IPFIX Mediation: Problem Statement

<draft-kobayashi-ipfix-large-ps-01.txt>

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Discussion in IETF 70

- Problems encountered in large-scale network were presented.
  - There are reasons to employ several collectors, i.e., load balancing, etc. Because current IPFIX specification doesn't have classification function, it is very difficult to implement.
  - Options and Observation Point info may be lost.
- Mainly two points are discussed for -00.txt.
  - What data is lost in Mediator?
  - Are these functions really needed?
- Results
  - Approval as a work item was postponed, due to too few members had read the draft.

Since IETF 70 (1)

- Received the following comments from four people. Thank you very much.
  - Understand our motivation and approach.
  - Clarify what data is lost in IPFIX Mediator. Losing accurate data by aggregation and sampling, and losing of IPFIX header info are confusing.
    - ➔ Add more description about lost data of IPFIX header info, such as ODID and "Export Time" field in -01.

Since IETF 70 (2)

- Other comments.
  - Request for more description about IPFIX Mediator and define IPFIX Mediator.
    - ➔ Add IPFIX Mediator terminology in -01.
  - Aggregation methods performed by dynamically changing Flow Key needs more description.
    - ➔ Remove this part in -01 because this is an alternative way for using of IPFIX Concentrator, which is not an advocacy point.
  - Logical order needs to be arranged in whole draft.
    - ➔ Create "Problems using IPFIX Mediators" section in -01. The section gathers problems with Mediators.

Since IETF 70 (3)

- Two comments from Emile.
  - Compatibility issue between traditional Exporter and IPFIX, i.e., NetFlow v5 and IPFIX.
  - Request for anonymization function for inter-domain information exchange.
    - ➔ Not included in -01 yet. I did not have enough time to describe these topics. In next presentation, Emile will present it.

Compare -01 to -00

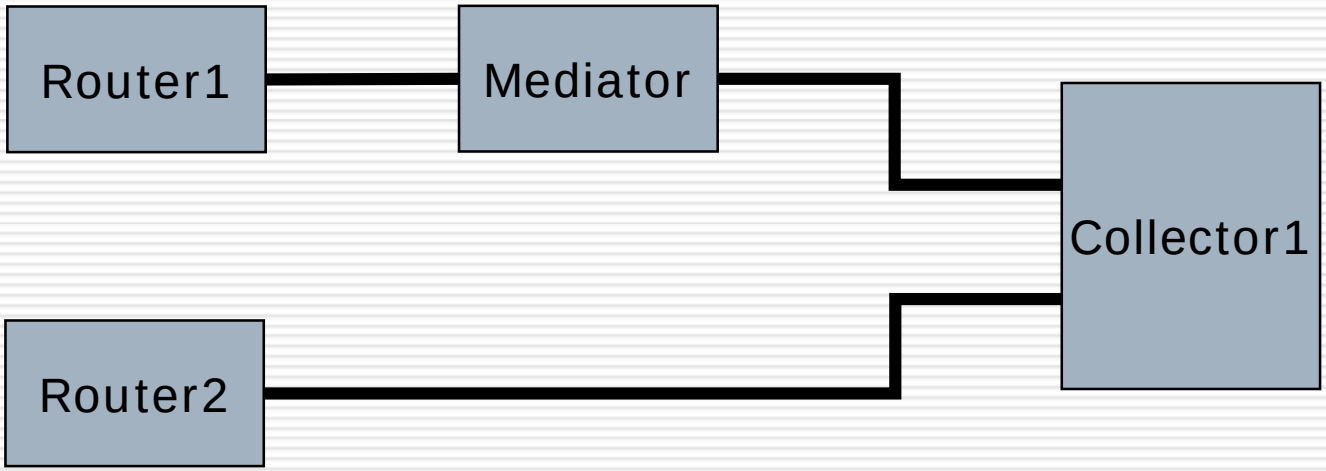
- Focuses on problems regarding IPFIX Mediators. Adds the following section.
  - IPFIX Mediator Terminology
  - Problems using IPFIX Mediators
    - Implementing Load Balancing
    - Loss of Observation Point Information
    - Loss of Base Time Information
    - Loss of Option Template Information
    - Observation Domain ID and Template ID Management
    - Session Management

IPFIX Mediator Terminology

- Many terms are quoted from Mediator draft.
  - IPFIX Mediator has two types of Mediation.
    - IPFIX Protocol Mediation
    - Flow Mediation
  - Added related devices except for IPFIX Proxy and Concentrators.
    - IPFIX Distributor
      - Classifies and feeds Flow Records for multiple Collectors.
    - IPFIX Masquerading Proxy (Christoph's suggestion)
      - Feeds Flow Records after reviewing them from the viewpoint of privacy and its policy.

