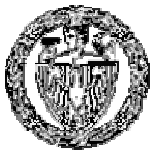


The MOME Measurement Database

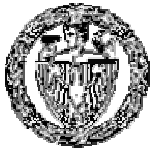
KST 2005, Bydgoszcz, Poland

September 8, 2005

Marek Dąbrowski, Jarosław Śliwiński, Wojciech Burakowski, Piotr Krawiec

Institute of Telecommunications

Warsaw University of Technology, Poland



Outline

MOME

- IST-MOME project
- The MOME database
- The MOME data analysis workstation
- Exemplary analysis results
- Conclusions

Information Society Technologies

Monitoring and Measurement Cluster (IST-MOME): Coordination Action

MOME

Co-ordinate activities in the area of IP monitoring and measurement

Measurement Tools

Measurement Data

Measurement Standardisation

Build a knowledge exchange platform

- Workshops, conferences (IPS-MoMe, Warsaw, March 2005)
- Dissemination activities
- The MOME database (measurement data and tools)

Information Society Technologies

salzburg research

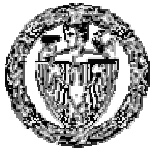
Budapest University of Technology and Economics

NEC

ULB

Telefónica

FOKUS



Motivation: The need for measurement data

MOME

- Developing new measurement and monitoring methods
- Developing architectures of measurement and monitoring systems
- Developing algorithms for network and traffic control functions supported by measurements
- Developing and validating realistic traffic models
- Validating the offered level of QoS

MOME assists researchers in finding and retrieving the measurement data and tools that are most appropriate for their purposes

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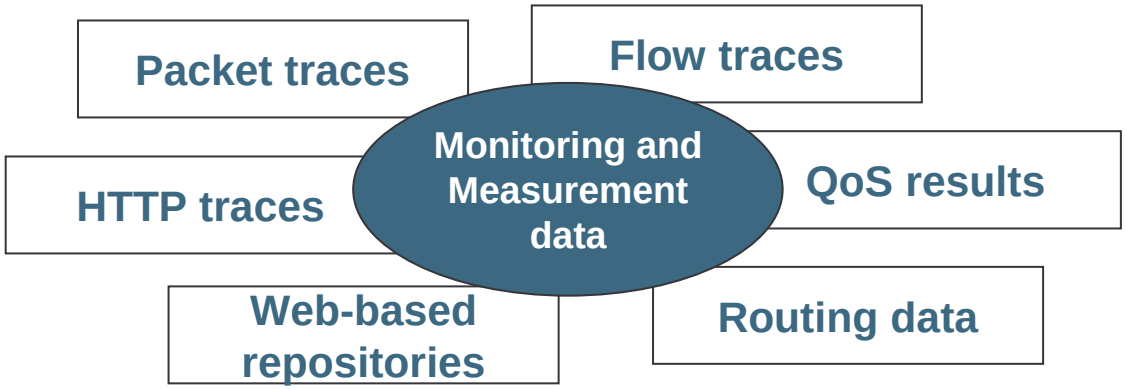
Meta-data paradigm

- http://www.ist-mome.org
- MOME database stores the meta-data
- „Data about data”
  - Description of measurement environment and scenario
  - Statistical information about the captured traffic
  - Link to the repository, where data is actually stored



The MOME meta-data model – packet traces

MOME

Dataset name	MAWI Samplepoint A, 31.01.2005
Data type	PacketTrace
File size	448.2MB
File compression	gz
Start time	2005-01-31 14:00:01
End time	2005-01-31 14:15:01
Duration	15min
Description	Wide-area traffic captured on USA-Japan link. Trace is stored by MAWI Working Group Traffic Archive
Dataset location	URL: ftp://tracer.csl.sony.co.jp/pub/maw...lepoint-B/2005/200501311400.dump.gz
Tool	Tcpdump
Submitted by	mdabrowski @ 2005-02-01 18:
Last Update	2005-02-01 18:51:49
Availability	online
Analysis Status	analysis done

Packet traces

Raw data

Network Type	WAN
Collector Location	trans-pacific line (USA-Japan)
Traffic Type	operational network, WAN traffic
Link Protocol	Ethernet, 100Mbps
Capture Mode	n/a
Filter Rules	none
Number of Packets	6854781
Trace Anonymisation	IP addresses scrambled using tcpdpriv
Capture Platform	n/a
Data Format	tcpdump
Additional Info	18Mbps CAR was configured on monitored 100Mbps link

