

D45 - 4th International Workshop on Internet Performance, Simulation, Monitoring and Measurements (IPS-MoMe 2006)

Abstract

This document contains the report from the 4th International Workshop on Internet Performance, Simulation, Monitoring and Measurements (IPS-MoMe 2006), held in Salzburg, Austria, on 27-28 February 2006.

Keywords

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1 Overview

The 4th International Workshop on Internet Performance, Simulation, Monitoring and Measurement (IPS-MoMe 2006), held on February 27-28 at the Salzburg University of Applied Sciences, is a successor to the IPS-2003, IPS-2004 and IPS-MoMe 2005 workshops which were organised within the scope of the European projects IST-INTERMON (FP5) and IST-MOME (FP6). The motivation behind the IPS-MoMe workshop is to serve as an integration forum for researchers from academia, standardisation bodies, industry, and research labs for presenting recent research results and practical experience on different aspects of Internet performance and control.

18 of the 34 submitted papers were selected covering topics in relevant areas of interest to the Internet Performance, Simulation, Monitoring and Measurement Community. The programme was divided into the following five sessions:

- Traffic Analysis & Pattern Recognition
- Speech Quality in Fixed and Mobile VoIP Networks
- Performance Analysis
- Simulation & Measurement Tools
- Traffic Modelling & Engineering

The technical programme was enhanced by two keynote speeches of Pertti Jauhiainen, European Commission, and Dirk Hetzer, T-Systems Germany, and two invited talks of Gregor v. Bochmann, University of Ottawa, and Heiner Hummel, Salzburg Research. Furthermore, two tutorials about „BGP-4 Route Repositories“ by Pedro A. Aranda Gutiérrez, Telefónica I+D, and „Emulating Computer Networks with Netkit“ by Massimo Rimondini, University of Pisa, completed the technical programme.

Detailed information including the presentations held on IPS-MoMe 2006 is available at the workshop web-site:

<http://www.ips2006.org/>

2 IPS-MoMe 2006 Organisation

The IPS-MoMe 2006 workshop was organised by Salzburg Research and Salzburg University of Applied Sciences.

2.1 General Chair

Siegfried Reich
Salzburg Research Forschungsgesellschaft mbH
Jakob-Haringer-Strasse 5, 5020 Salzburg, Austria
Phone: +43 662 2288 201, Fax: +43 662 2288 222
E-mail: siegfried.reich@salzburgresearch.at

2.2 Programme Committee Chair

Ulrich Hofmann
Salzburg Research Forschungsgesellschaft mbH
Jakob-Haringer-Strasse 5, 5020 Salzburg, Austria
Phone: +43 662 2288 441, Fax: +43 662 2288 222
E-mail: ulrich.hofmann@salzburgresearch.at

2.3 Technical Programme Committee

Antal Bulanza, Université Libre de Bruxelles, Belgium
Attila Vidacs, Budapest University of Technology and Economics, Hungary
Bernhard Hechenleitner, Salzburg University of Applied Sciences, Austria
Carsten Schmoll, Fraunhofer FOKUS, Germany
Davide Adami, University of Pisa, Italy
Dimitri Papadimitriou, Alcatel, Belgium
Dmitri Moltchanov, Tampere University of Technology, Finland
Edmundo Monteiro, University of Coimbra, Portugal
Felix Strohmeier, Salzburg Research, Austria
Gabor Vattay, Collegium Budapest Egyesulet (COLBUD), Hungary
Gianluca Iannaccone, Intel Corporation, United Kingdom
Giorgio Corazza, University of Bologna, Italy
Giuseppe Di Battista, University of Rome 3, Italy
Gregor v. Bochmann, University of Ottawa, Canada
Ilka Miloucheva, Fachhochschule Bonn-Rhein-Sieg, Germany
Jiri Novotny, Masaryk University in Brno, Czech Republic
Jürgen Quittek, NEC Europe, Germany
Karl Entacher, Salzburg University of Applied Sciences, Austria
Luyuan Fang, AT&T Laboratories, United States
Manuel Villen-Altamirano, Telefónica I+D, Spain
Marek Dabrowski, Warsaw University of Technology, Poland
Markus Fiedler, Blekinge Institute of Technology, Karlskrona, Sweden
Masayuki Murata, Osaka University, Japan
Nail Akar, Bilkent University, Turkey
Nevil Brownlee, CAIDA, Univ. of California, San Diego, United States
Panos Trimintzios, FORTH, Greece
Paul Van Binst, Université Libre de Bruxelles, Belgium
Pedro A. Aranda Gutiérrez, Telefónica I+D, Spain
Salvatore D'Antonio, CINI, Italy
Sándor Molnár, Budapest University of Technology and Economics, Hungary
Sandra Tartarelli, NEC Europe, Germany
Stefano Salsano, University of Rome "Tor Vergata", Italy
Steven Van den Berghe, Ghent University, Belgium
Stuart Parham, Cisco Systems, United Kingdom
Tanja Zseby, Fraunhofer FOKUS, Germany

