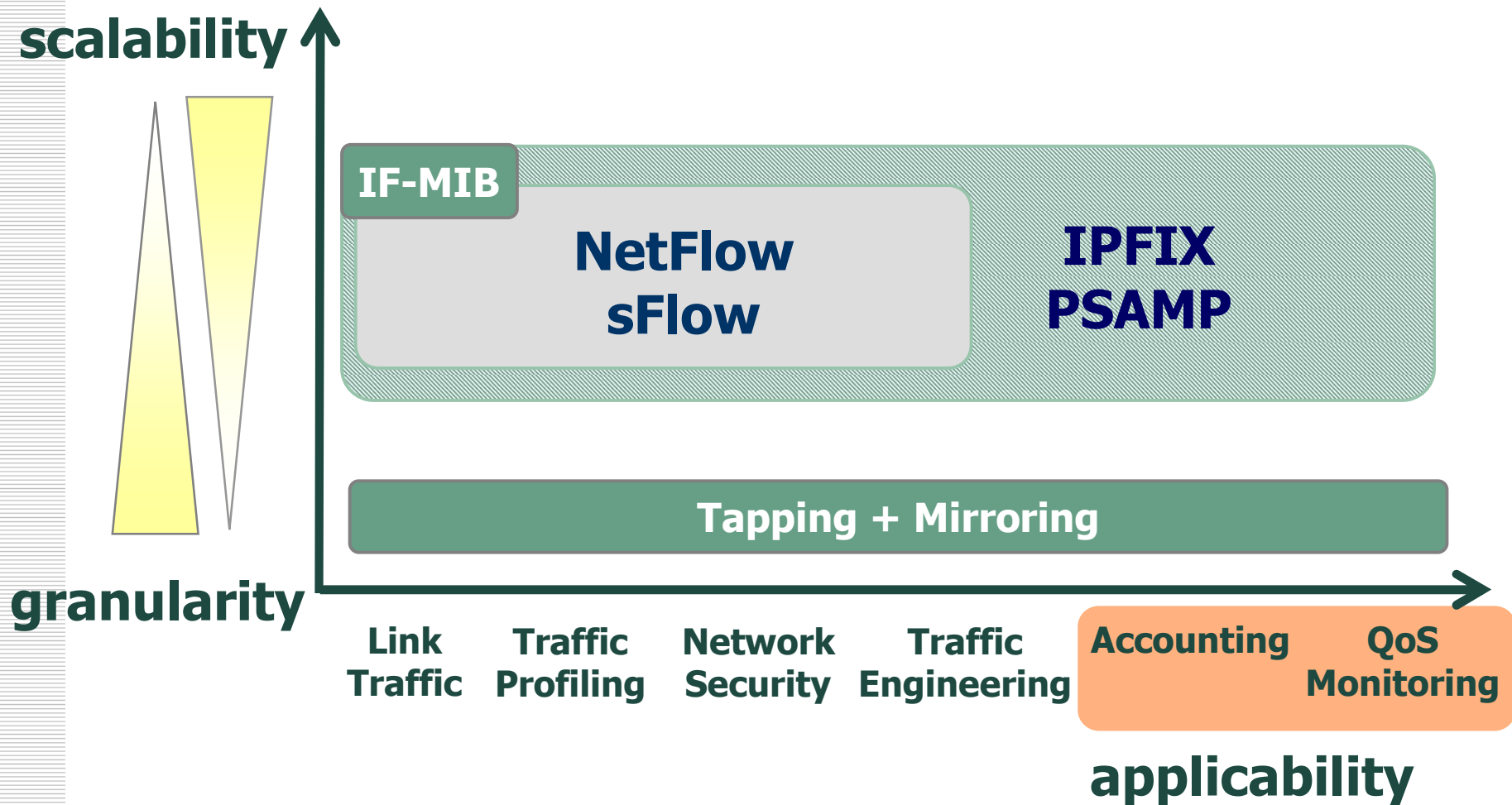


Multipurpose Traffic Measurement with IPFIX/PSAMP/xFlow

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Traffic Measurement overview

