Addition of New BMP Stat Types

draft-liu-grow-bmp-stats-reports-00

Yisong Liu (China Mobile)
Changwang Lin (New H3C)
Jinming Li (China Mobile)

Introduction

- As the BGP protocol continues to expand, more and more functional features are implemented through the BGP protocol, which adds more event information to monitor these functional features.

- This document defines some statistics types for BMP statistics message to update RFC 7854 for enriching events of interest to routers.

New BMP Stat Types

This lists new statistics types for RIB-IN and RIB-OUT stat type.

RIB-IN

- Statistics Types for Route Threshold
- Statistics Types for AS-Path Length Threshold
- Statistics Types for Route Origin Validation

RIB-OUT

- Statistics Types for AS-Path Length Threshold
- Statistics Types for Route Origin Validation

RIB-IN Statistics Types for Route Threshold

- Stat Type = TBD1: (64-bit Gauge) Current Number of routes in Adj-RIBs-In-Post-Policy rejected by reaching the received route threshold.
- Stat Type = TBD2: (64-bit Gauge) Current Number of routes in per-AFI/SAFI Adj-RIBs-In-Post-Policy rejected by reaching the received route threshold.
- Stat Type = TBD3: (64-bit Gauge) Current Number of routes in Adj-RIBs-In-Post-Policy rejected by reaching the license-customized route threshold.
- Stat Type = TBD4: (64-bit Gauge) Current Number of routes in per-AFI/SAFI Adj-RIBs-In-Post-Policy rejected by reaching the license-customized route threshold.

Routes rejected for route threshold would not be installed in the Loc-Rib.

RIB-IN Statistics Types for AS-Path Length Threshold

- Stat Type = TBD5: (64-bit Gauge) Current Number of routes in Adj-RIBs-In-Pre-Policy rejected by exceeding the length threshold of as-path.
- Stat Type = TBD6: (64-bit Gauge) Current Number of routes in per-AFI/SAFI Adj-RIBs-In-Pre-Policy rejected by exceeding the length threshold of as-path.

RIB-IN Statistics Types for Route Origin Validation

- Stat Type = TBD7: (64-bit Gauge) Current Number of routes in per-AFI/SAFI Adj-RIBs-In-Post-Policy invalidated by verifying route origin Autonomous System (AS) number through the Route Origin Authorization (ROA) of Resource Public Key Infrastructure (RPKI).
- Stat Type = TBD8: (64-bit Gauge) Current Number of routes in per-AFI/SAFI Adj-RIBs-In-Post-Policy validated by verifying route origin Autonomous System (AS) number through the Route Origin Authorization (ROA) of Resource Public Key Infrastructure (RPKI).
- Stat Type = TBD9: (64-bit Gauge) Current Number of routes in per-AFI/SAFI Adj-RIBs-In-Post-Policy not found by verifying route origin Autonomous System (AS) number through the Route Origin Authorization (ROA) of Resource Public Key Infrastructure (RPKI).

RIB-OUT Statistics Types for AS-Path Length Threshold

- Stat Type = TBD10: (64-bit Gauge) Current Number of routes in Adj-RIBs-Out-Post-Policy refused to be sent by exceeding the length threshold of as-path.
- Stat Type = TBD11: (64-bit Gauge) Current Number of routes in per-AFI/SAFI Adj-RIBs-Out-Post-Policy refused to be sent by exceeding the length threshold of as-path.

RIB-OUT Statistics Types for Route Origin Validation

- Stat Type = TBD12: (64-bit Gauge) Current Number of routes in per-AFI/SAFI Adj-RIBs-Out-Post-Policy invalidated by verifying route origin Autonomous System (AS) number through the Route Origin Authorization (ROA) of Resource Public Key Infrastructure (RPKI).
- Stat Type = TBD13: (64-bit Gauge) Current Number of routes in per-AFI/SAFI Adj-RIBs-Out-Post-Policy validated by verifying route origin Autonomous System (AS) number through the Route Origin Authorization (ROA) of Resource Public Key Infrastructure (RPKI).
- Stat Type = TBD14: (64-bit Gauge) Current Number of routes in per-AFI/SAFI Adj-RIBs-Out-Post-Policy not found by verifying route origin Autonomous System (AS) number through the Route Origin Authorization (ROA) of Resource Public Key Infrastructure (RPKI).

RIB-OUT Statistics Types for Route Origin Validation SHOULD NOT be applied if RFC8893 is not implemented in router.

Next Steps

- Discover other interesting events of router.
- Request more review.
- Any comments welcomed.

Thanks!

