Network Working Group
Internet-Draft
Intended status: Standards Track
Expires: September 14, 2017

P. Mi
Tencent
S. Zhuang
J. Dong
Huawei
March 13, 2017

Monitoring Outgoing Routes Using BMP
draft-mi-grow-monitoring-outgoing-bgp-routes-00

Abstract

The BGP Monitoring Protocol (BMP) [RFC7854] is designed to monitor BGP [RFC4271] running status, such as BGP peer relationship establishment and termination and route updates. At present, the BMP only monitors the incoming bgp routes (Adj-RIB-In), does not monitor the outgoing bgp routes (Adj-RIB-Out).

This draft extends the applicability of BMP [RFC7854] to monitor the outgoing bgp routes.

Requirements Language

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in RFC 2119 [RFC2119].

Status of This Memo

This Internet-Draft is submitted in full conformance with the provisions of BCP 78 and BCP 79.

Internet-Drafts are working documents of the Internet Engineering Task Force (IETF). Note that other groups may also distribute working documents as Internet-Drafts. The list of current Internet-Drafts is at http://datatracker.ietf.org/drafts/current/.

Internet-Drafts are draft documents valid for a maximum of six months and may be updated, replaced, or obsoleted by other documents at any time. It is inappropriate to use Internet-Drafts as reference material or to cite them other than as "work in progress."

This Internet-Draft will expire on September 14, 2017.

Table of Contents

1. Terminology

This memo makes use of the terms defined in [RFC7854].

Adj-RIB-Out: The Adj-RIBs-Out contains the routes for advertisement to specific peers by means of the local speaker's UPDATE messages.

BMP: BGP Monitoring Protocol

BMS: BGP Monitoring Station

2. Introduction

The BGP Monitoring Protocol (BMP) introduces the availability of monitoring BGP running status, such as BGP peer relationship establishment and termination and route updates. Without BMP, manual query is required if you want to know about BGP running status. With BMP, a router can be connected to a monitoring station and configured to report BGP running statistics to the station for monitoring, which

improves the network monitoring efficiency. BMP facilitates the monitoring of BGP running status and reports security threats in real time so that preventive measures can be taken promptly.

The BMP can be used to obtain route view instead of screen scraping. The BMP provides access to unprocessed routing information (Adj-RIB-In) and processed routes (applied inbound policy) of monitored router's peer. Route Monitoring (RM) message defined in [RFC7854] is used to provide an initial dump of all routes received from a peer, as well as an ongoing mechanism that sends the incremental routes advertised and withdrawn by a peer to the monitoring station.

At present, the BMP only monitors the incoming bgp routes (Adj-RIB-In), does not monitor the outgoing bgp routes (Adj-RIB-Out).

Consider the following scenario:

The Station of ISP A is attached to router A, and the route to the Station is advertised to the Users via multiple exit routers (Such as routers C and E).

The BMS (BGP Monitoring Station) is used to monitor the bgp running status of routers C and E.

Now the operator of ISP A would like to know the status of the routes being advertised out of the ISP A:

1) Outgoing to which peers;

2) Whether the route was rejected by the export policy;

3) The modification of BGP route attributes;

4) To be added later.

These status will provide valuable information for network operators, can be used in subsequent optimization procedures.

