Aggregated BMP Route Monitoring Message

draft-liu-grow-bmp-rm-aggregated-01

Presenter: Yisong Liu (China Mobile)
Changwang Lin (New H3C)
Mukul Srivastava (Juniper Networks)
BMP Route Monitoring (RM) message is used to send incremental BGP routes advertised and withdrawn by peers to the monitoring station.

According to the implementation of BGP group packing, proposing a new type of aggregated BMP RM message.

Compressing multiple BMP RM messages into one aggregated BMP RM message and reducing the amount of reported BMP RM messages.

Update RFC 7854 by adding the new BMP Messages type (Aggregated BMP RM message).
Background : BGP Group Packing-1

- RRs with multiple clients need to send routes to a large number of BGP client peers, and most of the client peers have the same configuration.
- BGP group packing technology treating all BGP peers with common configurations as a packing group.
- Each route to be sent is packaged only once and then sent to all neighbors in the packing group.

Suppose an RR has 100 clients and 100,000 routes to be reflected. If each neighbor is packaged separately, the total number of times all routes are packaged is 100,000 x 100.
Background: BGP Group Packing-2

If Prefixes are same, when there are N peers that need to be sent, and Prefixes has the same attribute.

Comparison of Two Packing Methods

<table>
<thead>
<tr>
<th>Encapsulation by Peer</th>
<th>Encapsulation by Peer Packing Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>N Peers</td>
<td>N Peers of Peer Packing Group</td>
</tr>
<tr>
<td>N Times Packing</td>
<td>1 Time Packing</td>
</tr>
<tr>
<td>N Times Sending</td>
<td>N Times Sending</td>
</tr>
</tbody>
</table>
BMP Route Monitoring Message

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**
- **~**
- **Per-Peer Header 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.

**Packing 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.

<table>
<thead>
<tr>
<th>Packing times</th>
<th>Common Header</th>
<th>Per-Peer Header</th>
<th>Unique BGP PATH Attributes for Per-Peer</th>
<th>Same BGP PATH Attributes</th>
<th>Prefixes</th>
</tr>
</thead>
<tbody>
<tr>
<td>RM Message * N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
<td>N</td>
</tr>
<tr>
<td>Aggregated RM Message * 1</td>
<td>1</td>
<td>N</td>
<td>N</td>
<td>1</td>
<td>1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Payloads</th>
<th>Common Header</th>
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</tr>
</tbody>
</table>

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

• Seeking for feedback from WG

• Welcome more questions and comments

*Thanks!*