~~Definition For New~~Advanced BGP Monitoring Protocol (BMP) Statistics
Types

Commenté [MB1]: (minor)May consider a better title to reflect the content.

                    draft-ietf-grow-bmp-bgp-rib-stats-08

Abstract

   RFC 7854 defines different BGP Monitoring Protocol (BMP) statistics
   message types to observe events that occur on a monitored router.
   This document defines new statistics type to monitor BMP Adj-RIB-In
   and Adj-RIB-Out Routing Information Bases (RIBs).

Status of This Memo

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1. Introduction

    Section 4.8 of [RFC7854] defines a number of different BGP Monitoring
    Protocol (BMP) statistics types to observe major events that occur on
    a monitored router. Stats are either counters or gauges.
    Section 6.2 of [RFC8671] also defines several BMP statistics types
    for Adj-RIB-Out of a monitored router.

    This document defines new gauges for BMP statistics message. The
    format of the BMP statistics message remains same as defined in
    [RFC7854].

1.1. 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.

    The terminology in this document aligns with [RFC7854] and [RFC8671].

2. Statistics Definition

    This section defines different statistics type for Adj-RIB-In and
    Adj-RIB-Out monitoring type.

2.1. Adj-RIB-In Statistics Definition

    * Type = 18: (64-bit Gauge) Current number of routes in Adj-RIBs-In
       Pre-Policy [RFC7854]. Note that tThis gauge updates stats type 7
       defined in [RFC7854] and makes it an explicit for Adj-RIBs-In Pre-
       Policy .

    * Type = 19: (64-bit Gauge) Current number of routes in per-Address
       Family Identifier (AFI)/Subsequent Address Family Identifier
       (SAFI) Adj-RIBs-In Pre-Policy. Note that tThis gauge is similar
       from to stats type 9 defined in Section 4.8 of [RFC7854] and makes
it a an explicit for
       Adj-RIBs-In Pre-Policy. The value is structured as: 2-byte AFI,

1-byte SAFI, followed by a 64-bit Gauge.

* Type = 20: (64-bit Gauge) Current number of routes in Adj-RIBs-In
  Post-Policy [RFC7854].

* Type = 21: (64-bit Gauge) Current number of routes in per-AFI/SAFI
  Adj-RIBs-In Post-Policy. The value is structured as: 2-byte AFI,
  1-byte SAFI, followed by a 64-bit Gauge.

* Type = 22: (64-bit Gauge) Current number of routes in per-AFI/SAFI
  rejected by inbound policy. Note that tThis gauge is different
  from stats type 0 defined in Section 4.8 of [RFC7854]. The stats
  type 0 in
  [RFC7854] is a 32-counter which is a monotonically increasing
  number
  and doesn't represent the current number of routes rejected by an
  inbound policy due to ongoing configuration changes. The value is
  structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit
  Gauge.

* Type = 23: (64-bit Gauge) Number of routes in per-AFI/SAFI
  accepted by inbound policy. The value is structured as: 2-byte
  AFI, 1-byte SAFI, followed by a 64-bit Gauge. Some
  implementations, or configurations in implementations, MAY may
  discard
  routes that do not match policy and thus the accepted count and
  the Adj-RIB-In counts will be identical in such cases.

* Type = 24: (64-bit Gauge) Number of routes in per-AFI/SAFI
  selected as primary route. The value is structured as: 2-byte
  AFI, 1-byte SAFI, followed by a 64-bit Gauge. A primary route is
  a recursive or non-recursive path whose next-hop resolution ends
  with an adjacency (see, e.g., [I-D.ietf-rtgwg-bgp-pic]). A prefix
  can have
  more than one primary path if multipath is configured. A best
  path is also considered as a primary path.

* Type = 25: (64-bit Gauge) Number of routes in per-AFI/SAFI
  selected as a backup route. The value is structured as: 2-byte
  AFI, 1-byte SAFI, followed by a 64-bit Gauge. A backup path is
  also installed in the Loc-RIB, but it is not used until some or
  all primary paths become unreachable. Backup paths are used for
  fast convergence in the event of failures.