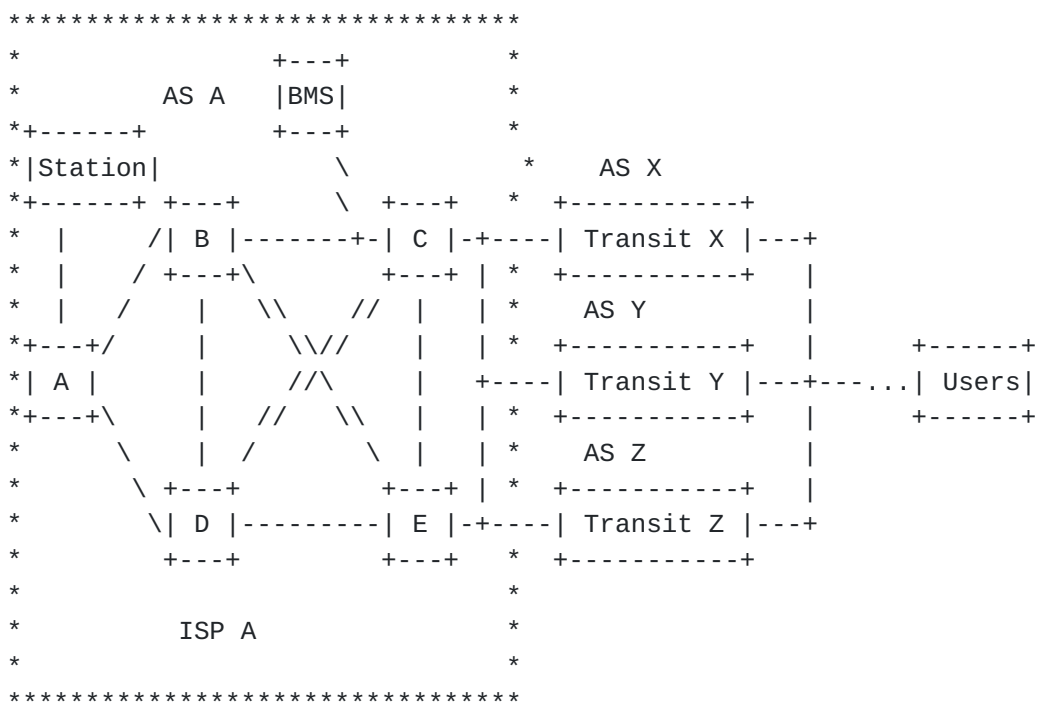

Figure 1: Monitoring Outgoing Routes Using BMP

From the above description of the scenario, it can be seen that it is necessary to monitor BGP outgoing routes. This draft extends the applicability of BMP [RFC7854] to monitor the outgoing bgp routes.

3. Protocol Extensions

In order to support BMP to monitoring outgoing BGP routes, this document proposes some protocol extensions to BMP.

3.1. Option 1: Extending BMP Peer Flags

[RFC7854] defines three bit flags in the Peer Flags field of the per-peer header. The bits are numbered from 0 (the high-order, or leftmost, bit) to 7 (the low-order, or rightmost, bit):

- Flag 0: V flag

- Flag 1: L flag

- Flag 2: A flag

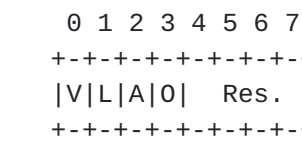

Figure 2: Peer Flags

This document defines an additional Flag that will be used to monitor the outgoing bgp routes:

- Flag TBD: O flag

The O flag, if set to 0, indicates that Adj-RIBs-In are synchronized to BMP Station. If set to 1, indicates that Adj-RIBs-Out are synchronized to BMP Station.

This flag has no significance when used with other messages but Route Monitoring message.

3.2. Option 2: Introducing Advertise Route Monitoring Message

[RFC7854] defines seven message types for transferring BGP messages between cooperating systems:

- Type 0: Route Monitoring
- Type 1: Statistics Report
- Type 2: Peer Down Notification
- Type 3: Peer Up Notification
- Type 4: Initiation
- Type 5: Termination
- Type 6: Route Mirroring

This document defines an additional message type that will be used to monitor the outgoing bgp routes:

- Type TBD: Advertise Route Monitoring

The format of Advertise Route Monitoring message will reuse Route Monitoring message, the only difference is the message type value.

The support for this new route type is OPTIONAL.

3.3. Optons Comparison

Option 1: Reusing the Type 0 information, only introduces an additional flag into the BMP Peer Flags. If the BMP Station does not support the new flag, there is a risk that the BMP Station will wrongly handle the receiving Adj-RIBs-Out information as Adj-RIBs-In information.

Option 2: Introduces an additional message type, if the BMP Station does not support it, the receiving new type message will be ignored by the BMP Station Quietly.

4. Acknowledgements

TBD.

5. IANA Considerations

TBD.

6. Security Considerations

TBD.

7. Normative References

[RFC2119] Bradner, S., "Key words for use in RFCs to Indicate Requirement Levels", BCP 14, RFC 2119, DOI 10.17487/RFC2119, March 1997, <http://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, <http://www.rfc-editor.org/info/rfc4271>.

[RFC7854] Scudder, J., Ed., Fernando, R., and S. Stuart, "BGP Monitoring Protocol (BMP)", RFC 7854, DOI 10.17487/RFC7854, June 2016, <http://www.rfc-editor.org/info/rfc7854>.

Authors' Addresses

Penghui Mi
Tencent
Tengyun Building,Tower A ,No. 397 Tianlin Road
Shanghai 200233
China

Email: kevinmi@tencent.com

Shunwan Zhuang
Huawei
Huawei Bld., No.156 Beiqing Rd.
Beijing 100095
China

Email: zhuangshunwan@huawei.com

Jie Dong
Huawei
Huawei Bld., No.156 Beiqing Rd.
Beijing 100095
China

Email: jie.dong@huawei.com