Definition for Aggregated BMP Route Monitoring Message

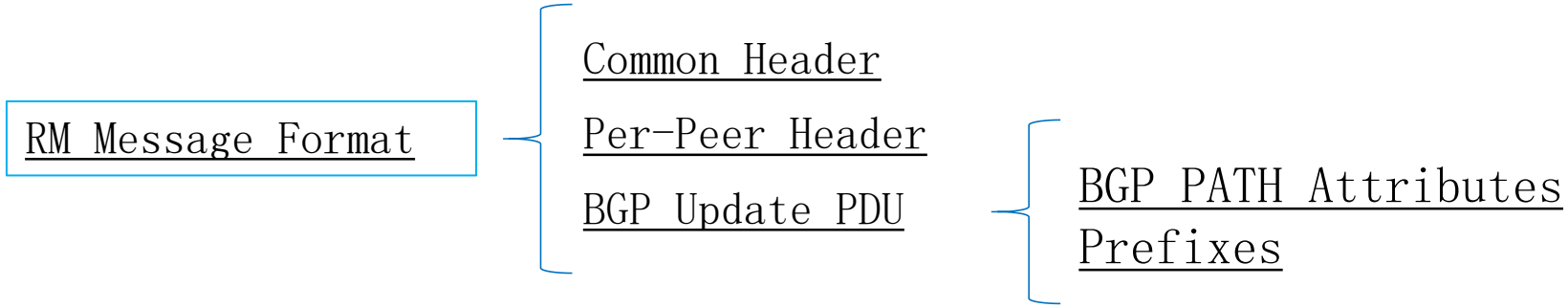
draft-liu-grow-bmp-rm-aggregated-00

Yisong Liu (China Mobile)
Changwang Lin (New H3C)

Introduction

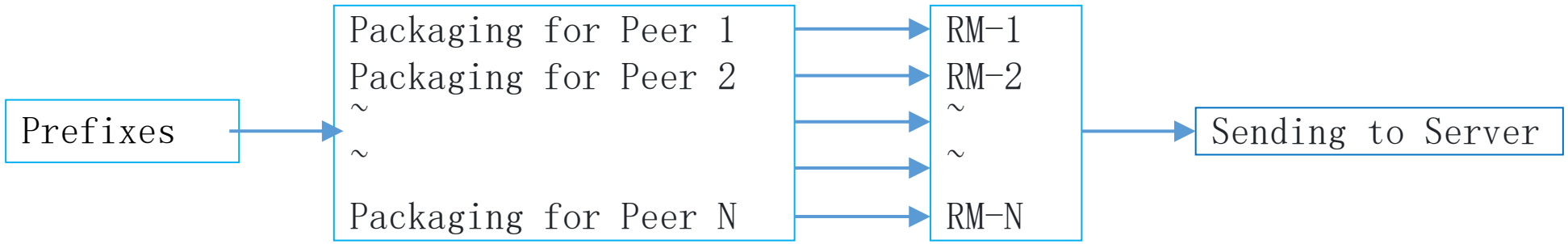
- BMP Route Monitoring (RM) message is used to send incremental BGP routes advertised and withdrawn by peers to the monitoring station.
- This draft proposes a Aggregated BMP RM message. It could compress multiple BMP RM messages into one aggregated BMP RM message.
- It reduces the amount of reported BMP RM messages and reduce network overhead.
- This draft updates RFC 7854 by adding the new BMP Messages type (Aggregated BMP RM message).

BMP Route Monitoring Message



Packaging example:

If Prefixes are same, when there are N peers, it may need to package N times and assemble N RM messages.



Aggregated BMP Route Monitoring Message

Aggregated RM Message Format

- Common Header
- Multi-Peer Header
- BGP Update PDU
  - BGP PATH Attributes
  - Prefixes

Multi-Peer Header Format

- Per-Peer Header 1
- BGP PATH Attribute Length 1
- BGP PATH Attributes 1
- ~
- Per-Peer Header N
- BGP PATH Attribute Length N
- BGP PATH Attributes N

Each Per-Peer Header could carry the unique BGP PATH attribute of the corresponding peer route.
If no BGP PATH attribute is carried, the corresponding BGP PATH attribute length must be 0.

Aggregated BMP Route Monitoring Message

Packaging example:

If Prefixes are same, when there are N peers, it may need to package 1 time and assemble 1 Aggregated RM message.

Compared with BMP RM Message

If Prefixes are same, when there are N peers and BGP PATH Attributes are slightly different for each peer.

RM Message * N	Packaging times	Payloads
Common Header	N	N
Per-Peer Header	N	N
BGP PATH Attributes	N	N
Prefixes	N	N

Aggregated RM Message * 1	Packaging times	Payloads
Common Header	1	1
Per-Peer Header	N	N
Unique BGP PATH Attributes for Per-Peer	N	N
Common BGP PATH Attributes	1	1
Prefixes	1	1

BGP PATH Attributes = Unique BGP PATH Attributes for Per-Peer + Same BGP PATH Attributes;

If Unique BGP PATH Attributes for Per-Peer = 0
Then BGP PATH Attributes = Common BGP PATH Attributes;

By Comparison, For Common Header, Same BGP PATH Attributes and Prefixes, the Packaging times and Payloads are reduced by N-1.

Next Steps

- Request more review.
- Any comments welcomed.

Thanks!