduction

.

Section 4.8 of [RFC7854] and section 6.2 of [RFC8671] define a number of different BGP Monitoring Protocol (BMP) statistics types to observe major events that occur on a monitored router, and [I-D.ietf-grow-bmp-bgp-rib-stats] defines some new statistics type to monitor BMP Adj-RIB-In and Adj-RIB-Out Routing Information Bases (RIBs). This document defines some additional statistics type to monitor BMP Adj-RIB-In, Loc-RIB and Adj-RIB-Out Routing Information Bases (RIBs).

2. RIB Monitoring Statistics

This section defines different statistics type for Adj-RIB-In and Adj-RIB-Out monitoring type. Some of these statistics are also applicable to Loc-RIB, The Statistics Format follows the definition in Section 3.1 of [I-D.ietf-grow-bmp-bgp-rib-stats].

2.1. Adj-RIB-In RIB Monitoring Statistics Definition

Type = TBD1: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In rejected due to exceeding the received route threshold.

Type = TBD2: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In rejected due to insufficient memory.

Type = TBD3: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In that cannot be downloaded to the FIB module due to insufficient forwarding resources.

Type = TBD4: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In that cannot be downloaded to the FIB module due to insufficient label resources or SID resources.

Type = TBD5: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In rejected due to invalid next-hop.

Type = TBD6: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In rejected due to next-hop unreachable.

Type = TBD7: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In that are inactive due to the inability to resolve the next-hop tunnel.

Type = TBD8: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In rejected due to Type 1 Route Leak as defined in [RFC7908]: Hairpin Turn with Full Prefix.

Type = TBD9: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In rejected due to Type 2 Route Leak as defined in [RFC7908]: Lateral ISP-ISP-ISP Leak.

Type = TBD10: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In rejected due to Type 3 Route Leak as defined in [RFC7908]: Leak of Transit-Provider Prefixes to Peer.

Type = TBD11: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In rejected due to Type 4 Route Leak as defined in [RFC7908]: Leak of Peer Prefixes to Transit Provider.

Type = TBD12: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In rejected due to Type 5 Route Leak as defined in [RFC7908]: Prefix Re-origination with Data Path to Legitimate Origin.

Type = TBD13: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-In rejected due to Type 6 Route Leak as defined in [RFC7908]: Accidental Leak of Internal Prefixes and More- Specific Prefixes.

Type = TBD14: (64-bit Gauge) Current number of routes in per-AFI/SAFI post-policy Adj-RIB-In invalidated through the AS_PATH Verification [I-D.ietf-sidrops-aspa-verification]. This is total number of routes invalidated due to AS_PATH Verification. The value is structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit Gauge.

Type = TBD15: (64-bit Gauge) Current number of routes in per-AFI/SAFI post-policy Adj-RIB-In validated through the AS_PATH Verification [I-D.ietf-sidrops-aspa-verification]. This is total number of routes validated due to AS_PATH Verification. The value is structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit Gauge.

Type = TBD16: (64-bit Gauge) Current number of routes in per-AFI/SAFI post-policy Adj-RIB-In whose AS_PATH Verification state is Unknown due to the AS_PATH Verification [I-D.ietf-sidrops-aspa-verification]. The value is structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit Gauge.

2.2. Adj-RIB-Out RIB Monitoring Statistics Definition

Type = TBD17: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-Out rejected due to exceeding the sent route threshold.

Type = TBD18: Number of routes currently in per-AFI/SAFI pre-policy Adj-RIB-Out that cannot be advertised to its peer due to insufficient label resources or SID resources.

Type = TBD19: (64-bit Gauge) Current number of routes in per-AFI/SAFI post-policy Adj-RIB-Out invalidated through the AS_PATH Verification [I-D.ietf-sidrops-aspa-verification] [I-D.zhang-sidrops-aspa-egress]. This is total number of routes invalidated due to AS_PATH Verification. The value is structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit Gauge.

Type = TBD20: (64-bit Gauge) Current number of routes in per-AFI/SAFI post-policy Adj-RIB-Out validated through the AS_PATH Verification [I-D.ietf-sidrops-aspa-verification] [I-D.zhang-sidrops-aspa-egress]. This is total number of routes validated due to AS_PATH Verification. The value is structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit Gauge.

