Export BGP community information in IP Flow Information Export (IPFIX)

draft-li-opsawg-ipfix-bgp-community-00

Zhenqiang Li
Rong Gu (Presenter)
Jie Dong
Background

• Traffic Engineering/Traffic Steering/Traffic load balancing
  Network administrators need to get the flow information with amount and direction of traffic in their network in order to realize the network optimization.

• IPFIX is designed for exporting formatted IP flow information
  Flow information is transferred from an exporter to a collector with information elements defined in [IANA-IPFIX]
  • sourceIPv4Address / destinationIPv4Address
  • sourceTransportPort / destinationTransportPortPort
  • bgpSourceAsNumber / bgpDestinationAsNumber
  • etc.
BGP Community Based Flow Information

• For traffic engineering in operators’ backbone networks, flow information based on the existing IEs is not always suitable
  • Flow information based on IP address or IP prefix is meticulous.
  • Flow information based on AS numbers is too coarse.

• BGP community can provide the suitable flow granularity
  • Describes a group of routes sharing some common properties

• Flow information based on BGP community needs to be exported using IPFIX

  Up to now, no existing IE is defined for BGP community information.
Application

• Architecture 1

Exporter → Mediator → Collector

- Hold the up-to-date BGP routing table
- Look up in the BGP routing table

- bgpSourceAsNumber
- bgpDestinationAsNumber
- bgpNextHopIPv4Address
- ...existing IEs

- Correlating BGP community with the flow information by matching the route for the specific flow

• Architecture 2

Exporter → Collector

- Hold the up-to-date BGP routing table
- Look up in the BGP routing table

- bgpSourceAsNumber
- bgpDestinationAsNumber
- bgpNextHopIPv4Address
- ...

- New IEs for BGP community
IE definition

• Two information elements are defined in order to export the BGP community information.
  - bgpSourceCommunityList
  - bgpDestinationCommunityList

• Both IPv4 and IPv6 traffic are applicable.

• Both exporter and mediator can use these two IEs to export BGP community information in IPFIX.
**IE definition: bgpSourceCommunityList**

- **bgpSourceCommunityList** with its data type semantics listed as follows.

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<table>
<thead>
<tr>
<th>ElementID</th>
<th>to be assigned by IANA, 458 is suggested</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>bgpSourceCommunityList</td>
</tr>
<tr>
<td>Data Type</td>
<td>basicList, as specified in [RFC6313]</td>
</tr>
<tr>
<td>Data Type Semantics</td>
<td>list</td>
</tr>
<tr>
<td>Description</td>
<td>BGP community information corresponding with</td>
</tr>
<tr>
<td></td>
<td>source IP address</td>
</tr>
<tr>
<td>Units</td>
<td>not needed</td>
</tr>
</tbody>
</table>
```

**Figure 1: bgpSourceCommunityList**
**IE definition: bgpDestinationCommunityList**

- `bgpDestinationCommunityList` with its data type semantics listed as follows.

<table>
<thead>
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<tbody>
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<td>destination IP address</td>
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<td>Units</td>
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</tbody>
</table>

*Figure 2: bgpDestinationCommunityList*
Next steps

• See if other operators have similar requirements

• Solicit comments and contributions to improve this draft

• Work group adoption?
MANY THANKS

Zhenqiang Li
lizhenqiang@chinamobile.com

Rong Gu
gurong@chinamobile.com

Jie Dong
jie.dong@Huawei.com