Multipurpose Traffic Measurement with IPFIX/PSAMP/xFlow

Atsushi KOBAYASHI
(akoba@nttv6.net)
Traffic Measurement overview

- IPFIX/PSAMP expand applicability.

Scalability

Granularity

Tapping + Mirroring

IPFIX
PSAMP

NetFlow
sFlow

Link
Traffic
Profiling
Network
Security
Traffic
Engineering

Accounting
QoS
Monitoring

IF-MIB
Operators expect that mixed (Flow and packet-based) measurement works out in practical use.

- IPFIX: Flow-based
- PSAMP: Packet-based

Now, IPTV and VoIP services are growing.

- But, when some trouble happens, there is no suitable monitoring tool for troubleshooting, so far.
- IPFIX/PSAMP would play a great role for this monitoring.
Example for IPTV service

- Service quality (packet loss and interval time) would be measured efficiently by IPFIX/PSAMP.

**Observation Point**

- **Selector#1** Filtering
- **Selector#2** Systematic time-based sampling
- **Selector#3** Systematic count-based sampling

IPFIX export
Advanced Feature

- Router/Switches export mixed data.
  - **QoS sensitive traffic: IPTV, VoIP**
    - Systematic time based sampling
    - Exporting type: packet-based
    - Maximum Header length: 128 byte
  - **Network Security: DarkIP, SIP, DNS, Specific Web site**
    - Systematic count based sampling
    - Exporting type: packet-based
    - Maximum Header length: 512 byte
  - **Other**
    - Random sampling 1/8192
    - Exporting type: flow-based (5-tuple)
Advanced Feature

- **IPFIX/PSAMP** would be more flexible, but it would bring more complex configuration data.
  - we need to consider the collecting side structure as well.
Mediator transmits traffic data to an appropriate application collector based on configuration data.

- Mediator in advance configures the filter, sampling interval and so on for router/switch.
- If necessary, the Mediator dynamically changes the configuration related to monitoring.
Example for IPTV monitoring

- Operators monitor multicast topology and detailed service quality per IPTV channel.
Example for VoIP monitoring

- Operators monitor SIP session information.
  - When operators would like to monitor the RTP session as well, Mediator also configures the filter for RTP packet.
Summary

- Networks would be more heterogeneous environment.
  - QoS sensitive traffic, IPv4/6 and its traffic growth.
- Traffic measurement needs to advanced features to cope with it.
  - We expects IPFIX/PSAMP implementation.
  - Above all, filtering is useful.
- To utilize the IPFIX flexibility, the mediation structure and configuration scheme needs to be considered.