Type = TBD21: (64-bit Gauge) Current number of routes in per-AFI/SAFI post-policy Adj-RIB-Out whose AS_PATH Verification state is Unknown due to the AS_PATH Verification [I-D.ietf-sidrops-aspa-verification] [I-D.zhang-sidrops-aspa-egress]. The value is structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit Gauge.

3. IANA Considerations

This document requests that IANA assign the following new parameters to the BMP parameters name space (https://www.iana.org/assignments/bmp-parameters/bmp-parameters.xhtml).

They will be added in subsequent versions.

4. Security Considerations

Procedures and protocol extensions defined in this document do not affect the BMP security model. All security and authentication mechanisms required by Section 11 of [RFC7854], Section 8 of [RFC8671], and Section 7 of [RFC9069] are also applicable to the gauges defined in this document. This document does not add any additional security considerations.

Monitored devices SHOULD be configured to implement rate-limited reporting of new gauges.

5. Contributors

The following people made significant contributions to this document:

To be added.

6. Acknowledgements

The authors would like to acknowledge the review and inputs from xxx.

7. References

7.1. Normative References

[I-D.ietf-grow-bmp-bgp-rib-stats]
Srivastava, M., Liu, Y., Lin, C., and J. Li, "Advanced BGP Monitoring Protocol (BMP) Statistics Types", Work in Progress, Internet-Draft, draft-ietf-grow-bmp-bgp-rib-stats-17, 3 December 2025, <https://datatracker.ietf.org/doc/html/draft-ietf-grow-bmp-bgp-rib-stats-17>.

[I-D.ietf-sidrops-aspa-verification]
Azimov, A., Bogomazov, E., Bush, R., Patel, K., Snijders, J., and K. Sriram, "BGP AS_PATH Verification Based on Autonomous System Provider Authorization (ASPA) Objects", Work in Progress, Internet-Draft, draft-ietf-sidrops-aspa-verification-24, 19 October 2025, <https://datatracker.ietf.org/doc/html/draft-ietf-sidrops-aspa-verification-24>.

[I-D.zhang-sidrops-aspa-egress]
Zhang, J., Wang, Y., Matト嬲ka, M., and M. Xu, "ASPA-based AS_PATH Verification for BGP Export", Work in Progress, Internet-Draft, draft-zhang-sidrops-aspa-egress-03, 21 July 2025, <https://datatracker.ietf.org/doc/html/draft-zhang-sidrops-aspa-egress-03>.

[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>.

[RFC4271] Rekhter, Y., Ed., Li, T., Ed., and S. Hares, Ed., "A Border Gateway Protocol 4 (BGP-4)", RFC 4271, DOI 10.17487/RFC4271, January 2006, <https://www.rfc-editor.org/info/rfc4271>.

[RFC4760] Bates, T., Chandra, R., Katz, D., and Y. Rekhter, "Multiprotocol Extensions for BGP-4", RFC 4760, DOI 10.17487/RFC4760, January 2007, <https://www.rfc-editor.org/info/rfc4760>.

[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>.

[RFC7908] Sriram, K., Montgomery, D., McPherson, D., Osterweil, E., and B. Dickson, "Problem Definition and Classification of BGP Route Leaks", RFC 7908, DOI 10.17487/RFC7908, June 2016, <https://www.rfc-editor.org/info/rfc7908>.

[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>.

[RFC8671] Evens, T., Bayraktar, S., Lucente, P., Mi, P., and S. Zhuang, "Support for Adj-RIB-Out in the BGP Monitoring Protocol (BMP)", RFC 8671, DOI 10.17487/RFC8671, November 2019, <https://www.rfc-editor.org/info/rfc8671>.

[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>.

7.2. Informative References

Authors' Addresses

Lili Wang
Huawei Technologies
Huawei Bld., No.156 Beiqing Rd.
Beijing
100095
China
Email: lily.wong@huawei.com

Nan Geng
Huawei Technologies
Huawei Bld., No.156 Beiqing Rd.
Beijing
100095
China
Email: gengnan@huawei.com

Lei Li
Huawei Technologies
Huawei Bld., No.156 Beiqing Rd.
Beijing
100095
China
Email: kenny.lilei@huawei.com

Shunwan Zhuang
Huawei Technologies
Huawei Bld., No.156 Beiqing Rd.
Beijing
100095
China
Email: zhuangshunwan@huawei.com