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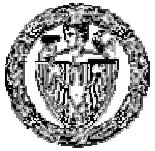

Motivation: Measurement data analysis

MOME

- Added value from analysis of data
  - Enhancing the description of data
  - To help in finding the interesting measurement data

- To show how measurement data can be processed
  - Selected most valuable analysis results

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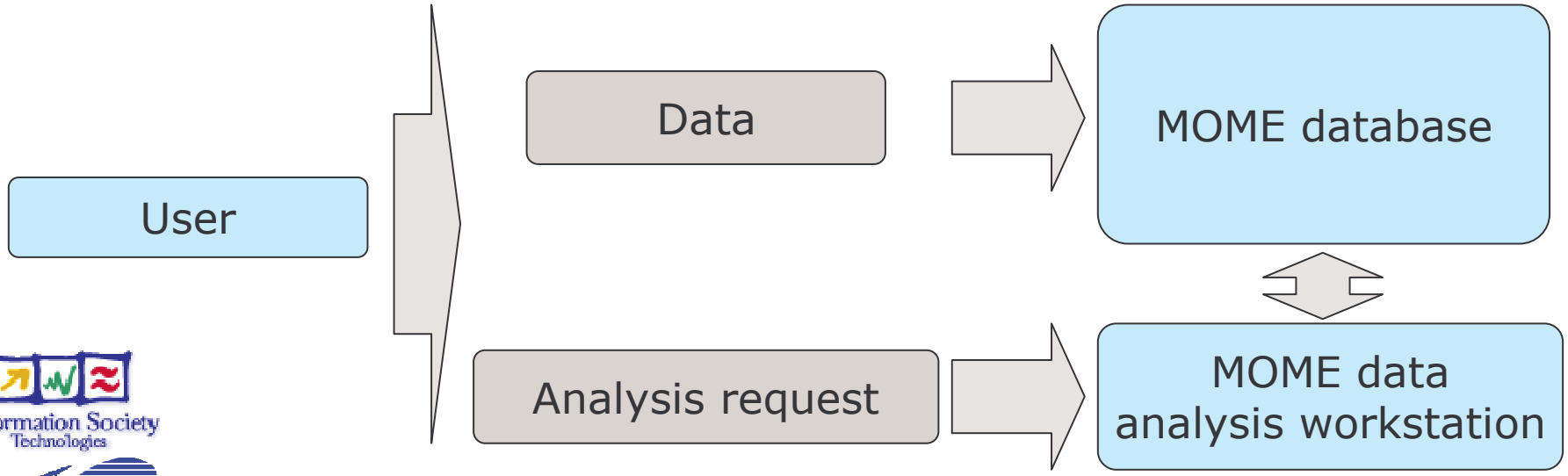
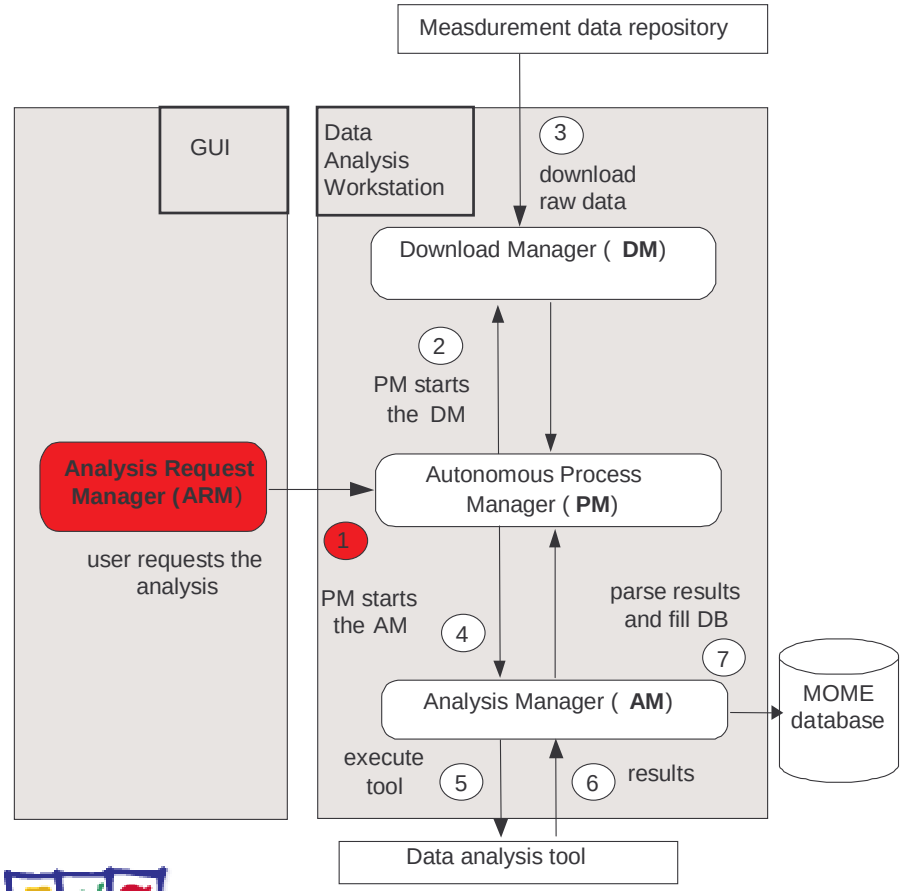
MOME Data analysis

