IPFIX Mediation: Problem Statement

<draft-ietf-ipfix-mediators-problem-statement-01.txt>

Atsushi Kobayashi and Haruhiko Nishida (NTT)

Christoph Sommer and Falko Dressler (Univ. Erlangen)

Emile Stephan (France Telecom)

Benoit Claise (Cisco Systems)

Background

- ❖ Approved as a WG item in IETF69.
    - ▪ Based on IPFIX Mediation in large-scale NW.
- ❖ Held an editing session in IETF71.
    - ▪ Expanded scope and covered general topics in networks of any scale.
- ❖ Submitted as WG draft version 00 in IETF 72.
    - ▪ Added a definition of IPFIX Mediator
    - ▪ Added an applicability statement and examples
- ❖ New Milestone: April 2009, submit to IESG.

Reminder: What is IPFIX Mediation?

❖ Consists of a set of functions:

- Rerouting input data to an appropriate Collector
- Replicating input data
- Filtering and selecting input data
- Aggregating input data
- Modifying input data
- Changing a transport protocol carries IPFIX Messages
- **New** *Correlating a set of Flow Records/Packet Reports and calculating new metrics.*
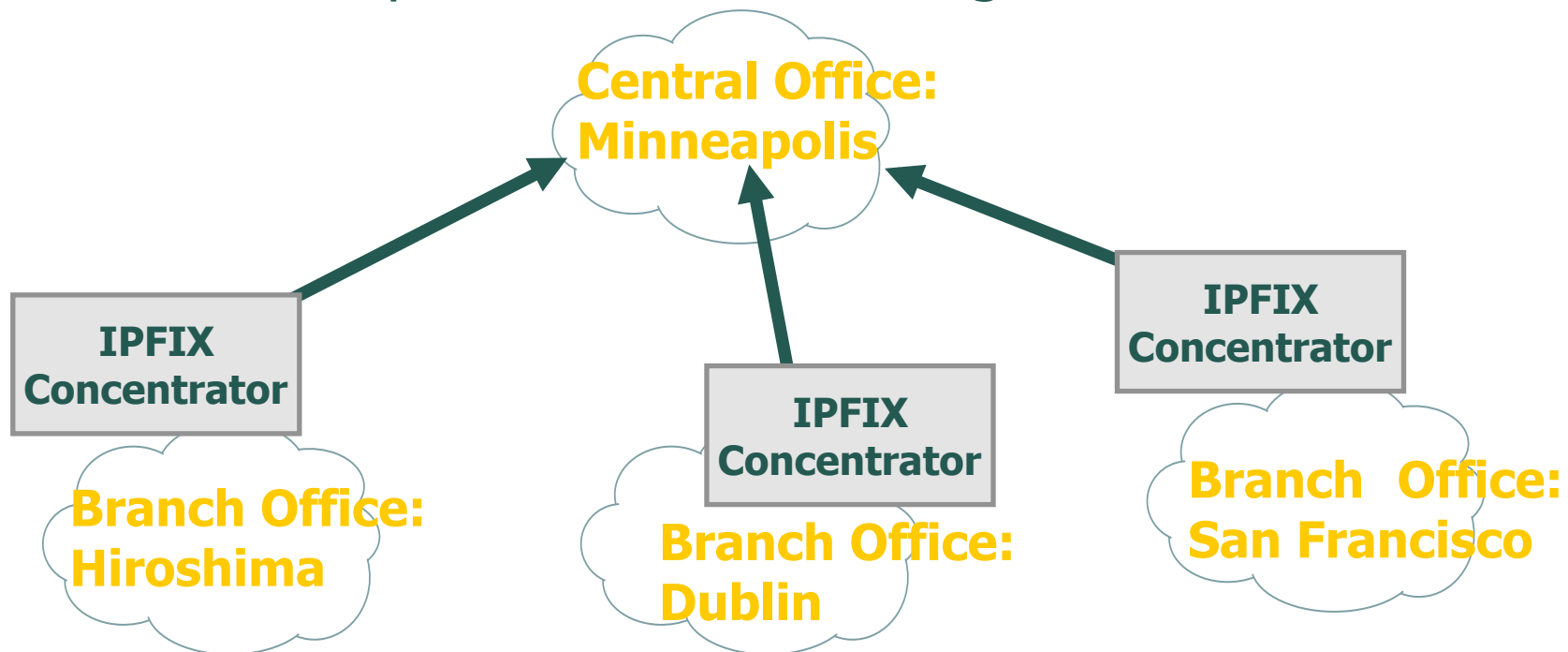
Changes from 00 version (1)

- ❖ Improved overall document.
  - ▪ Clarified definition of IPFIX Mediation more.
- ❖ Reorganized document based on scope.
  - ▪ This document covers applicable examples and problem statements of IPFIX Mediation.
  - ▪ The framework draft covers functional blocks or components in IPFIX Mediator.
- ❖ Removed overlapped subsections.
  - ▪ Rewrote similar subsections and description to avoid confusion.