❖ **IPFIX/PSAMP expand applicability.**



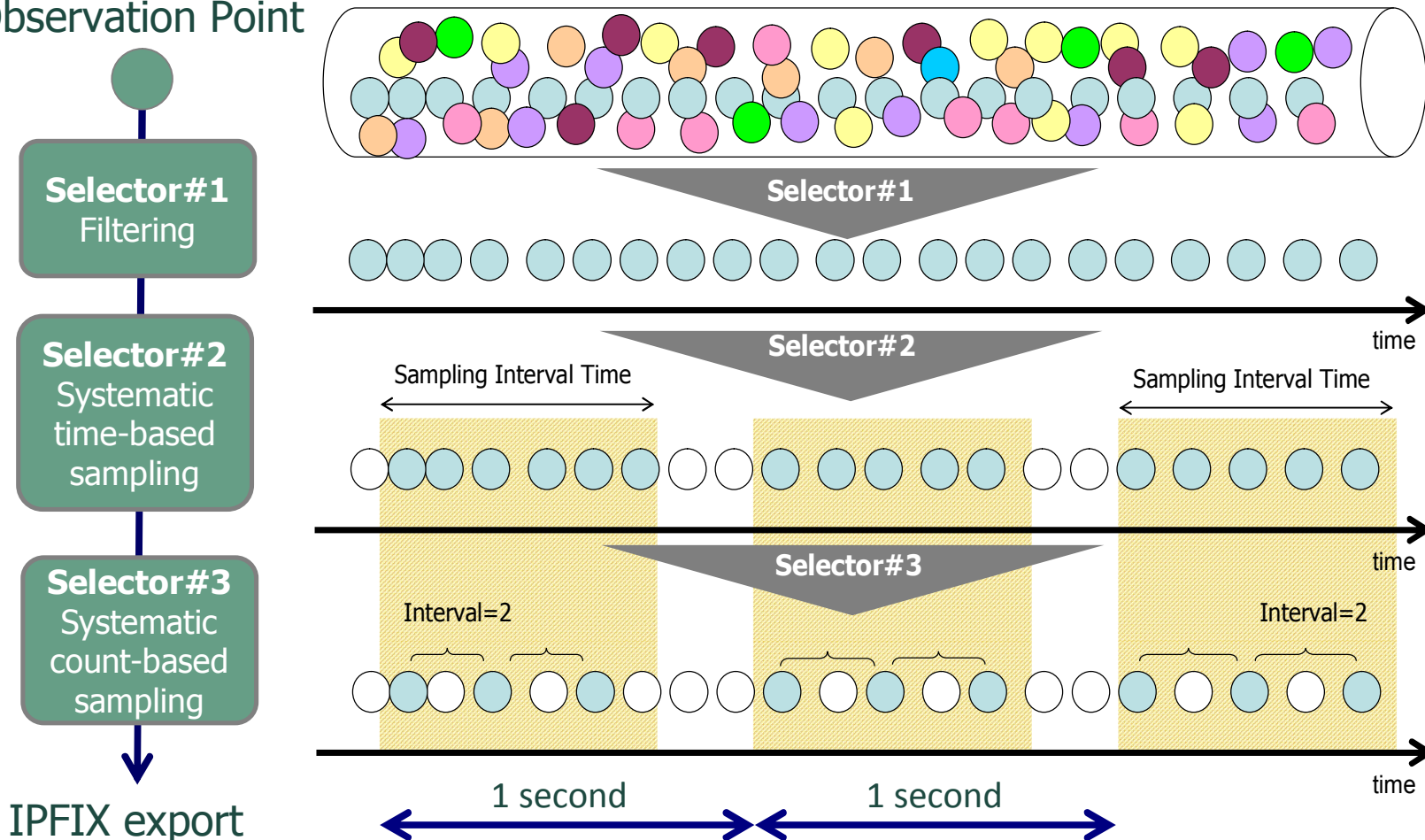
IPFIX/PSAMP

- ❖ **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