* Type = 26: (64-bit Gauge) Number of routes in per-AFI/SAFI
  suppressed by configured route damping policy. The value is
  structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit
  Gauge. 'Suppressed' refers to a path which has been declared
  suppressed by the BGP Route Flap Damping mechanism as described in
  Section 2.2 of [RFC2439].

* Type = 27: (64-bit Gauge) Number of routes in per-AFI/SAFI marked
  as stale by any configuration. The value is structured as: 2-byte
  AFI, 1-byte SAFI, followed by a 64-bit Gauge. 'Stale' refers to a
  path which has been declared stale by the BGP Graceful Restart
  mechanism as described in Section 4.1 of [RFC4724], such as the
  routes filtered by a remote peer through application of policies
  during a graceful restart.

* Type = 28: (64-bit Gauge) Number of routes in per-AFI/SAFI marked
  as stale by Long-Lived Graceful Restart (LLGR). The value is
  structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit
  Gauge. 'Stale' refers to a path which has been declared stale by
  the BGP LLGR mechanism as described in Section 4.3 of [RFC9494].

* Type = 29: (64-bit Gauge) Number of routes left until reaching the
  received route threshold as defined in Section 6.7 of [RFC4271].

* Type = 30: (64-bit Gauge) Number of routes in per-AFI/SAFI left
  until reaching the received route threshold as defined in
  Section 6.7 of [RFC4271]. The value is structured as: 2-byte AFI,
  1-byte SAFI, followed by a 64-bit Gauge.

* Type = 31: (64-bit Gauge) Number of routes left until reaching a
  license-customized route threshold. This value is affected by
  whether a customized license exists for the relevant address
  family, and when the customized license is installed.

* Type = 32: (64-bit Gauge) Number of routes in per-AFI/SAFI left
  until reaching a license-customized route threshold. This value
  is affected by whether a customized license exists for the
  relevant address family, and when the customized license is
  installed. The value is structured as: 2-byte AFI, 1-byte SAFI,
  followed by a 64-bit Gauge.

* Type = 33: (64-bit Gauge) Current nNumber of routes rejected by
  exceeding the length threshold of AS-PATHAS PATH.

* Type = 34: (64-bit Gauge) Current Number number of routes in per-
AFI/SAFI
    rejected by exceeding the length threshold of AS-PATHAS PATH. The
value
    is structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit
    Gauge.

* Type = 35: (64-bit Gauge) Current Number number of routes in per-
AFI/SAFI
    Adj-RIBs-In Post-Policy invalidated through the Route Origin
    Authorization (ROA) of Resource Public Key Infrastructure (RPKI)
    [RFC6811]. This is total number of routes invalidated due to
    origin Autonomous System (AS) number mismatch and prefix length
    mismatch. The value is structured as: 2-byte AFI, 1-byte SAFI,
    followed by a 64-bit Gauge.

* Type = 36: (64-bit Gauge) Current Number number of routes in per-
AFI/SAFI
    Adj-RIBs-In Post-Policy validated by verifying route origin AS
    number through the ROA of RPKI [RFC6811]. The value is structured
    as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit Gauge.

* Type = 37: (64-bit Gauge) Current Number number of routes in per-
AFI/SAFI
    Adj-RIBs-In Post-Policy not found by verifying route origin AS
    number through the ROA of RPKI [RFC6811]. The value is structured
    as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit Gauge.

2.2. Adj-RIB-Out Statistics Definition

   * Type = 38: (64-bit Gauge) Current number of routes in per-AFI/SAFI
      rejected by outbound policy. These routes are active routes which
      should otherwise would have been advertised in absence of outbound
      policy which rejected them. The value is structured as: 2-byte
      AFI, 1-byte SAFI, followed by a 64-bit Gauge. This counter only
      considers routes distributed from Loc-RIB into the Adj-RIBs-Out
      and does not include cases like BGP add-paths [RFC7911].