Change from 00 version (2)

❖ Added new subsections based on comments from Benoit.

- 3.5. "IPFIX Export from Branch Office"
- 3.6. "Correlation of Flow Records/Packet Reports Information"
- 4.3. "Time Composition"
- 4.4. "Space Composition"

⇒ Time/Space composition is related to Flow key selection, which is part of general aggregation.

IPFIX Export from Branch Office

❖ IPFIX Concentrator can be utilized to reduce traffic flowing toward a central office by aggregating.

- In a long-distance exclusive line case, the bandwidth for transport IPFIX is not enough.

Central Office: Minneapolis

IPFIX Concentrator

IPFIX Concentrator

IPFIX Concentrator

Branch Office: Hiroshima

Branch Office: Dublin

Branch Office: San Francisco

Correlation of Flow Records/Packet Reports

❖ Correlation of Flow Records/Packet Reports creates some new metrics.

- One-way delay
- Arrival interval time or Jitter
  - Correlation of arrival interval time of consecutive Packets.
- Difference in traffic volume between ingress and egress IF Observation Points of same Flow.
 - Enables us to monitor the effect of rate-limiting or shaping.

Correlation

Flow Record ←————————→ Flow Record

Rate-limit

Ingress point   **Egress point**
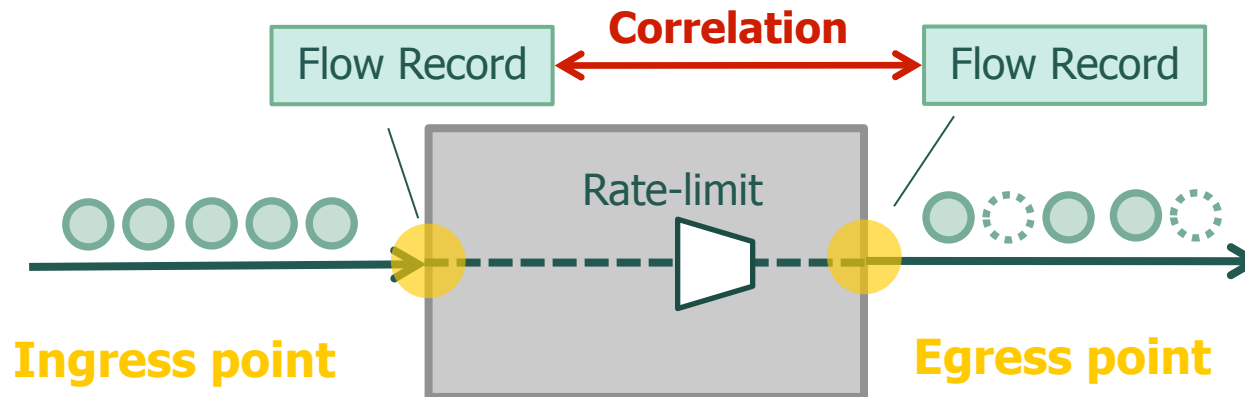
Space Composition

❖ Space composition: aggregation of Flow Records involved in a larger Observation Domain or a set of Observation Points.
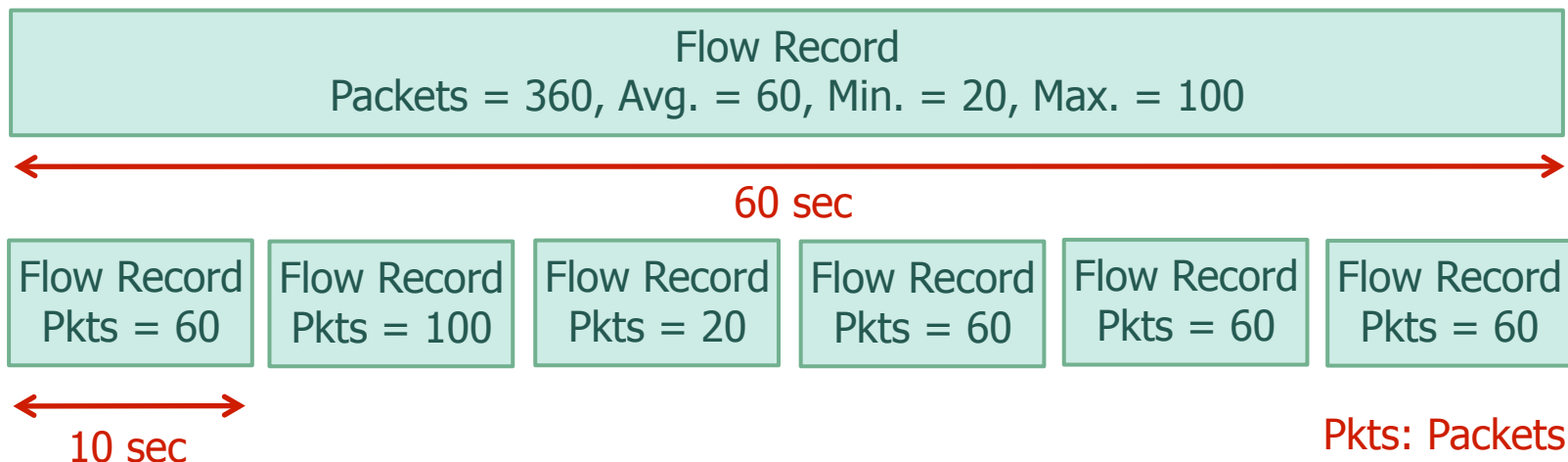
- ▪ Examples:
  - • Link aggregation
    - – Aggregating Flow Records based on LAG interface.
  - • Area domain
    - – Aggregating Flow Records based on area, such as PoP or region.