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

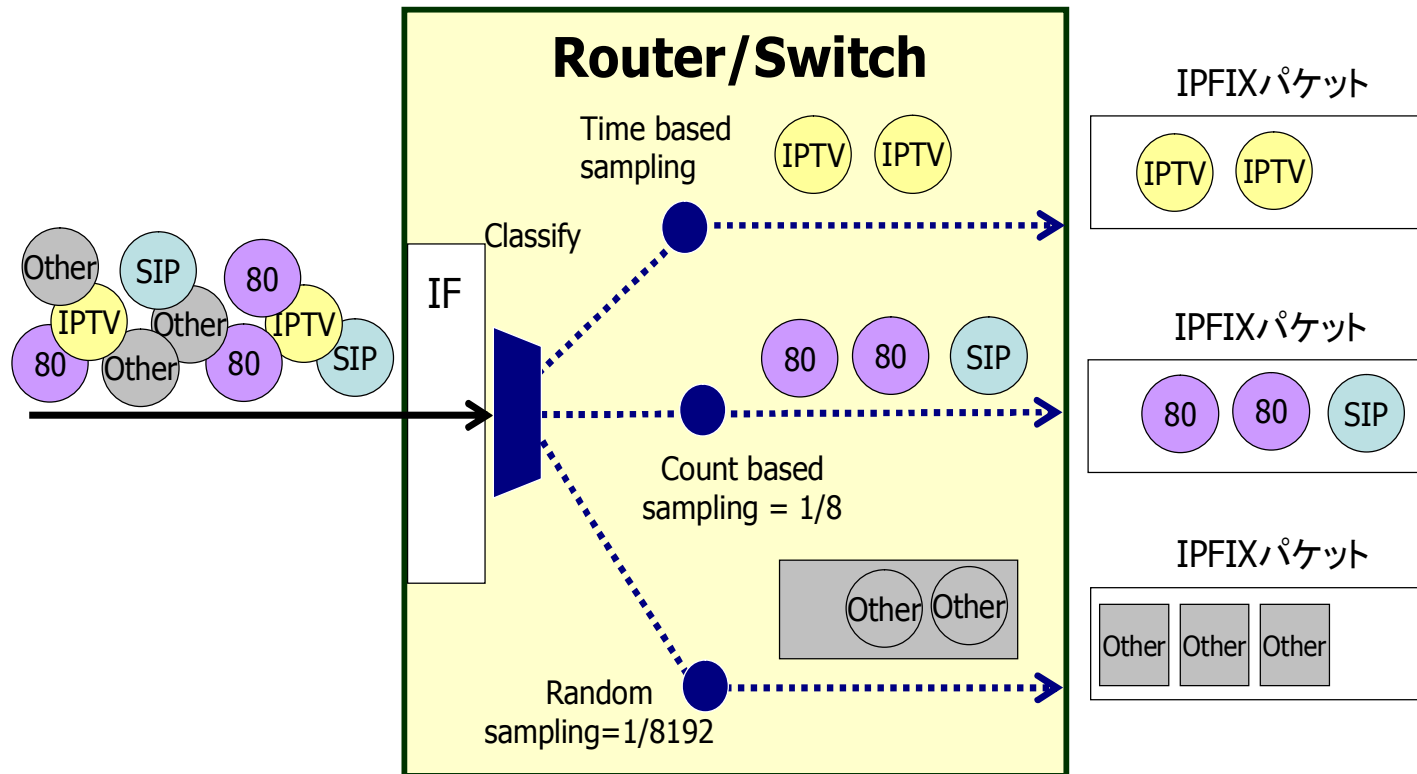
■ Network Security: DarkIP, SIP, DNS, Specific Web site

