Lecture Notes in Computer Science

5274

Commenced Publication in 1973
Founding and Former Series Editors:
Gerhard Goos, Juris Hartmanis, and Jan van Leeuwen

Editorial Board

David Hutchison

Lancaster University, UK

Takeo Kanade

Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler

University of Surrey, Guildford, UK

Jon M. Kleinberg

Cornell University, Ithaca, NY, USA

Alfred Kobsa

University of California, Irvine, CA, USA

Friedemann Mattern

ETH Zurich, Switzerland

John C. Mitchell

Stanford University, CA, USA

Moni Naor

Weizmann Institute of Science, Rehovot, Israel

Oscar Nierstrasz

University of Bern, Switzerland

C. Pandu Rangan

Indian Institute of Technology, Madras, India

Bernhard Steffen

University of Dortmund, Germany

Madhu Sudan

Massachusetts Institute of Technology, MA, USA

Demetri Terzopoulos

University of California, Los Angeles, CA, USA

Doug Tygar

University of California, Berkeley, CA, USA

Gerhard Weikum

Max-Planck Institute of Computer Science, Saarbruecken, Germany

George Pavlou Toufik Ahmed Tasos Dagiuklas (Eds.)

Management of Converged Multimedia Networks and Services

11th IFIP/IEEE International Conference on Management of Multimedia and Mobile Networks and Services, MMNS 2008 Samos Island, Greece, September 22-26, 2008 Proceedings



Volume Editors

George Pavlou University College London Department of Electonic and Electrical Engineering Torrington Place, London, WE1E 7JE, UK E-mail: G.Pavlou@ee.ucl.ac.uk

Toufik Ahmed University Bordeaux 1 CNRS LaBRI Lab 351 Cours de la Libération, 33405 Talence Cedex, France E-mail: tad@labri.fr

Tasos Dagiuklas TEI of Mesolonghi Dept. of Telecommunications and Networks 30300 Nafpaktos, Greece E-mail: ntan@teimes.gr

Library of Congress Control Number: 2008934861

CR Subject Classification (1998): C.2, H.4, H.5, H.2.4, H.4.3

LNCS Sublibrary: SL 5 – Computer Communication Networks and Telecommunications

ISSN 0302-9743

ISBN-10 3-540-87358-9 Springer Berlin Heidelberg New York ISBN-13 978-3-540-87358-7 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

Springer is a part of Springer Science+Business Media

springer.com

© IFIP International Federation for Information Processing, Hofstrasse 3, A-2361 Laxenburg, Austria 2008 Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India Printed on acid-free paper SPIN: 12523825 06/3180 5 4 3 2 1 0

Preface

This volume presents the proceedings of the 11th IFIP/IEEE International Conference on Management of Multimedia and Mobile Networks and Services (MMNS 2008), which was held on Samos, Greece during September 22–26 as part of the 4th International Week on Management of Networks and Services (Manweek 2008). As in the previous three years, the Manweek umbrella allowed an international audience of researchers and scientists from industry and academia – who are researching and developing management systems – to share views and ideas and present their state-of-the-art results.

The other events co-located with Manweek 2008 were the 19th IFIP/IEEE International Workshop on Distributed Systems: Operations and Management (DSOM 2008), the 8th IEEE Workshop on IP Operations and Management (IPOM2008), the Third IEEE International Workshop on Modeling Autonomic Communications Environments (MACE 2008), the 4th IEEE/IFIP International Workshop on End-to-End Virtualization and Grid Management (EVGM 2008) and the 5th International Workshop on Next-Generation Networking Middleware (NGNM 2008).

Under this umbrella, MMNS again proved itself as a top public venue for dissemination of results and intellectual collaboration with specific emphasis on the management of emerging mobile and wireless networks. The objective of the conference is to bring together researchers and scientists from academia and industry interested in state-of-the-art management of converged multimedia networks and services across heterogeneous networking infrastructures.

Contributions from the research community met this challenge with a total of 46 paper submissions from four continents. A comprehensive review process was carried out by the Technical Program Committee and additional subject area experts, with all papers receiving three reviews. Subsequently, all submissions were ranked based on review scores as well as the wider Technical Program Committee's view of their contribution and relevance to the conference scope. After a relevant discussion, it was decided to accept 15 full papers and 1 short paper, presenting work in progress. The overall acceptance rate was 32.6%, which is in line with previous events and guarantees a high-quality technical program. The diverse topics in this year's program included services and user experience, management aspects of wireless and cellular networks, monitoring and control and resource management, IMS platforms for the management of applications, P2P overlays for multimedia applications and services all contributing to the management of real-time mobile multimedia services, as expressed in this year's motto.

The high-quality MMNS 2008 program is a delicate concoction based on the accepted papers of the original and novel contributions of all the authors who submitted their work to the conference, purified by the hard work of the

VI Preface

MMNS 2008 Technical Program Committee members and the rigorous review process accomplished by this set of worldwide experts, supported by the 2008 Manweek Organizing Committee, and enabled by the generous contribution of IFIP, IEEE and the sponsor companies, all of whom are gratefully thanked by the conference Technical Program Committee Chairs. In addition, we thank the Publication Chair Tom Pfeifer and the Springer LNCS team for their support of these proceedings.

We have no doubt that the MMNS 2008 conference was another significant step towards the ability to develop, manage and control truly scalable end-to-end multimedia-based services over next-generation wired and wireless networks.