- Assist researchers in analyzing the measurement data
- The platform for automatic analysis for measurement data referenced in the MOME database
  - Data provided by the user
  - Analysis requested by the user
  - Results stored in the MOME database

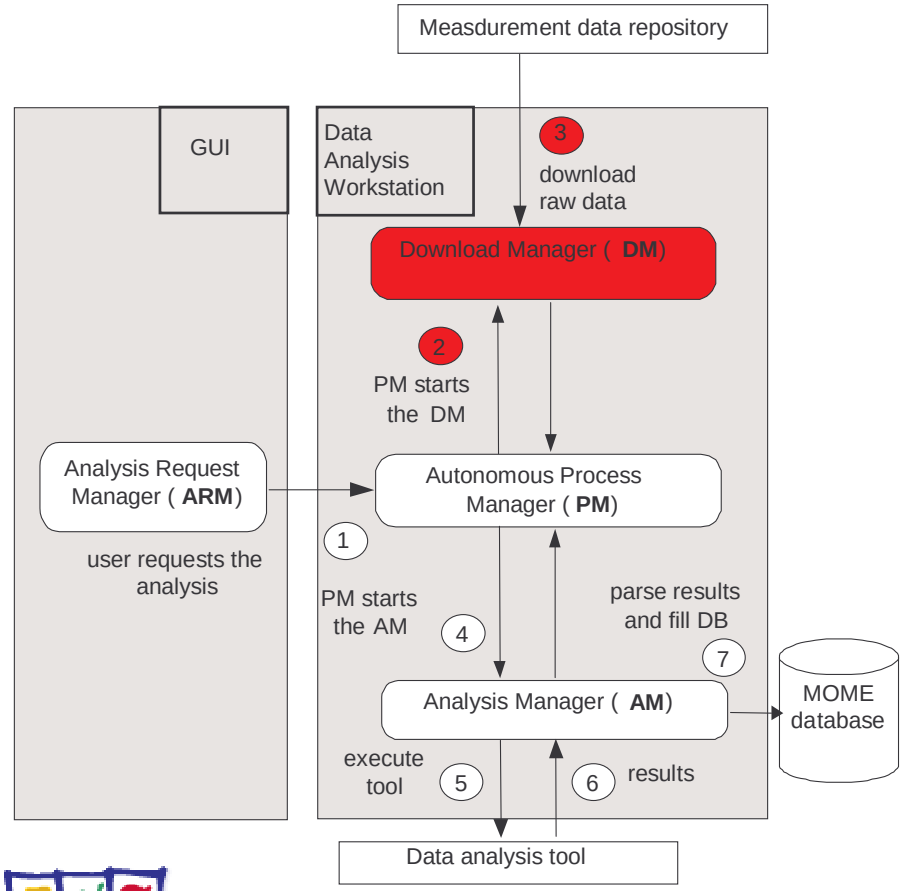


Data analysis framework operation