- 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

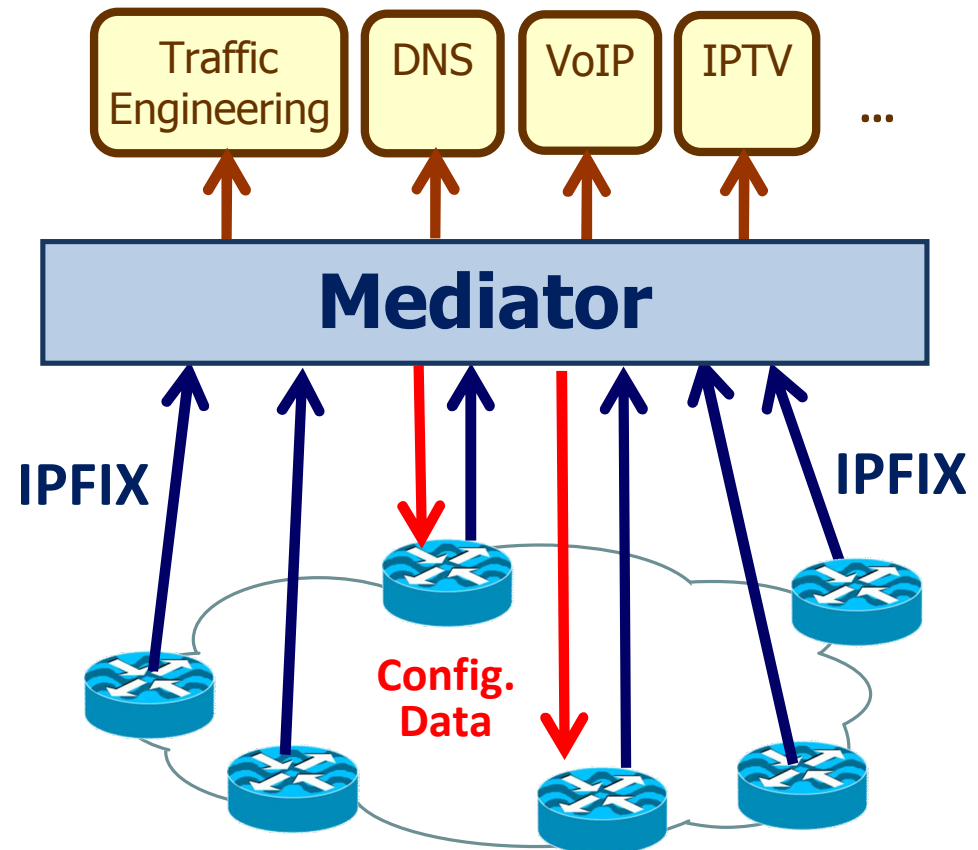


- ❖ **IPFIX/PSAMP would be more flexible, but it would bring more complex configuration data.**
 - we need to consider the collecting side structure as well.

Structure

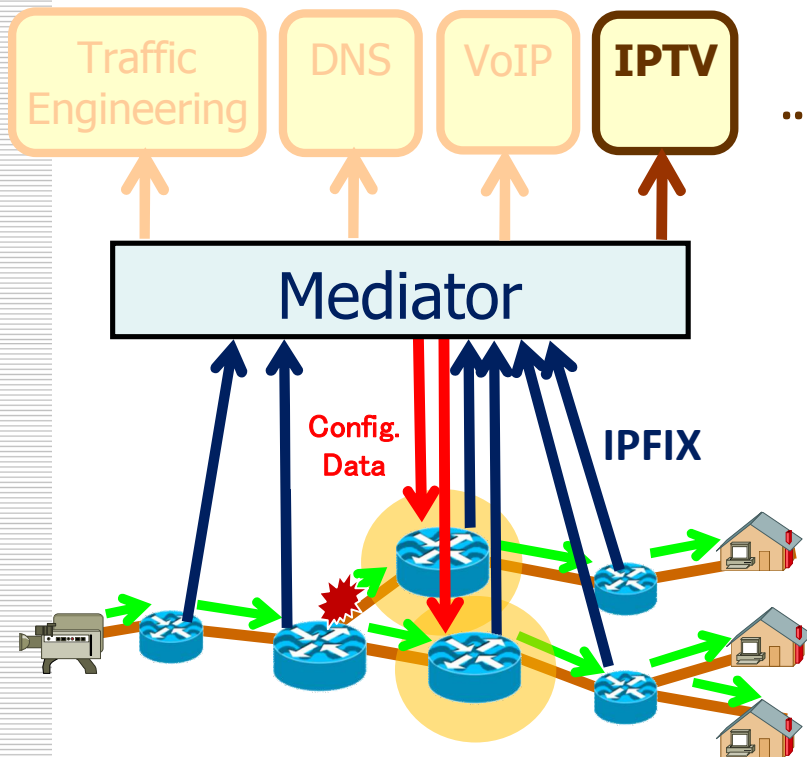
❖ **Mediator transmits traffic data to an appropriate application collector based on configuration data.**

- 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.

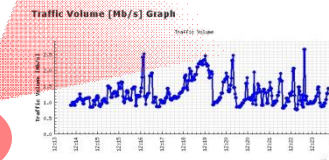
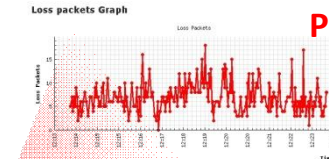
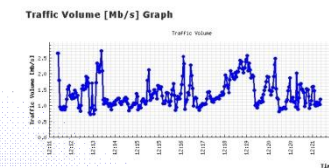
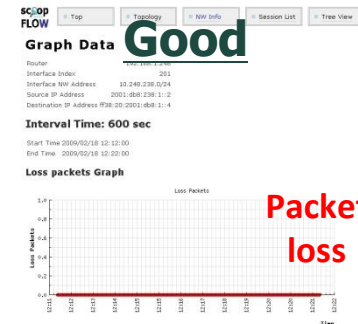


Example for IPTV monitoring

- ❖ Operators monitor multicast topology and detailed service quality per IPTV channel.