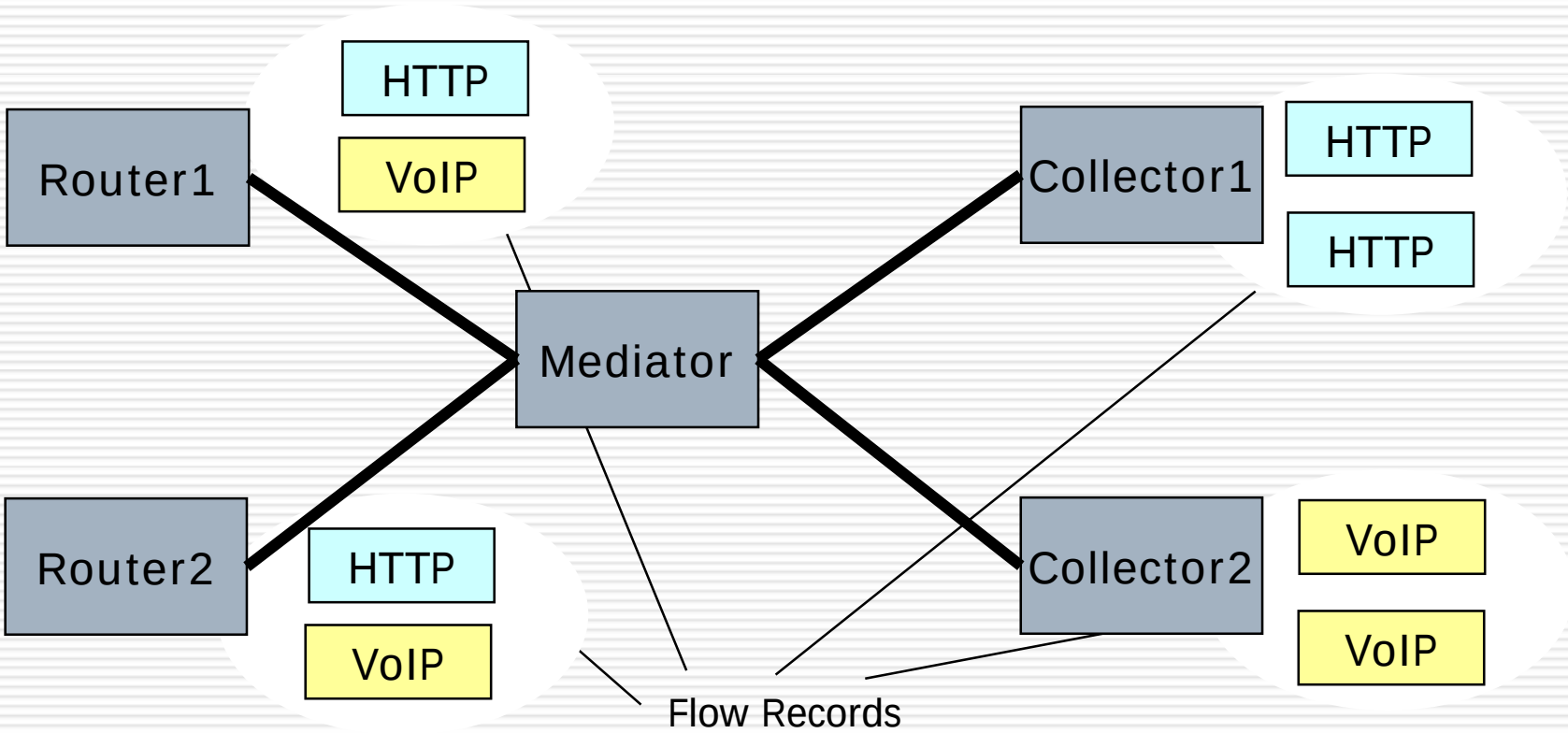
Problems using IPFIX Mediators (1)

- Implementing Load Balancing/Sharing
  - Load sharing method needs a classification function as mentioned in the last meeting.
- Loss of Observation Point Information
  - Notification methods for Exporter IP address and ODID which can be interpreted by Collectors and Mediators are thus necessary, even if under the following conditions.



