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Export BGP community information in IP Flow Information Export (IPFIX) draft-li-opsawg-ipfix-bgp-community-00

Abstract

This draft specifies an extension to the IPFIX information model defined in [RFC7012] to export the BGP community information. Two information elements, bgpSourceCommunityList and bgpDestinationCommunityList, are introduced in this document to carry the community information for the source IP and destination IP respectively.

Status of This Memo

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

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This Internet-Draft will expire on January 7, 2017.

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1. Introduction

IP Flow Information Export (IPFIX) [RFC7011] provides network administrators with traffic flow information using the information elements (IEs) defined in [IANA-IPFIX] registries. Based on the traffic flow information, network administrators know the amount and direction of the traffic in their network, then they can optimize their network when needed. For example, they can steer some flows from the congested links to the low utilised links.

[IANA-IPFIX]has already defined the following IEs for traffic flow information exporting in different grain: sourceIPv4Address, sourceIPv4Prefix, destinationIPv4Address, destinationIPv4Prefix, bgpSourceAsNumber, bgpDestinationAsNumber, bgpNextHopIPv4Address, etc. In some circumstances, however, especially when traffic engineering and optimazation are used on the Tier 1 or Tier 2 operators' backbone networks, traffic flow information based on these IEs is not suitable. Flow information based on IP address or IP prefix is much more mediculous. On the contrary, flow information based on AS number is too coarse. BGP community [RFC1997], which describes a group of routes sharing some common properties, is preferablely used for fine granularity traffic engineering [Community-TE] [RFC4384]. Unfortunately, [IANA-IPFIX] has no IE defined for BGP community information, yet.

Flow information based on BGP community can be collected by a mediator defined in [RFC6183]. Mediator is responsible for the correlation between flow information and BGP community. However no IEs is defined in [RFC6183] for exporting BGP community information in IPFIX. Furthermore, to correlate the BGP community with the flow

information, mediator needs to learn BGP routing and lookup in the BGP routing table to get the matching route for the specific flow. Neither BGP routing learning nor routing table lookup is trivial for a mediator. Mediator is mainly introduced to release the performance requirement for the exporter [RFC5982]. In fact, to obtain the BGP related IEs that have already been defined, such as bgpSourceAsNumber, bgpDestinationAsNumber, bgpNextHopIPv4Address, etc, exporter has to hold the up-to-date BGP routing table and look up in the BGP routing table. The exporter can get the community information in the same procedure. So, getting BGP community information adds no more requiremnet for exporter. Some vendors have implemented this feture in their exporters using private IEs. So, for exporting the BGP community information in IPFIX, exporter may be the better place than the mediator.

This draft specifies an extension to the IPFIX information model defined in [RFC7012] to export the BGP community information. Two information elements, bgpSourceCommunityList and bgpDestinationCommunityList, are introduced to complete this task. BgpSourceCommunityList is for the source IP address, and bgpDestinationCommunityList is for the destination IP address. bgpSourceCommunityList and bgpDestinationCommunityList IEs are applicable for both IPv4 and IPv6 traffic. Both exporter and mediator can use these two IEs to export BGP community informaiton in IPFIX.

2. Terminology

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 [RFC2119].

3. BGP Community Information Elements

This section describes two information elements needed in exporting BGP community information along with other flow information defined by IPFIX. Information elements description and their data type semantics are listed below. With these two elements, BGP community information can be reported and flow information based on BGP community can be accumulated and analysed by the collector or other applications.

3.1. bgpSourceCommunityList

ElementID	to be assigned by IANA, 458 is suggested
Name	bgpSourceCommunityList
Data Type	basicList, as specifed in [RFC6313]
Data Type Semantics	list
Description	BGP community information corresponding with source IP address
Units	not needed

Figure 1: bgpSourceCommunityList

3.2. bgpDestinationCommunityList

ElementID	to be assigned by IANA, 459 is suggested
Name	bgpDestinationCommunityList
Data Type	basicList, as specifed in [RFC6313]
Data Type Semantics	list
Description	BGP community information corresponding with destination IP address
Units	not needed

Figure 2: bgpDestinationCommunityList

4. Security Considerations

This document only defines two new information elements. So, this document itself does not directly introduce security issues. The same security considerations as for the IPFIX Protocol Specification [RFC7011] and Information Model [RFC7012] apply.

5. IANA Considerations

This draft specifies two new IPFIX information elements, bgpSourceCommunityList and bgpDestinationCommunityList, to export BGP community information along with other flow information.

The Element IDs for these two information elements are solicited to be assigned by IANA. Number 458 is suggested for bgpSourceCommunityList and number 459 is suggested for bgpDestinationCommunityList.

6. References

6.1. Normative References

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6.2. Informative References

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