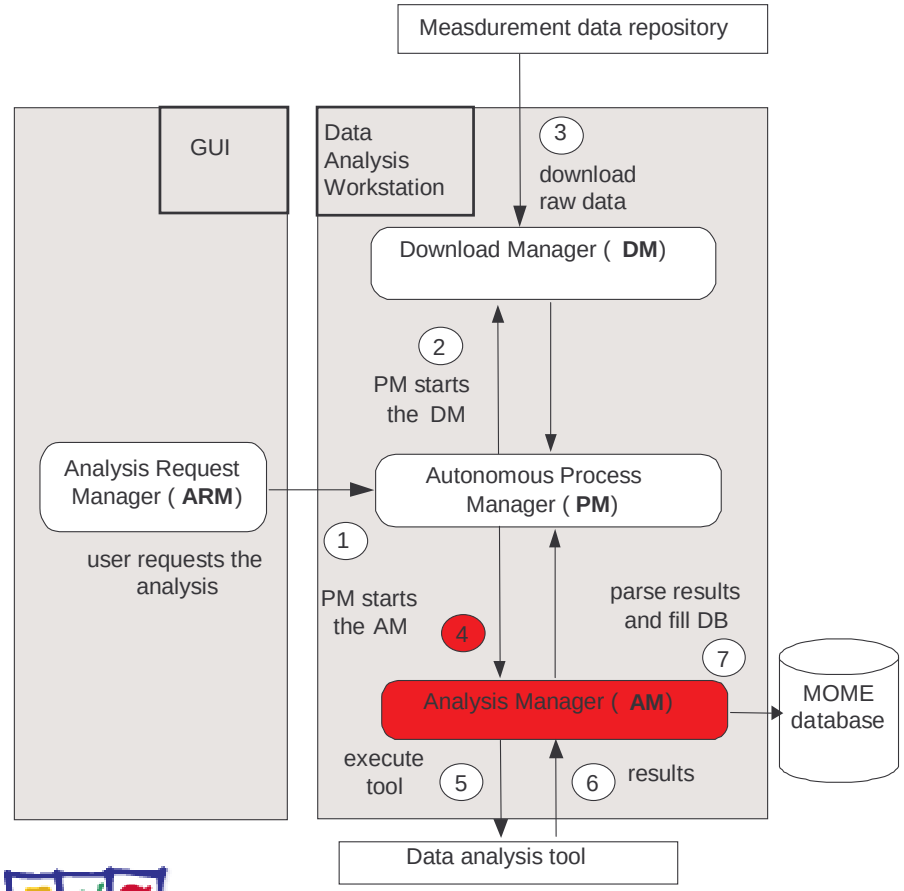
- User requests the analysis of measurement data using request manager
  - Analysis type
  - Measurement data

Data analysis framework operation



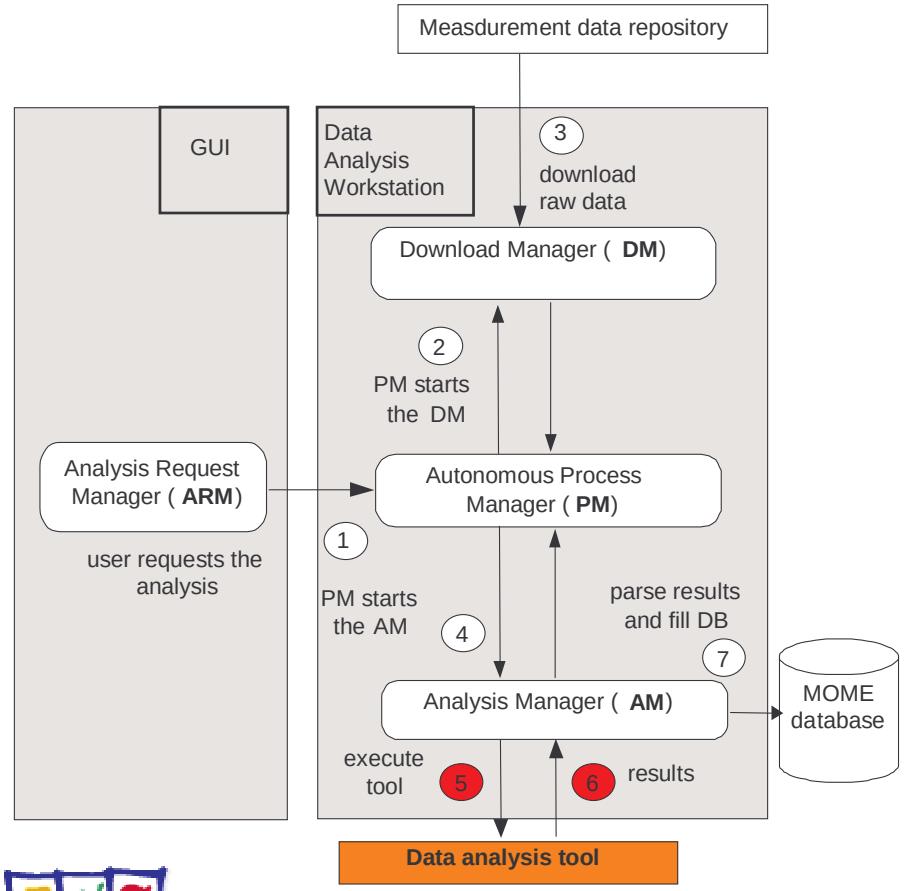
- Analysis request is forwarded to Download Manager (DM) if disk space is available
- DM downloads the measurement data