Torsten Braun, University of Bern, Switzerland
Udo Krieger, Otto-Friedrich Universität Bamberg, Germany
Willie Donnelly, Waterford Institute of Technology, Ireland
Wojciech Burakowski, Warsaw University of Technology, Poland
Yevgeni Koucheryavy, Tampere University of Technology, Finland

2.4 Organising Committee Chair

Felix Strohmeier
Salzburg Research Forschungsgesellschaft mbH
Jakob-Haringer-Strasse 5, 5020 Salzburg, Austria
Phone: +43 662 2288 443, Fax: +43 662 2288 222
E-mail: felix.strohmeier@salzburgresearch.at

2.5 Organising Committee

Bernhard Hechenleitner, Salzburg University of Applied Sciences, Austria
Elfi Redtenbacher, Salzburg Research, Austria

3 List of presented papers

All the papers presented at the IPS-MoMe 2006 are listed below. The presentations and the papers are available at the workshop web-site.

3.1 Session I - Traffic Analysis & Pattern Recognition

Pascal Cheung-Mon-Chan, Fabrice Clérot
Finding Hierarchical Heavy Hitters with the Count Min Sketch

Mika Ilvesmäki, Marko Luoma
Characterizing Internet flows with aggregated TCP/UDP source port measurements

Miguel de Vega, Salvatore Spadaro, Marie-Ange Remiche, Davide Careglio, Javier Barrantes, Jürgen Götz
On the Statistical Nature of Highly-Aggregated Internet Traffic

Philipp Svoboda, Fabio Ricciato, Eduard Hasenleithner, Rene Pilz
Composition of GPRS/UMTS traffic: snapshots from a live network

3.2 Session II - Speech Quality in fixed and mobile VoIP networks

Tobias Hofffeld, Andreas Binzenhöfer, Markus Fiedler, Kurt Tutschku
Measurement and Analysis of Skype VoIP Traffic in 3G UMTS Systems

Xiaoming Zhou, Frans Muller, Rob E. Kooij, Piet Van Mieghem
Estimation of Voice over IP Quality in the Netherlands

Roland Kwitt, Thomas Fichtel, Thomas Pfeiffenberger
Measuring Perceptual VoIP Speech Quality over UMTS

3.3 Session III - Performance Analysis

Andreas Mäder, Bartosz Wagner, Tobias Hossfeld, Dirk Staehle
Measurements in a Laboratory UMTS Network with time-varying Loads and different Admission Control Strategies

Jens Mahnke, Nilson Reyes, Ilka Miloucheva
Protocol Mechanisms for Reliable Multicast in Mobile Ipv6 Environment

Laszlo Kovacs, Attila Vidacs, Zsolt Olah
Absolute QoS Guarantees in a Relative Differentiated Services Architecture

3.4 Session IV - Simulation & Measurement Tools

Davide Adami, Christian Callegari, Daniele Ceccarelli, Stefano Giordano, Michele Pagan
Design and Implementation of the OSPF-TE Network Simulator

Ahmed Ait Ali, Fabien Michaut, Francis Lepage
End-to-End Available Bandwidth Measurement Tools: A Comparative Evaluation of Performances

Loránd Jakab, René Serral-Gracià, Jordi Domingo-Pascual
A Study of Packet Losses in the EuQoS Network

Helder Veiga, Rui Valadas, Paulo Salvador, António Nogueira, Thomas Pfeiffenberger, Felix Strohmeier
OWAMP Performance and Interoperability Tests

3.5 Session V - Traffic Modeling & Engineering

Shu Zhang, Lothar Kreft, Ulrich Killat
A Novel Linear-Programming Based Methodology for the Planning of Real Time Communication Groups in a Network with SCED Schedulers

Mintu Shah, Srividya Gopalan, Sridhar V
TCP Proactive WestWood

Antoine Scherrer, Nicolas Larrieu, Pierre Borgnat, Philippe Owezarski, Patrice Abry
Non Gaussian and Long Memory Statistical modeling of Internet Traffic

Péter Hága, Krisztián Diriczi, Gábor Vattay, István Csabai
Granular Cross Traffic Based Path Parameter Estimation

4 Workshop Programme

The final workshop programme for the IPS-MoMe 2006 contained 24 presentations including 2 keynotes, 2 invited papers, 2 tutorials and 18 regular papers.