   * Type = 39: (64-bit Gauge) Current Number number of routes refused
to be
      sent by exceeding the length threshold of AS-PATH.

   * Type = 40: (64-bit Gauge) Current Number number of routes in per-
AFI/SAFI
      refused to be sent by exceeding the length threshold of AS-PATH.
      The value is structured as: 2-byte AFI, 1-byte SAFI, followed by a
      64-bit Gauge.

   * Type = 41: (64-bit Gauge) Current Number number of routes in per-
AFI/SAFI
      Adj-RIBs-Out Post-Policy invalidated through the ROA of RPKI
      [RFC6811]. This is total number of routes invalidated due to
      origin AS number mismatch and prefix length mismatch. The value
      is structured as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit
      Gauge.

   * Type = 42: (64-bit Gauge) Current Number number of routes in per-
AFI/SAFI
      Adj-RIBs-Out Post-Policy validated by verifying route origin AS
      number through the ROA of RPKI [RFC6811]. The value is structured
      as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit Gauge.

   * Type = 43: (64-bit Gauge) Current Number number of routes in per-
AFI/SAFI
      Adj-RIBs-Out Post-Policy not found by verifying route origin AS
      number through the ROA of RPKI [RFC6811]. The value is structured
      as: 2-byte AFI, 1-byte SAFI, followed by a 64-bit Gauge.

3. IANA Considerations

   IANA has assigned the following new parameters in the BMP Statistics
   Types registry, part of the BMP parameters registry group
   (https://www.iana.org/assignments/bmp-parameters/bmp-
   parameters.xhtml).

   This document requests IANA to update these entries as follows. Also,
the document requests IANA to update ethe the reference cited for the
   entries with the RFC number to be assigned to this document.

   * Type = 18: Number of routes currently in Adj-RIBs-In Pre-Policy.

   * Type = 19: Number of routes currently in per-AFI/SAFI Adj-RIBs-In
      Pre-Policy.

   * Type = 20: Number of routes currently in Adj-RIBs-In Post-Policy.

*   Type = 21: Number of routes currently in per-AFI/SAFI Adj-RIBs-In Post-Policy.

*   Type = 22: Number of routes currently in per-AFI/SAFI rejected by inbound policy.

*   Type = 23: Number of routes currently in per-AFI/SAFI accepted by inbound policy.

*   Type = 24: Number of routes currently in per-AFI/SAFI selected as primary route.

*   Type = 25: Number of routes currently in per-AFI/SAFI selected as a backup route.

*   Type = 26: Number of routes in per-AFI/SAFI suppressed by configured route damping policy.

*   Type = 27: Number of routes in per-AFI/SAFI marked as stale by any configuration.

*   Type = 28: Number of routes in per-AFI/SAFI marked as stale by LLGR.

*   Type = 29: Number of routes left until reaching the received route threshold.

*   Type = 30: Number of routes in per-AFI/SAFI left until reaching the received route threshold.

*   Type = 31: Number of routes left until reaching a license-customized route threshold.

*   Type = 32: Number of routes in per-AFI/SAFI left until reaching a license-customized route threshold.

*   Type = 33: Number of routes currently rejected due to exceeding the length threshold of AS-PATH.

*   Type = 34: Number of routes currently in per-AFI/SAFI rejected due to exceeding the length threshold of AS-PATH.

*   Type = 35: Number of routes currently in per-AFI/SAFI Adj-RIBs-In Post-Policy invalidated after verifying route origin AS number through the ROA of RPKI.

*   Type = 36: Number of routes currently in per-AFI/SAFI Adj-RIBs-In Post-Policy validated after verifying route origin AS number through the ROA of RPKI.

*   Type = 37: Number of routes currently in per-AFI/SAFI Adj-RIBs-In Post-Policy not found after verifying route origin AS number through the ROA of RPKI.