Data analysis framework operation



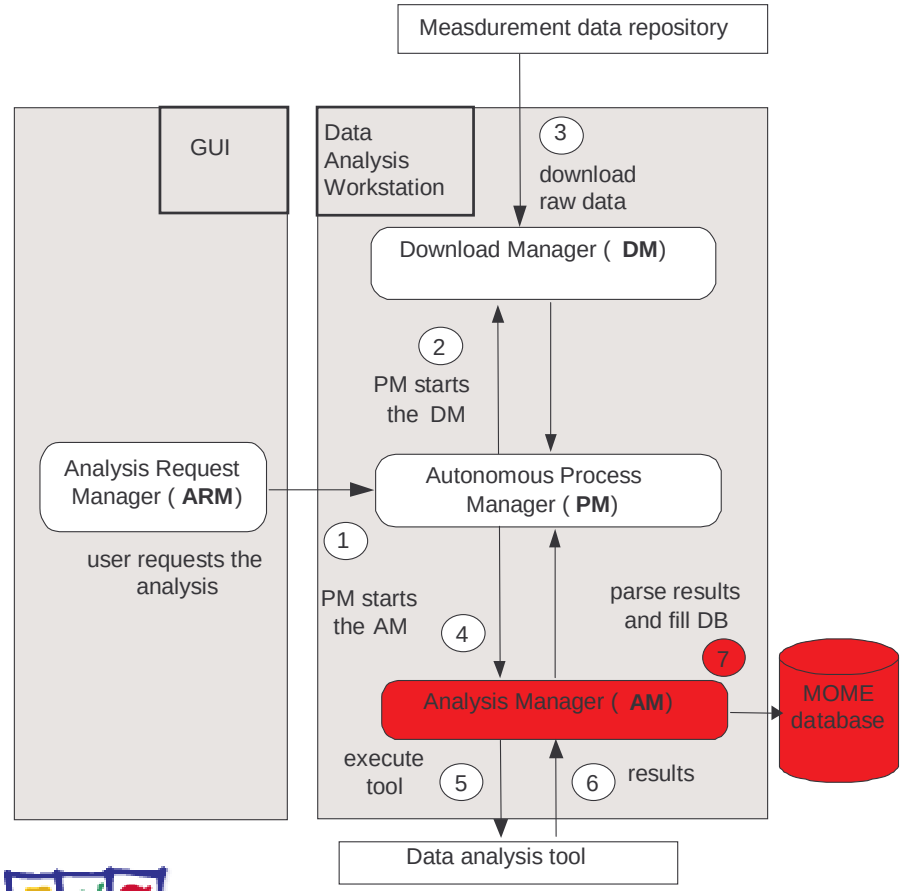
- Analysis request is sent to Analysis Manager
  - Analysis type
  - Local file name

