Traffic Measurement & Monitoring Roadmap and QoS Roadmap

Workshop Report

Berlin 13/06/02

Intervening Participants:

Ulrich Hofmann (Salzburg Reserach)
Maurizio Molina (NEC)
Daniel Karenberg (RIPE)
Ali Nassri (Siemens AG)
Tanja Zseby (Fhi)Elisa Boschi (Fhi)
Carsten Schmoll (Fhi)
Rudolph Roth (Fhi)
Ilka Miloucheva (Salzburg Research)
Dirk Hetzer (T-Systems)

Goal of the Workshop:

- Introduction of •2002 – 2006 6th FP
- Report on IST Concertation meeting 13/02/02
- EC request for – Benchmarking and Roadmapping on Traffic Measurement and QoS and presentation of NGNI project benchmarking for QoS architectures
- Presentation of RIPE ncc activities
- Round table on traffic Measurement and QoS

### KeyNote Speeches

Ulrich Hofmann (Salzburg Research):

NGNI RoadMap Project on Traffic Measurement and QoS: Research Directions as defined by future Applications and Network Demands

Daniel Karenberg (RIPE):

RIPE.net organization and activities

Workshop Results

1) Ulrich Hoffman presented the NGNI Project on Traffic Measurement and QoS goals and schedule, as summarized in the picture below (the activities covered by the project are those evidenced in grey).

Planned Deliverables
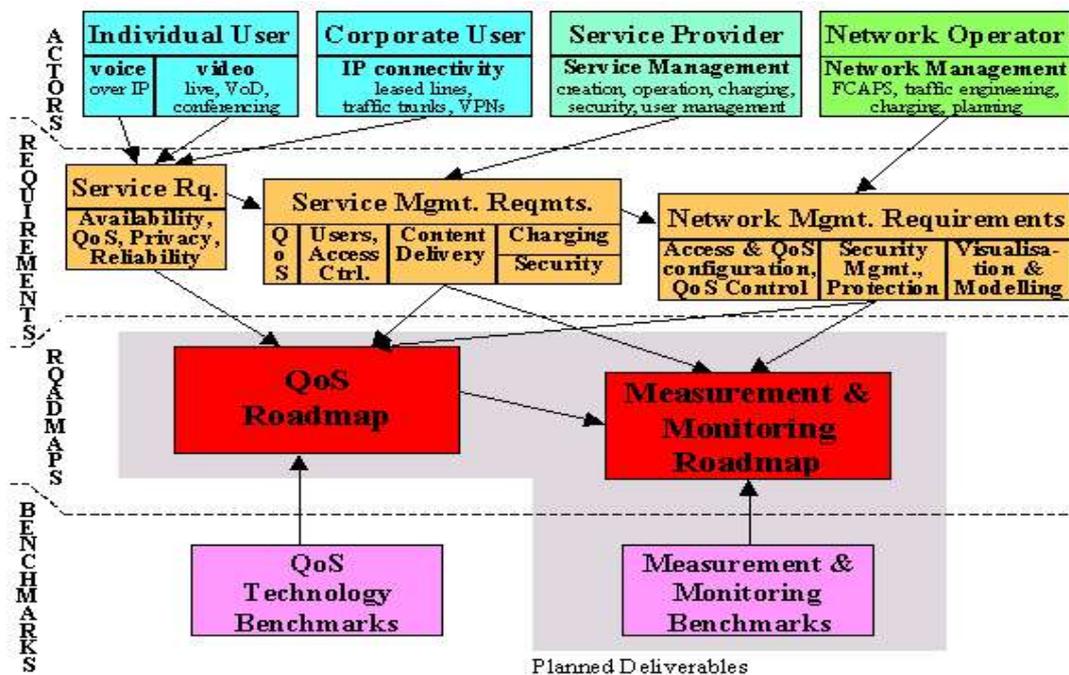
2) Daniel Karrenberg (RIPE ncc - www.ripe.net) introduced the RIPE organization (it's a non-profit organization, that is mostly known for assigning IP addresses in Europe) and then focused the presentation on their Test Traffic Measurement (TTM) activities. Basically, they sell at the "pure hardware cost" (+/- 2500 euro) a Test Box (TB) that can inject test traffic and collect performance and routing statistic between couple of (GPS synchronized) TB. A TB can be used for private or public test. In the first case the TB is remote controlled by RIPE, and the test results are made available to the organization supporting RIPE. In the second case there isn't any commitment from RIPE side to give support after TB purchase and software installation, but within the limit of their resources they're happy to help (e.g. in these days they were helping Fhi). RIPE declared its general interest in cooperating with the INTERMON project and/or with a wider scope IP in the area, but their policy is to not directly participate to EU founded projects.

3) Other participants made presentation about Traffic Measurement or QoS activities carried in their organization, as summarized in the table below.

Participant	Contribution
Ali Nassri	Traffic and QoS Measurement Requiremens for QoS enabled applications : VoIP and Streaming Multimedia Applications
Maurizio Molina	Demands for QoS Research
Tanja Zseby	QoS and Traffic Measurement Technologies and Tools developed and used at GMD Focus
Rudolph Roth	QoS Concepts in European Projects – comparison of different projects
Ilka Miloucheva	INTERMON - Inter-domain QoS monitoring, modelling and simulation, Network Tomography and analysis of large interconnected infrastructures
Dirk Hetzer	Measurement Technologies for Mobile Networking QoS and Traffic (towards 4th generation integrated mobile networks All-QoS-IP Measurement Concepts)

4) A brainstorming among the participants about what will be the main issues in network monitoring and QoS in the next years lead to the collection of the following list, which was meant to serve as a guideline for the compilation of the "Roadmap" documents of NGNI Project on Traffic Measurement and QoS.

- Methods and tools for macroscopic topology and performance analysis of the Internet, geographical and topological mapping

- Realistic models for inter-domain traffic

- Combined black-box and structural models for individual domains for modeling of interconnected domain infrastructures

- Modeling-based and simulations-based inter-domain methods for connectivity planning and optimisation

- Business models and service scenarios for multi-domain services

- Inter-domain QoS based interconnection architectures (MPLS, DiffServ),

- Inter-domain QoS and resource management, capacity planning and optimization

- SLA and QoS Monitoring, Modeling and Verification in interconnected domain infrastructures

- Architectures and tools for inter-domain traffic and performance monitoring

- Inter-domain traffic engineering methods, techniques, and applications

- Provisioning of consistent security policies in inter-domain environments

- Accounting in Inter-Domain and Roaming scenarios

- AAA to configure measurements

- Fault management in inter-domain environment, including failure monitoring, (event) detection : realtime, and recovery

- Inter-domain event detection methods, DoS attacks and their impact on performance.
- + Suppport mobile networks

- Time scale : trends(Netw. Eng.... Operations People), operational(TrafficEng.)
- Operators ?
- Why QoS and where: Factors today, factors tomorrow (codecs, ES-network, BW, Server/Client....)
- Which QoS architecture will survive (MPLS,DiffServ,QoSandSIP, QoS and apll.relate signalling, IntServ)
- IPv6 (features for measurements)
- VPN
- Future MoMe has to support : ..., IPv6, MC,...
- MoMe Architecture (what should be standardised): IPPM, IPFIX,..; compare different approaches
- Trust in measurement data; export/import, peering, Third party