Space composition

Space composition

West coast

East coast
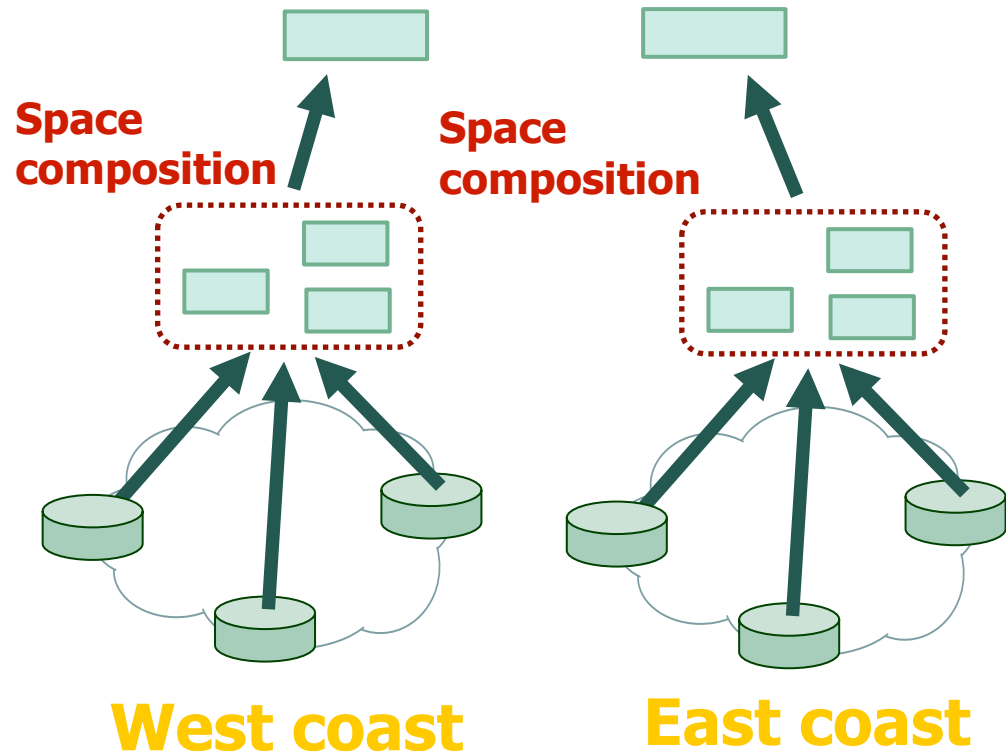
Time Composition

❖ Time composition: aggregating consecutive Flow Records within the same Flow.

- Advantages:
  - Calculating average, maximum, and minimum value of counters from several Flow Records for short time periods.
    – Enables us to monitor behavior of Flow in Flow timeout period.
  - Reducing the number of Flow Records.

Flow Record Packets = 360, Avg. = 60, Min. = 20, Max. = 100

← 60 sec →

Flow Record Pkts = 60	Flow Record Pkts = 100	Flow Record Pkts = 20	Flow Record Pkts = 60	Flow Record Pkts = 60	Flow Record Pkts = 60

← 10 sec →

Pkts: Packets

Summary

❖ Authors think the following have been done.

- Described definition of IPFIX Mediation.
- Described applicability examples in networks of any-scale.
- Described problems that IPFIX Mediation will face.

Next Step (1)

❖ New version needs to solve the feedbacks from Nevil and Gerhald.

- Mediator drafts add the important idea of three drafts without the reference to them.
    - IP Flow Anonymisation Support
    - IPFIX Flow Aggregation
    - Flow Selection

Next Step (2)

- ## What is the focus of this document?

  - The focus should be more on monitoring situations that cannot be adequately handled without this intermediate box.

- ## Can Mediation be included in any IPFIX devices?

  - If functionalities like configurable flow keys, flow selection, anonymization are realized on an IPFIX exporter directly, they can be considered as part of the Metering Process.