Data analysis framework operation



- Analysis Manager starts the adapted analysis tool

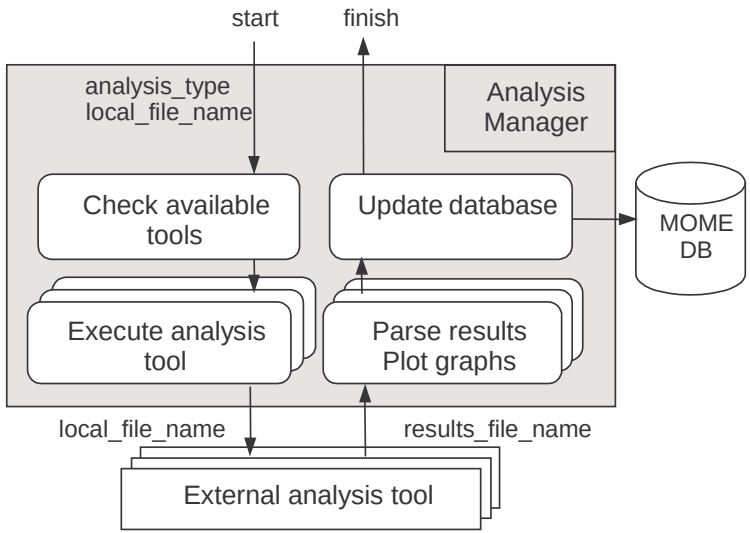
Data analysis framework operation



- The Analysis Manager updates analysis results in database
  - Values
  - Graphs

MOME data analysis workstation current status

- Currently basic analysis of packet traces
  - General statistics
  - Bit rate plots
- Available trace formats
  - libpcap packet for Ethernet
  - DAG (ERF) for Ethernet

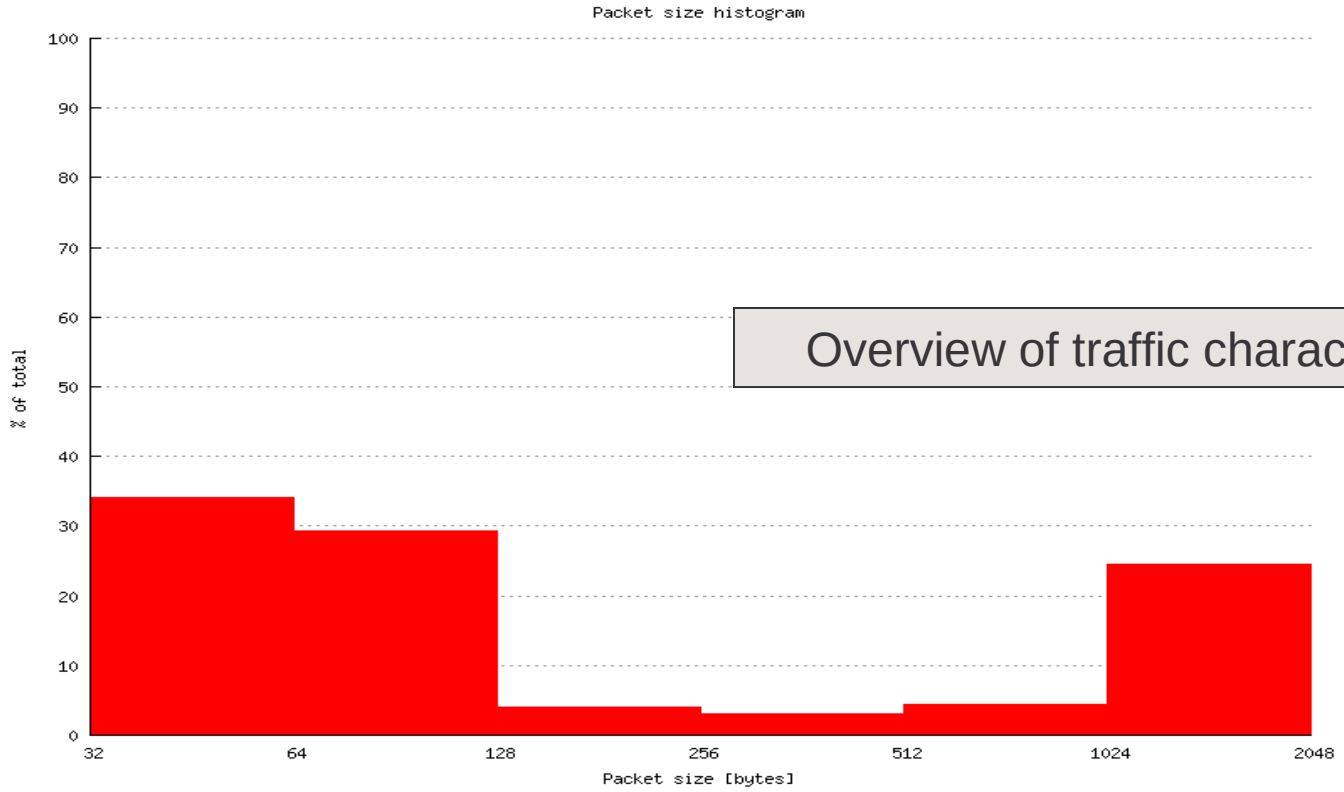


- Possibility for incorporating of new analysis tools

Exemplary analysis results (1)

