BGP Route Policy and Attribute Trace Using BMP

draft-xu-grow-bmp-route-policy-attr-trace-01

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Recap

• What is it?
  • Tracking route policy processing as events, and encapsulated in BMP
  • E.g., **10.1.1.0/24** received from Peer **192.168.1.1** passed the **inbound** policy (Route Policy **CAP**, Item **100**) at time **T1**, with a **community attribute (100:1)** added

• Where is it used?
  1. Route policy validation
  2. Root cause analysis
  3. Route propagation tracing
Changes from -00 to -01

1. New message structure: basic information part + flexible part
   • Basic information part: fixed length -- prefix, AFI/SAFI, timestamp and so on
   • Flexible part: TLV based -- each TLV is optional for saving bandwidth and user-specific visualization need

2. Flexible representation of route policy structure:
   • New structure allows chaining and recursion

3. Optional TLV:
   • A string type TLV: allows user-specific expression of policy name/ID, as well as the policy execution result.
   • Other usage: any user-specific info
BMP RoFT Message

- Monitoring a subset of or all prefixes
- Event record triggered by policy processing action, e.g., a if-match hit
- One or multiple events per message
Event Format

Event index
Timestamp
Policy category
Peer info
Path ID
Address family
VRF/global table

Event environment

Single event length
Event index
Timestamp (seconds)
Timestamp (microseconds)
Policy Classification
Peer ID
Peer AS
Path Identifier
Peer AFI
Peer SAFI
VRF/Table Name TLV

Event results
Pre + Post policy
BGP attributes
Pre Policy Attribute TLV
Post Policy Attribute TLV

Event cause
Policy
Policy ID TLV

Event notes
Optional data
Optional TLV

- TLVs are optional
  - Pre-policy attribute TLV
  - Post-policy attribute TLV
  - Policy ID TLV
  - Optional TLV
- TLVs allow user-customized contents and format
Pre/Post Policy Attribute TLV

Pre policy BGP attributes

- Type = TED2
- Pre Policy Attr. length
- Pre Policy Attribute sub TLVs

Optional, in case you only want results after policy.

Post policy BGP attributes

- Type = TED3
- Post Policy Attr. length
- Post Policy Attribute sub TLVs

Allowing direct one-by-one attribute comparison before and after policy.

Optional, in case you don’t want any attributes but only the record of policy execution points.
Policy ID TLV

Optional, in case you don’t this format of policy representation or you don’t want policy info at all.

C flag + R flag allow flexible representation of policy with chaining and recursion structure.

Not touching the exact if-match conditions
Optional TLV

<table>
<thead>
<tr>
<th>Type = TB05</th>
<th>Length</th>
</tr>
</thead>
<tbody>
<tr>
<td>Value</td>
<td></td>
</tr>
</tbody>
</table>

Possible usage: a string type TLV
- "Route rejected due to inbound filtering"
- What else?

Optional, in case you want to convey any user-specific info.