IPFIX Mediation: Framework

<draft-ietf-ipfix-mediators-framework-00.txt>

Atsushi Kobayashi and Haruhiko Nishida (NTT)

Benoit Claise (Cisco Systems)

Background

- In IETF 71, the framework draft was approved as an important step for development.
  - Needs to be consistent with IPFIX-ARCH draft format.
- Submitted as IPFIX-WG item in July 2008.
  - Based on ipfix-mediator-model-02
- New Milestone: April 2009, submit to IESG

Scope of this document

- IPFIX Mediation documents overview
  - IPFIX Mediation: Problem Statement
  - IPFIX Mediation: Framework
    - Architecture model
    - General function examples
    - Guidelines for complying with IPFIX Protocol
  - IPFIX Mediation Protocol Specifications
    - Not yet published
  - Each Implementation
    - Anonymization, Aggregation, and Flow selection
      - Each implementation is not limited in Mediation function.

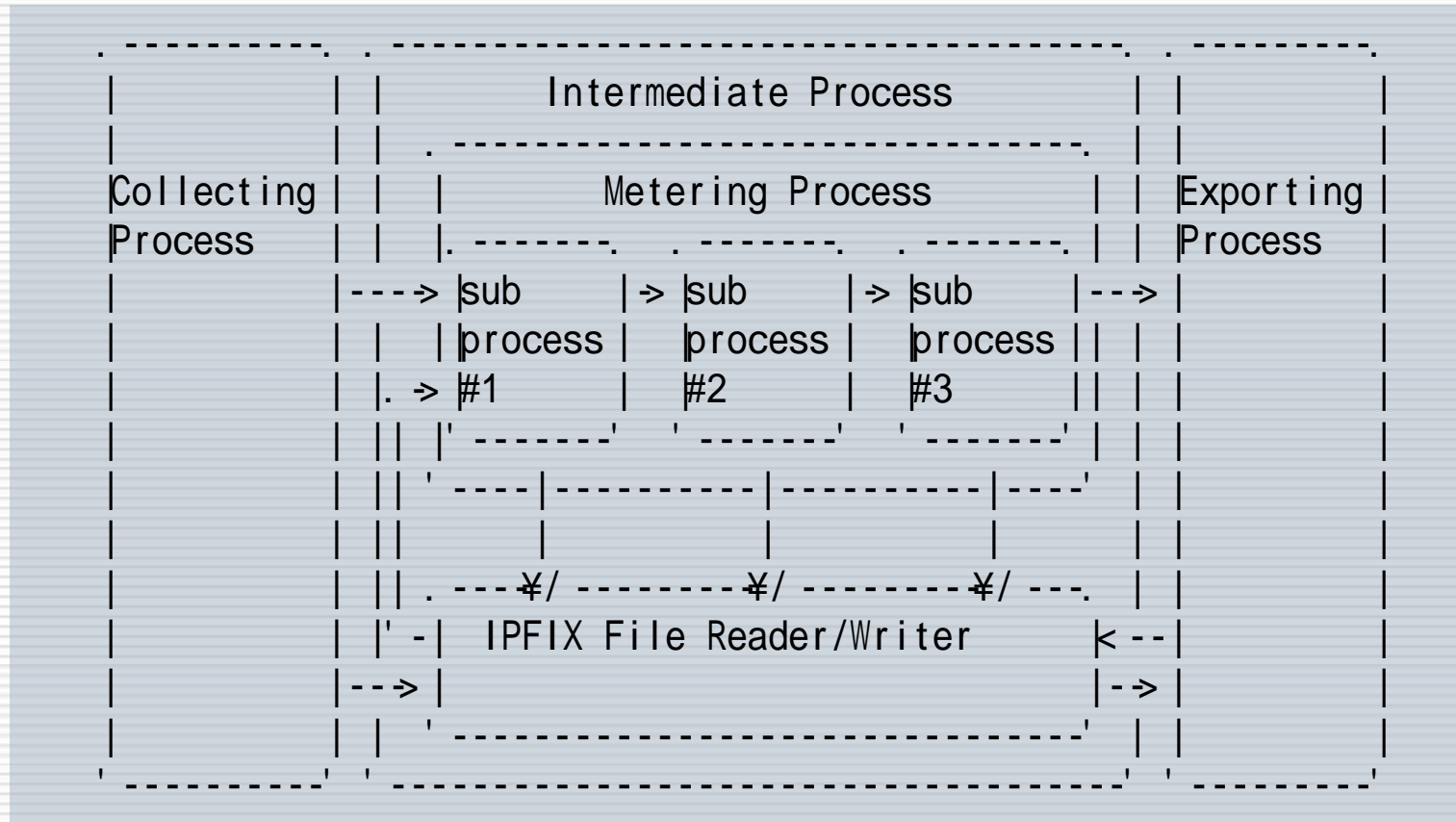→ Whether or not the protocol part should be merged into protocol draft?

