Introduction

- After IETF69th, we have improved IPFIX Mediator draft.
- Mainly, this draft updates as follows.
  - Describes arrangement of roles and functions for several nodes, such as IPFIX proxy, firewall and concentrator.
    - This part is not enough to describe whole concept yet.
  - Defines internal components of IPFIX Mediator.
  - Adds IPFIX protocol considerations.
  - Refines solution scenario using IPFIX Mediator.
What is IPFIX Mediator?

- IPFIX Mediators have basically two types of mediation function.
  - **IPFIX protocol Mediation**
    - Simply, it forwards input Flow Records.
    - IPFIX proxy, IPFIX distributor
  - **Flow Mediation**
    - Create renewed Flow Records from input Flow records
    - IPFIX Firewall, IPFIX concentrator

```
CP : Collecting Process
MP: Metering Process
EP: Exporting Process
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What is IPFIX Mediator? (cont’d)

- IPFIX Mediators has basically two roles.
  - Acts as a guard to external domain instead of an original Exporter.
    - Try to guard a original exporter and networks.
    - Prevents to reveal the network topology information, such as “exporterIPAddress” and “ipNextHopIPAddress”.
    - IPFIX proxy, IPFIX firewall
  - Assists an original Exporter.
    - Complements the inability function of an original Exporter.
    - Forwards Flow Record that the top collector required.
      - Distributes Flow records based on the Flow contents.
      - Aggregates Flow records.
      - Adds other fields into Flow records. For example, BGP Next-Hop, MPLS route distinguisher.
      - Anonymizes privacy field.
    - IPFIX concentrator, IPFIX distributor
What is IPFIX Mediator? (cont’d)

- Total picture of IPFIX Mediator.

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Several nodes could be considered in this part.
IPFIX Protocol Mediation

- IPFIX protocol mediation handles multiple collecting sessions and multiple exporting sessions.
  - Merges from multiple sessions to one session.
  - Distributes from one session to multiple sessions.

Needs management of each session, observation domain IDs and templates IDs.
Flow Mediation

- MP is consisted of following sub-processes.
  - Aggregation process: creates aggregated Flow Records.
  - Modification process: deletes, adds some fields and modifies the value of some fields in the Flow Records.
    - Anonymizes and hides the privacy or the topology information.
  - Selection process: Filtering Flow Records based on Flow contents.

Any sequence and combination is configured by the user.
IPFIX Protocol Considerations

- Export time issue
  - Take care of delta time field, if it rewrites the export time.

- Observation Domain ID management
  - Generally, needs to be unique per IPFIX Mediator. Simply, it’s zero.
  - Needs to manage collecting ODID and the exporting ODID, if it handles the multiple sessions.

- Template ID management
  - Generally, needs to be unique per the exporting ODID.
  - Needs to manage template id with ODID and session information.

- Transport Session Management
  - How to handle exporting sessions, if the collecting session resets.

- Option Template Management
  - Needs to rewrite the scope fields, if observation domain id and template id are rewritten.

- Reporting of Exporter Information
  - How to notify the original exporter information to the final collector.
Solution Scenario using IPFIX Mediators

- Large scale traffic monitoring system
  - Thanks to mediators, the traffic collecting system consists of hierarchical architecture.

- Assist an old router function.
  - It adds the derived packet property field, such as BGP Next-hop and AS path information.

- Exchange Flow Records between different domain.
  - ASP provides the graphical view and reports of traffic data by sending monitored Flow Records to ASP.
Summary

- We present a taxonomy of IPFIX Mediator use-cases through two axes, types and roles.
- The concept of IPFIX Mediator has been described mainly.
  - IPFIX protocol considerations, and the refinement of several nodes need discussion with IPFIX members.
- Implementation of IPFIX Mediator is ongoing.
- Discussion
  - Does it deserve the WG work item?
  - Do NW operators stand in need of Mediator?
    - Some collectors have a proxy function based on the NetFlow v.5.
    - Some collectors can cascade itself, whole system can consist of hierarchical architecture.