MONDAY, 27 February 2006	
8:30 – 9:30	REGISTRATION
9:30 – 10:00	OPENING SESSION <ul style="list-style-type: none">• Welcome Notes <i>Salzburg University of Applied Sciences</i> <i>Salzburg Research</i>• MOME Project: Felix Strohmeier, Salzburg Research
10:00 – 10:30	KEYNOTE: Pertti Jauhainen, European Commission
10:30 – 11:00	COFFEE BREAK
11:00 – 12:40	Paper Session I - Traffic Analysis & Pattern Recognition (Chair: Fabio Ricciato, ftw.) <ul style="list-style-type: none">• Finding Hierarchical Heavy Hitters with the Count Min Sketch <i>Pascal Cheung-Mon-Chan, France Télécom R&D</i>• Characterizing Internet flows with aggregated TCP/UDP source port measurements <i>Mika Ilvesmäki, Helsinki University of Technology</i>• On the Statistical Nature of Highly-Aggregated Internet Traffic <i>Miguel de Vega, Free University of Brussels (ULB)</i>

	<ul style="list-style-type: none"> Composition of GPRS/UMTS traffic : snapshots from a live network <i>Philipp Svoboda, Telecommunications Research Center Vienna, ftw.</i>
12:40 – 13:30	LUNCH BREAK
13:30 – 14:00	INVITED TALK: Gregor v. Bochmann, University of Ottawa: Home Broadband Access
14:00 – 15:15	Paper Session II - Speech Quality in fixed and mobile VoIP networks (Chair: Pedro A. Aranda Gutiérrez, Telefonica I+D) <ul style="list-style-type: none"> Measurement and Analysis of Skype VoIP Traffic in 3G UMTS Systems <i>Tobias Hofffeld, University of Würzburg</i> Measurement of Voice over IP Quality in the Netherlands <i>Xiaoming Zhou, Delft University of Technology</i> Measuring Perceptual VoIP Speech Quality over UMTS <i>Thomas Fichtel, Salzburg Research</i>
15:15 – 15:30	COFFEE BREAK
15:30 – 16:45	Paper Session III - Performance Analysis (Chair: Carsten Schmoll, Fraunhofer FOKUS) <ul style="list-style-type: none"> Measurements in a Laboratory UMTS Network with time-varying Loads and different Admission Control Strategies <i>Tobias Hofffeld, University of Würzburg</i> Performance Analysis of Reliable Mobile Multicast Protocol for content delivery <i>Nilson Reyes, Fachhochschule Bonn-Rhein-Sieg</i> Absolute QoS Guarantees in a Relative Differentiated Services Architecture <i>Attila Vidacs, Budapest University of Technology and Economics</i>
SOCIAL PROGRAMME	
18:30 – 19:30	Guided Tour - City of Salzburg (Meeting point: Makartplatz)
19:30 – open	Gala Dinner Concert

TUESDAY, 28 February 2006	
9:00 – 10:30	TUTORIAL 1: <ul style="list-style-type: none"> BGP-4 Route Repositories <i>Pedro A. Aranda Gutiérrez, Telefónica I+D</i>
	TUTORIAL 2: <ul style="list-style-type: none"> Emulating Computer Networks with Netkit <i>Massimo Rimondini, University of Roma Tre</i>
10:30 – 11:00	COFFEE BREAK
11:00 – 12:40	Paper Session IV - Simulation & Measurement Tools (Chair: Markus Fiedler, Blekinge Institute of Technology) <ul style="list-style-type: none"> Design and Implementation of the OSPF-TE Network Simulator <i>Christian Callegari, University of Pisa</i> End-to-End Available Bandwidth Measurement Tools: A Comparative Evaluation of Performances <i>Ahmed Ait Ali, University Henri Poincaré, Nancy 1</i> A Study of Packet Losses in the EuQoS Network <i>Loránd Jakab, Universitat Politècnica de Catalunya</i> OWAMP Performance and Interoperability Tests <i>Helder Veiga, University of Aveiro</i>
12:40 – 13:30	LUNCH BREAK
13:30 – 14:00	KEYNOTE: Dirk Hetzer, T-Systems: Bandwidth planning for content on-demand applications in heterogeneous mobile environment
14:00 – 14:30	INVITED TALK: Heiner Hummel: New Routing Architectures
14:30 – 15:00	COFFEE BREAK
15:00 – 16:40	Paper Session V - Traffic Modeling & Engineering (Chair: Antal Bulanza, Free University of Brussels) <ul style="list-style-type: none"> A Novel Linear-Programming Based Methodology for the Planning of Real

<p>Time Communication Groups in a Network with SCED Schedulers <i>Shu Zhang, Hamburg University of Technology</i></p> <ul style="list-style-type: none">• TCP Proactive WestWood <i>Mintu Shah, Satyam Computer Services Limited</i>• Non Gaussian and Long Memory Statistical modeling of Internet Traffic <i>Pierre Borgnat, ENS Lyon</i>• Granular Cross Traffic Based Path Parameter Estimation <i>Peter Haga, Eotvos University</i>
16:40 – 16:50 CLOSING SESSION

5 List of participants

There were 63 participants at the workshop, representing 19 countries.