Changes from ipfix-mediator-model-02

- Overall text improvement from ipfix-mediator-model-02 for clarity
- Supports the handling of Packet Reports (PSAMP)
- Adds a description of IPFIX File Writer/Reader

Document outline

1. Introduction
2. Terminology
3. Architecture Model
    3.1. Collecting Process
    3.2. Exporting Process
    3.3. Intermediate Process
        3.3.1. Metering Process
        3.3.2. IPFIX File Writer/Reader
4. Guideline for IPFIX Protocol for IPFIX Mediators
    4.1. Handling Delta Time Field
    4.2. Observation Domain ID Management
    4.3. Template ID Management
    4.4. Transport Session Management
    4.5. Option Template Management
    4.6. Reporting Original Exporter Information
5. Security Considerations
Appendix. Solution Scenario with IPFIX Mediators

Architecture model

```
.----------. .---------------------------------. .----------.
|          | |         Intermediate Process    | |          |
|          | |  .---------------------------.  | |          |
|Collecting| |  |         Metering Process   | | |Exporting|
|Process   | |  |.--------.  .-------.  .--------.| | |Process  |
|          | |---->|sub     |->|sub    |->|sub     |---->|          |
|          | |  | ||process|  |process|  |process|| | |          |
|          | |  |.->|#1      |  |#2      |  |#3      || | |          |
|          | || |  '-------'  '-------'  '-------' | | |          |
|          | || '----|--------|---------|----'    | |          |
|          | ||      |        |         |         | |          |
|          | || .----\/--------\/--------\/---.    | |          |
|          | ||'-|  IPFIX File Reader/Writer  |<--|          |
|          | |--->|                            |-->|          |
|          | | '----------------------------'    | |          |
'----------' '---------------------------------' '----------'
```

→ Note: sub-process#1-3 are serialized, but the architecture model allows parallel sub-processes, too.

Intermediate Process

- ☐ Metering Process
  - ■ Sub-processes:
    - ☐ Selecting Process
      - ■ Filter the Flow Records/Packet Reports
    - ☐ Aggregating Process
    - ☐ Modifying Process
      - ■ Adds or deletes the fields of IEs
      - ■ Modifies the value of specific IEs
- ☐ IPFIX File Writer/Reader
- ➔ Should "Flow-based Collector selection" function be located in Metering or Exporting Process?

Protocol Guidelines for IPFIX Mediators

- ☐ Handling Delta Time Field
  - ■ Needs to guarantee the time stamp field in Data Records.
- ☐ Observation Domain ID Management
  - ■ Needs to guarantee in several ways the uniqueness of ODID per session to comply with IPFIX protocol.
    - ☐ Replacing the new value or fixed value, or relaying received value.
  - → Should ODID be zero according to RFC5101, when Mediators aggregate Flow Records?
- ☐ Template ID Management
  - ■ Needs to guarantee in several ways the uniqueness of Template ID per ODID to comply with IPFIX protocol.

Protocol Guideline for IPFIX Mediators

- ☐ **Transport Session Management**
  - ■ Manages the link between Collecting Sessions and Exporting Sessions.
- ☐ **Option Template Management**
  - ■ Needs to export optional-data defined Option Template by merging the data into Flow Records or changing the scope fields of optional Data Records.
- ☐ **Reporting Original Exporter Information**
  - ■ Reporting may be needed based on the role of Mediators.
    - ☐ Merging the information into Data Record or creating new optional Data Record.

Next step

- ☐ Compare the draft with the format and terminologies of IPFIX-ARCH and RFC3917, and then adjust for consistency.

- ☐ Add more description about following received comments.

  - ■ Protocol conversion: SCTP, PR-SCTP, TCP, and UDP

  - ■ Correlate input Packet Reports, and then create new metrics, such as one way delay

  - ■ Timeout mechanism in Metering Process, such as Active/InActive Timeout

- ☐ Submit next version by October, after Dublin IETF.