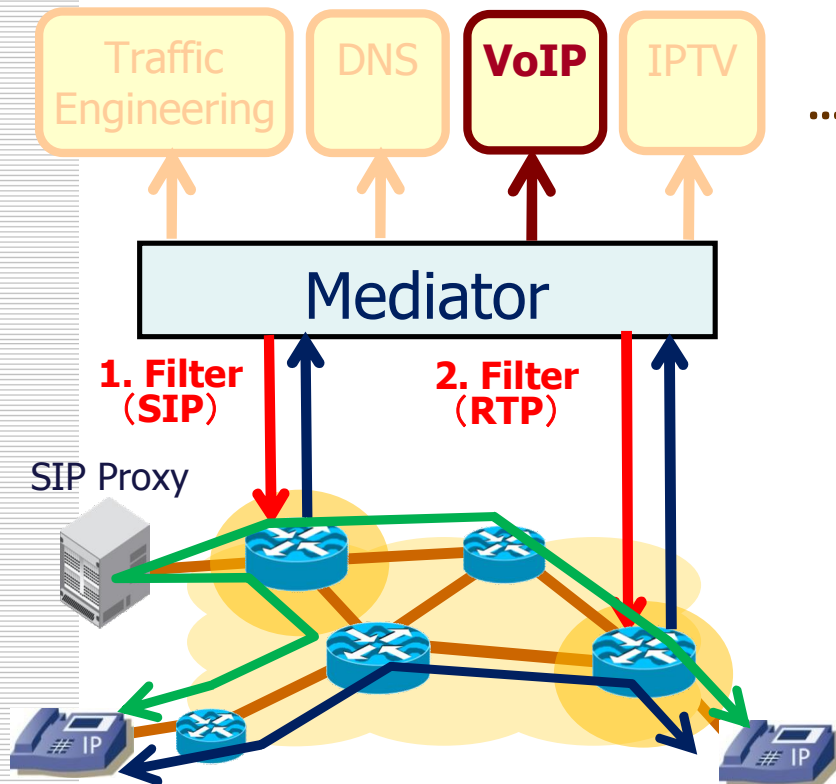
...



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.



scop FLOW

Sessions

SIP sessions

No.	Time	Caller			Monitor Status	Callee		
		URI	Audio IP	Audio Port		URI	Audio IP	Audio Port
1	2009/02/18 10:06:50	sip:TARO@192.168.0.54	192.168.0.81	41000	<< >>	sip:JIRO@192.168.0.54	192.168.1.82	45673
2	2009/02/17 21:07:13	sip:SHIRO@192.168.0.54	192.168.1.84	41564	<< >>	sip:AKOBA@192.168.0.54	192.47.163.188	19366
3	2009/02/17 20:13:37	sip:TARO@192.168.0.54	192.168.0.81	41000	<< >>	sip:JIRO@192.168.0.54	192.168.1.82	45673
4	2009/02/17 19:28:54	sip:SHIRO@192.168.0.54	192.168.1.84	41564	<< >>	sip:AKOBA@192.168.0.54	192.47.163.188	19366
5	2009/02/17 19:28:50	sip:SHIRO@192.168.0.54	0.0.0.0	41564	<< >>	sip:AKOBA@192.168.0.54	192.47.163.188	19366
6	2009/02/17 19:26:04	sip:SHIRO@192.168.0.54	192.168.1.84	41564	<< >>	sip:AKOBA@192.168.0.54	192.47.163.188	19366
7	2009/02/17 19:26:29	sip:SHIRO@192.168.0.54	192.168.1.83	41000	<< >>	sip:AKOBA@192.168.0.54	192.47.163.188	19366
8	2009/02/17 19:20:19	ip:SABURO@192.168.0.54	192.168.1.83	41000	<< >>	sip:AKOBA@192.168.0.54	192.47.163.188	19366

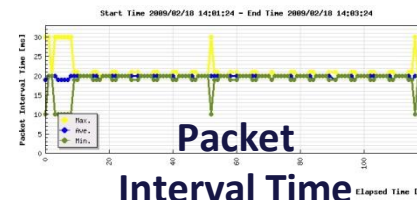
RTP packet monitoring

scop FLOW

Monitor Traffic

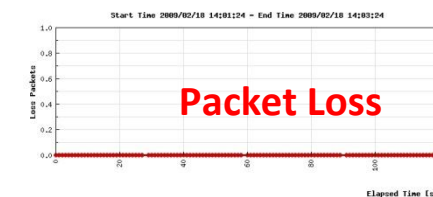
Date: 2009/02/17 20:13:37
 Current Status: active
 Source IP Address: 192.168.0.81
 Source Port: 41000
 Destination IP Address: 192.168.1.82
 Destination Port: 45673
 Change Status: inactive

Interval Time [ms] Graph



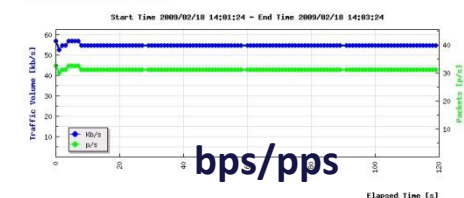
Packet Interval Time

Loss packets Graph



Packet Loss

Traffic Volume Graph



bps/pps

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.**