September 2008

George Pavlou Toufik Ahmed Tasos Dagiuklas

MMNS 2008 Organization

Workshop and Program Co-chairs

George Pavlou University College London, UK
Toufik Ahmed University Bordeaux 1, France
Tasos Dagiuklas TEI of Mesolonghi, Greece

Publication Chair

Tom Pfeifer Waterford Institute of Technology, Ireland

Publicity Co-chair

Luciano Paschoal Gaspary Universidade Federal do Rio Grande do Sul,

Brazil

Treasurers

Sofoklis Kyriazakos Converge, Greece

Brendan Jennings Waterford Institute of Technology, Ireland

Website and Registration Chair

Sven van der Meer Waterford Institute of Technology, Ireland

Submission Chair

Lisandro Granville Universidade Federal do Rio Grande do Sul,

Brazil

Sponsoring Co-chairs

E. Pallis Centre for Technological Research of Crete,

Greece

I. Venieris National Technical University of Athens,

Greece

Manweek 2008 Chair

George Kormentzas University of the Aegean, Greece

Manweek 2008 Vice Chair

Francisco Guirao European Commission

Manweek 2008 Advisors

Raouf Boutaba University of Waterloo, Canada

Brendan Jennings Waterford Institute of Technology, Ireland Sven van der Meer Waterford Institute of Technology, Ireland

MMNS 2008 Technical Program Committee

Ahmed Mehaoua University of Paris, Descartes - CRIP5, France

Aiko Pras University of Twente, The Netherlands Alan Marshall The Queen's University of Belfast, UK

Alexander Clemm Cisco Systems, USA

Bert-Jan van Beijnum University of Twente, The Netherlands Brendan Jennings TSSG, Waterford Institute of Technology,

Ireland

Burkhard Stiller University of Zurich and ETH Zurich,

Switzerland

Chadi Assi CIISE Concordia University, Canada

Christian Timmerer Klagenfurt University, Austria
Danny Raz Technion University, Israel
Dilip Krishnaswamy Qualcomm, Inc., USA
Dorgham Sisalem Tekelec, Germany

Francine Krief LaBRI Laboratory, Bordeaux 1 University,

France

Gabriel-Miro Muntean Dublin City University, Ireland

Gang Ding Olympus Communication Technology of

America, USA

Gerard Parr University of Ulster, UK Go Hasegawa Osaka University, Japan Guy Pujolle Université de Paris 6, France

Hanan Lutfiyya University of Western Ontario, Canada

John Vicente Intel Corporation, USA
Jun Li University of Oregon, USA
Karim Seada Nokia Research Center, Finland

Liam Murphy UCD, Ireland

Lukas Kencl Czech Technical University (CTU),

Czech Republic

Maja Matijasevic University of Zagreb, Croatia

Masum Hasan Cisco Systems, USA

Mihaela van der Schaar UCLA, USA

Nazim Agoulmine University of Evry, France

Ralf Steinmetz Roger Zimmermann

Sasitharan Balasubramaniam

Sven van der Meer Theodore Willke Theodore Zahariadis Thomas Magedanz

Tom Pfeifer

Viji Raveendran Yacine Ghamri-Doudane

Yangcheng Huang

Darmstadt University, Germany

National University of Singapore, Singapore Waterford Institute of Technology, Ireland Waterford Institute of Technology, Ireland

Intel Corporation, USA TEI of Chalkida, Greece FhG FOKUS, Germany

Waterford Institute of Technology, Ireland

QUALCOMM Incorporated, USA

LRSM - ENSIIE, France

Ericsson, USA

Table of Contents

Wireless Ad Hoc and Sensor Networks	
A Knowledge Plane for Autonomic Context-Aware Wireless Mobile Ad Hoc Networks	1
Policy Distribution Using the Publish/Subscribe Paradigm for Managing MANETs	14
D-Sense: An Integrated Environment for Algorithm Design and Protocol Implementation in Wireless Sensor Networks	20
Multimedia Distribution	
A Case for Multimedia Streaming over the Grid Infrastructure Lambros Lambrinos and Fotis Georgatos	33
Resource Management and Signalling Architecture of a Hybrid Multicast Service for Multimedia Distribution	39
Scalable Multimedia Group Communications through the Over-Provisioning of Network Resources	52
Comparative Study of Real-Time Multimedia Transmission over Multi-homing Transport Protocols	64
L-CAN: Locality Aware Structured Overlay for P2P Live Streaming Nikolaos Efthymiopoulos, Athanasios Christakidis, Spyros Denazis, and Odysseas Koufopavlou	77

Quality of Experience

ACME: An Automated Tool for Generating and Evaluating the Quality of VoIP Calls	91
Leandro C.G. Lustosa, André A.D.P. Souza, Paulo H. de A. Rodrigues, and Douglas G. Quinellato	01
Live Video Streaming Using P2P and SVC	104
Peer-to-Peer Overlay Multicast for Scalable Audiovisual Services over Converging Wired and Wireless Networks	114
QoS Mechanisms and Tools for Multimedia	
Intra-Domain Delay-Based Quality of Service Using Differentiated Routing	127
Multiconstrained Optimization of Networks with Multicast and Unicast Traffic	139
Stabilizing Intelligent Route Control: Randomized Path Monitoring, Randomized Path Switching or History-Aware Path Switching?	151
A Dimensioning and Deployment Tool for on Demand Policy-Based Resource Management System	157
Author Index	171