*   Type = 38: Number of routes currently in per-AFI/SAFI rejected by outbound policy.

*   Type = 39: Number of routes currently refused by exceeding the

length threshold of AS-PATH.

* Type = 40: Number of routes currently in per-AFI/SAFI refused by exceeding the length threshold of AS-PATH.

* Type = 41: Number of routes currently in per-AFI/SAFI Adj-RIBs-Out Post-Policy invalidated after verifying route origin AS number through the ROA of RPKI.

* Type = 42: Number of routes currently in per-AFI/SAFI Adj-RIBs-Out Post-Policy validated after verifying route origin AS number through the ROA of RPKI.

* Type = 43: Number of routes currently in per-AFI/SAFI Adj-RIBs-Out Post-Policy not found after verifying route origin AS number through the ROA of RPKI.

X. Operational Considerations

4. Security Considerations

The considerations in Section 11 of [RFC7854] apply to this document. It is also believed that tThis document does not add any additional security considerations other than those discussed in Section 11 of [RFC7854].

5. Implementation Status

Note to the RFC Editor - remove this section before publication, as well as remove the reference to [RFC7942].

This section records the status of known implementations of the protocol defined by this specification at the time of posting of this Internet-Draft, and is based on a proposal described in [RFC7942]. The description of implementations in this section is intended to assist the IETF in its decision processes in progressing drafts to RFCs. Please note that the listing of any individual implementation here does not imply endorsement by the IETF. Furthermore, no effort has been spent to verify the information presented here that was supplied by IETF contributors. This is not intended as, and must not be construed to be, a catalog of available implementations or their features. Readers are advised to note that other implementations may exist.

According to [RFC7942], "this will allow reviewers and working groups to assign due consideration to documents that have the benefit of running code, which may serve as evidence of valuable experimentation and feedback that have made the implemented protocols more mature. It is up to the individual working groups to use this information as they see fit".

5.1. Juniper Networks

* Organization: Juniper Networks.

* Implementation:

Commenté [MB9]: •Remind this part from the base spec:

«It is left to the implementation to determine transmission timings -- however, configuration control should be provided of the timer and/or threshold values.»

•An implem should expose which stats types are supported/enabled by default/etc.
•Is there any dependency between the various stats that can be used, e.g., for sanity check? For example sum of all per AFI/SAFI=global count?
•Anything to discuss about how discontinuity is managed/reported?

* Description: Below RIB-IN statistics are implemented.

    - Type = 18.

    - Type = 19.

    - Type = 20.

    - Type = 21.

    - Type = 22.

    - Type = 23.

    - Type = 26.

    - Type = 27.

    - Type = 28.

    - Type = 35.

    - Type = 36.

    - Type = 37.

* Maturity Level: Demo

* Coverage:

* Version: Draft-05

* Licensing: N/A

* Implementation experience: Nothing specific.

* Contact: msri@juniper.net

* Last updated: January 20, 2025

5.2. New H3C Technologies

* Organization: New H3C Technologies.

* Implementation: H3C CR16000, CR19000 series routers implementation of New BMP Statistics Type.

* Description: Below New types have been implemented in above-mentioned New H3C Products (running Version 7.1.086 and above).

    - Type = 18.

    - Type = 19.

    - Type = 20.

    - Type = 21.

- Type = 22.

            - Type = 23.

            - Type = 24.

            - Type = 25.

            - Type = 29.

            - Type = 30.

            - Type = 31.

            - Type = 32.

            - Type = 33.

            - Type = 34.

            - Type = 35.

            - Type = 36.

            - Type = 37.

            - Type = 38.

            - Type = 39.

            - Type = 40.

      * Maturity Level: Demo

      * Coverage:

      * Version: Draft-05

      * Licensing: N/A

      * Implementation experience: Nothing specific.

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      * Last updated: January 20, 2025

6. Acknowledgements

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   their valuable input.

7. References

7.1. Normative References

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7.2. Informational References

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