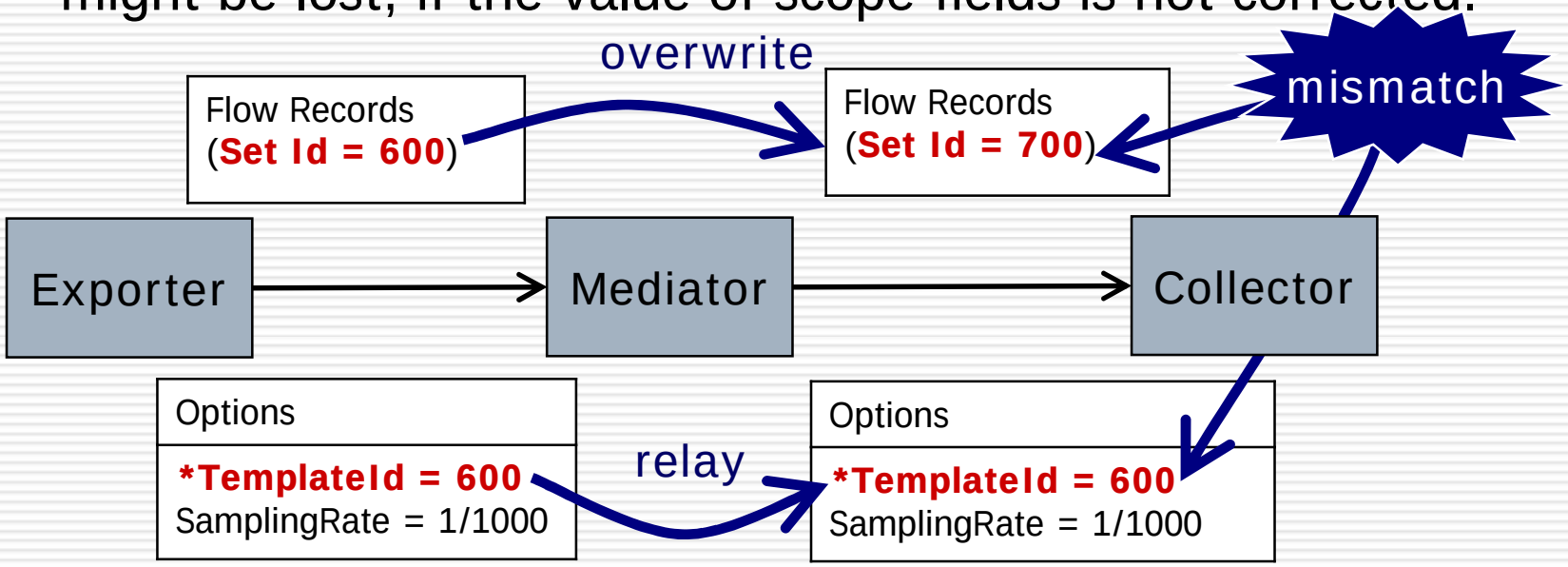
Problems using IPFIX Mediators (2)

- Who is the Exporter of Flow Records?
  - Mediator
  - Router1 or Router2 (To do so, a Mediator should fakes source IP address of the Flow stream to Collectors.)



Problems using IPFIX Mediators (3)

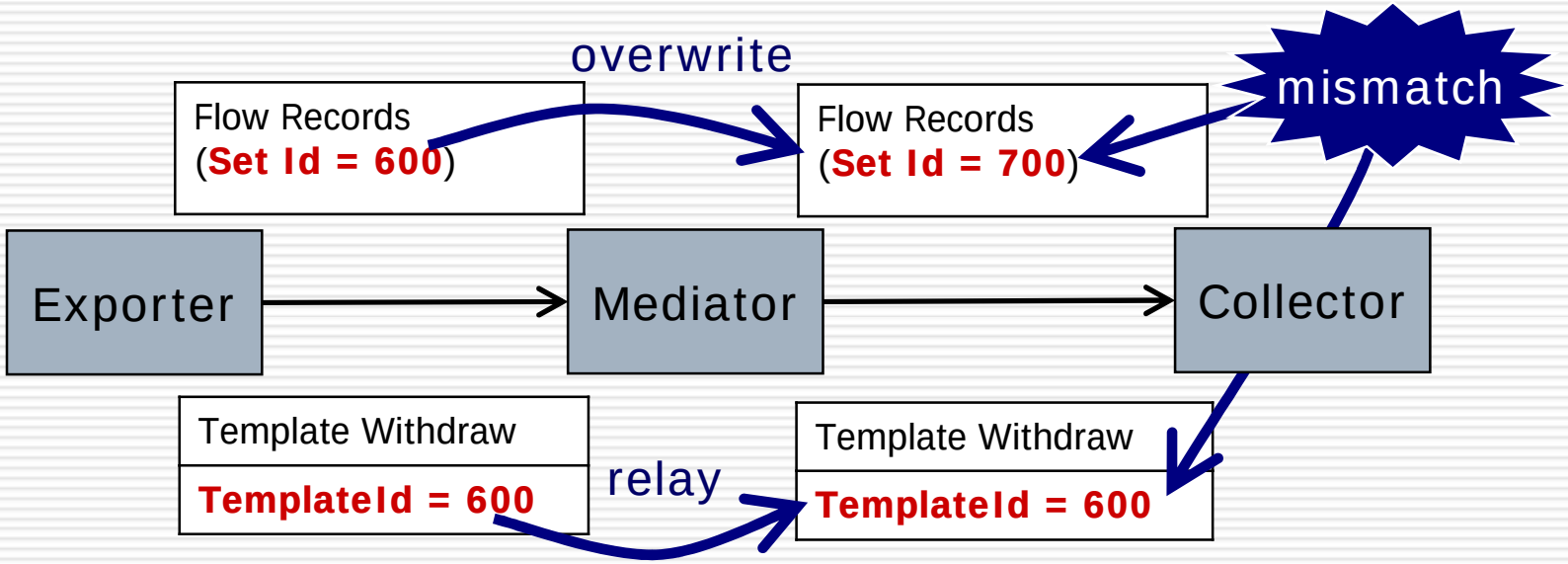
- Loss of Base Time Information
  - Delta time field in Flow Records might become meaningless, if "Export Time" field is overwritten.
- Loss of Option Template Information
  - Info communicated by Options, such as sampling rate, might be lost, if the value of scope fields is not corrected.