Rui Aguiar, University of Aveiro, Portugal
Ahmed Ait Ali, CRAN, France
Peter Alm, Netintact AB, Sweden
Pierre Borgnat, Laboratoire de Physique ENS, France
Elisa Boschi, Hitachi Europe, Switzerland
Andreas Bourges, IsarNet AG, Germany
Christof Brandauer, Salzburg Research Forschungsgesellschaft, Austria
Antal Bulanza, University of Brussels, Belgium
Christian Callegari, University of Pisa, Italy
Pascal Cheung-Mon-Chan, France Telecom R&D, France
Marek Dabrowski, Warsaw University of Technology, Institute of Telecommunications, Poland
Miguel de Vega, Siemens AG, Belgium
Peter Dorfinger, Salzburg Research Forschungsgesellschaft, Austria
Michael Eichriedler, University of Applied Sciences, Austria
Markus Fellhofer, University of Applied Sciences, Austria
Thomas Fichtel, Salzburg Research Forschungsgesellschaft, Austria
Markus Fiedler, Blekinge Institute of Technology, Sweden
Robert Griessner, University of Applied Sciences, Austria
Anders Gustafsson, Netintact, Sweden
Pedro Gutiérrez, TID, Spain
Peter Haber, University of Applied Sciences, Austria
Peter Haga, Eotvos University, Hungary
Alexander Haväng, Netintact AB, Sweden
Bernhard Hechenleitner, University of Applied Sciences, Austria
Dirk Hetzer, T-Systems Enterprise Services GmbH, Germany
Ulrich Hofmann, Salzburg Research Forschungsgesellschaft, Austria
Tobias Hoßfeld, University of Würzburg, Germany
Heiner Hummel, Salzburg Research Forschungsgesellschaft, Germany
Mika Juhani Ilvesmäki, Helsinki University of Technology, Finland
Loránd Jakab, UPC, Spain
Pertti Jauhiainen, European Commission, Belgium
Gyoung-Bae Kim, Seowon University, Korea
Milan Kovacic, CESNET, Czech Republic
Roland Kwitt, Salzburg Research Forschungsgesellschaft, Austria
Jens Mahnke, FH BRS, Germany
Kevin Meynell, TERENA, Netherlands
Ilka Miloucheva, Fachhochschule Bonn-Rhein-Sieg/SATCOM Fraunhofer, Germany
Eberhard Müller, Salzburg Research Forschungsgesellschaft, Austria
Andreas Oberhuemer, Jazzey GmbH, Austria
Byoung-Seob Park, Inha Technical College, Korea
Thomas Pfeiffenberger, Salzburg Research Forschungsgesellschaft, Austria

Aiko Pras, University of Twente, Netherlands
Jürgen Quittek, NEC Europe Ltd., Germany
Susan Rea, Cork Institute of Technology, Ireland
Siegfried Reich, Salzburg Research Forschungsgesellschaft, Austria
Helmut Reitinger, University of Applied Sciences, Austria
Nilson Reyes, FH BRS, Germany
Fabio Ricciato, ftw. Telecommunications Research, Austria
Massimo Rimondini, University of Roma Tre, Italy
Carsten Schmoll, Fraunhofer FOKUS, Germany
Mintu Sha, Satyam Computer Services Ltd., India
Felix Strohmeier, Salzburg Research Forschungsgesellschaft, Austria
Philipp Svoboda, TU Wien, Austria
Brian H. Trammell, Software Engineering Institute, USA
Gregor v. Bochmann, University of Ottawa, Canada
Gabor Vattay, Eotvos University, Hungary
Armin Veichtlbauer, Salzburg Research Forschungsgesellschaft, Austria
Hélder Veiga, Institute of telecommunications Aveiro, Portugal
Attila Vidács, Budapest University of Technology and Economics, Hungary
Bartosz Sebastian Wagner, University of Würzburg, Germany
Martin Zadnik, CESNET, Czechia
Shu Zhang, Technische Universität Hamburg, Germany
Xiaoming Zhou, Delft University of Technology, Netherlands