- Packet-level traces from the MAWI archive
- Basic statistical parameters

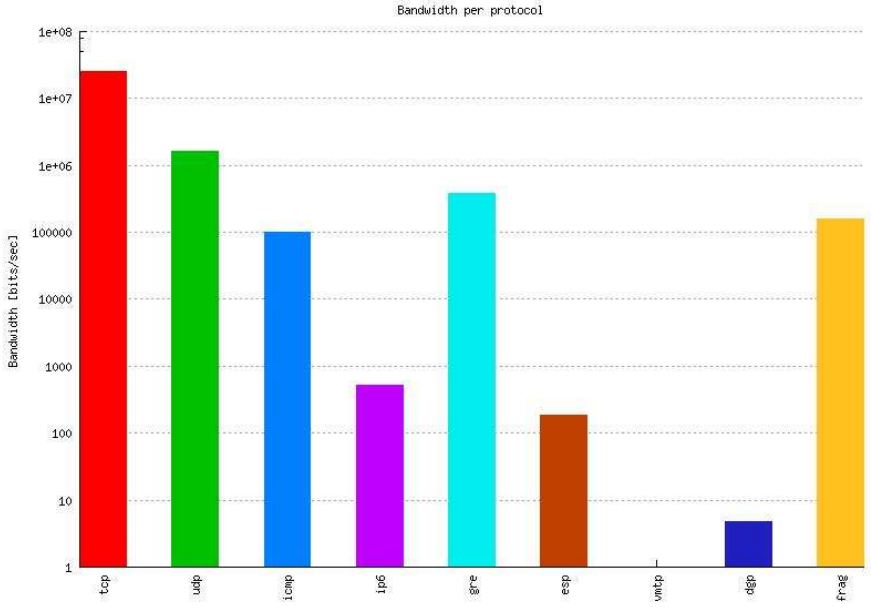
Entire traffic rate, averaged over trace duration, in bit/s	27599219
Average packet inter-arrival time in sec	0.000131
Average packet size in bytes	452.9
Average packet arrival rate in pkt/sec	7616.76

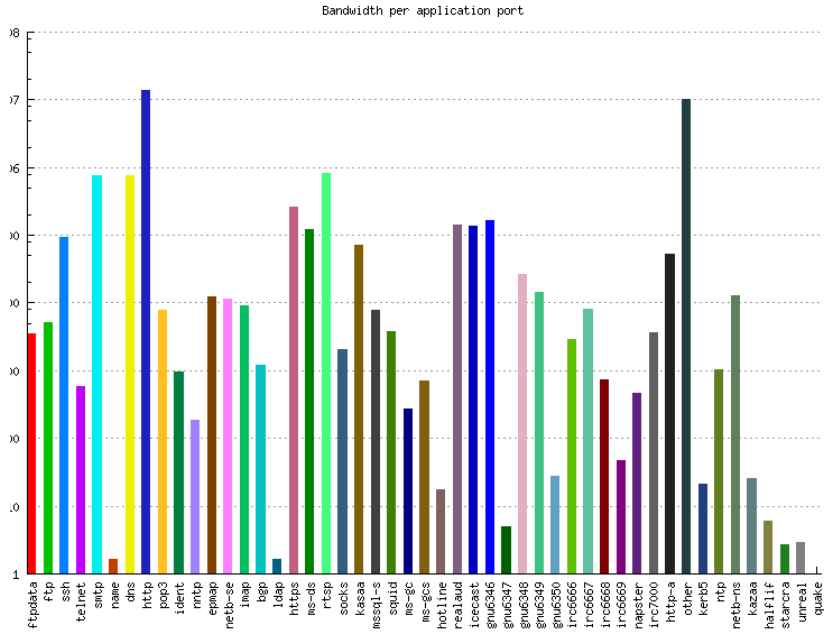


Overview of traffic characteristics

Exemplary analysis results (2)