(*) indicates scope field.

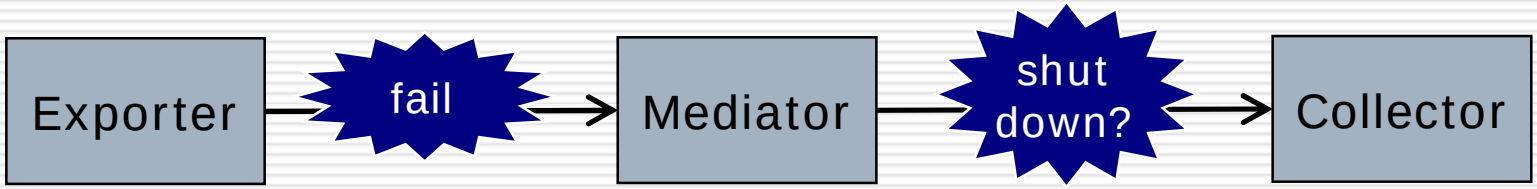
Problems using IPFIX Mediators (4)

- ODID and Template ID Management
  - The ODID must be locally unique to the EP, and the Template ID must be unique on the basis of the ODID.
  - The values for Option Template and Template Withdraw Message would become wrong without management of the relationship among these IDs and Transport Session Information.

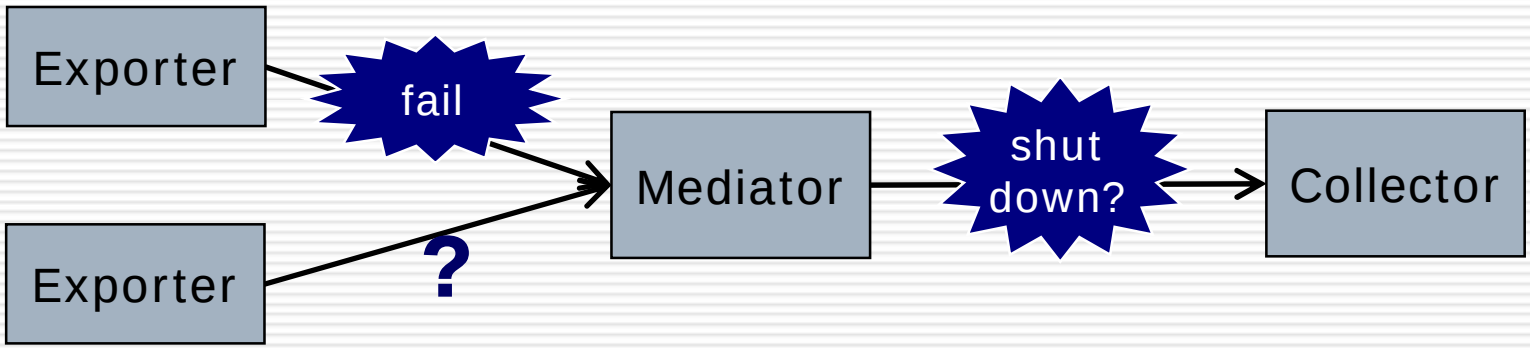


Problems using IPFIX Mediators (5)

- Session Management
  - If a session of the CP is reset and the session of the EP is shut down, the Collector would continue in a futile attempt to try to establish the session.



  - Other sessions of the CP might not be relayed at all in case of multiple sessions.



Summary

- Classification function should be introduced into IPFIX devices.
- IPFIX Header Info and Exporter IP address might be lost via IPFIX Mediators.
  - Notification mechanism could be required.
- Options Data, such as sampling rate, might be lost via IPFIX Mediators.
  - Notification mechanism for Options Data could be required.
- Improper handling for Transport Sessions and IDs creates IPFIX anomalous messages.
  - Transport Session and ID management are required.

Conclusion

- Requirements for the framework of IPFIX Mediators are as follows.
  - The minimum set of information which should be communicated between Original Exporter and Collector.
  - The interworking methods between both IPFIX sessions.
  - The basic internal components of IPFIX Mediators