- Averege bit rate classification





Per protocol

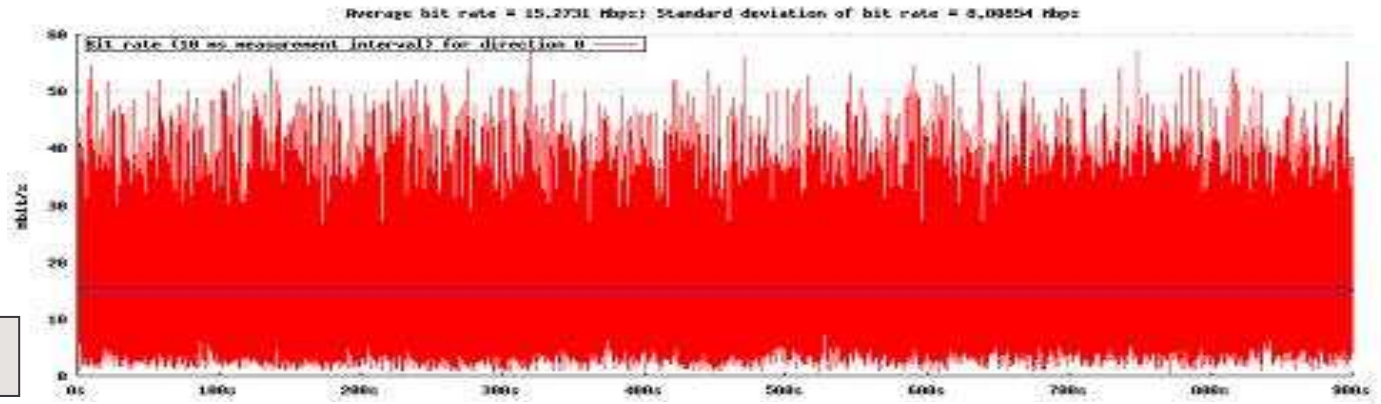
Per application

Overview of traffic nature

Exemplary analysis results (3)

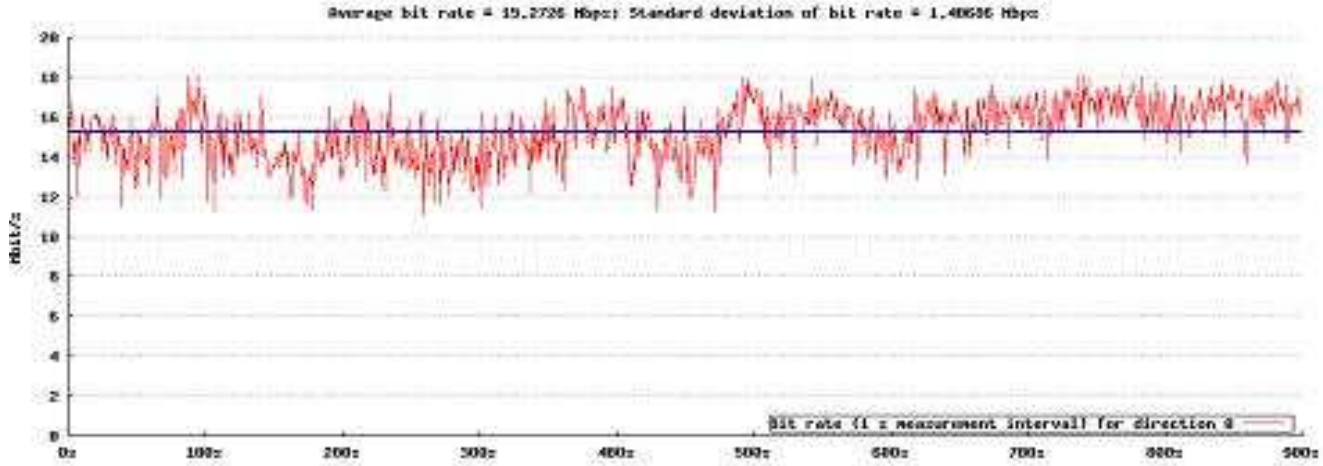
- Time-plot of bit rate

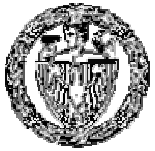
10ms intervals



Variability of traffic

1s intervals





Conclusion

MOME

- MOME database collects the information about available tools and data
  - Available online **http://www.ist-mome.org/database/**
  - Free access to all data
- Framework for automatic analysis of measurement data
  - Basic tasks implemented
  - Valuable information about the contents of packet traces
  - Extensible for new analysis tools
- Open for Co-operation
  - Share information about tools
  - Share measurement data

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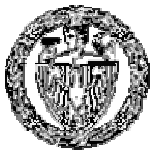

Thank you!

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Questions?

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