Lecture Notes in Computer Science

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

Editorial Board

Takeo Kanade
Carnegie Mellon University, Pittsburgh, PA, USA

Josef Kittler
University of Surrey, Guildford, UK

Jon M. Kleinberg
Cornell University, Ithaca, NY, 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
New York University, NY, USA

Doug Tygar
University of California, Berkeley, CA, USA

Moshe Y. Vardi
Rice University, Houston, TX, USA

Gerhard Weikum
Max-Planck Institute of Computer Science, Saarbruecken, Germany
Preface

Nowadays, networks and telecommunications are two of the most active fields. Research and development in these areas have been going on for some time, reaching the stage of products. The objectives of HSNMC 2004 (International Conference on High Speed Networks and Multimedia Communications) were to promote research and development activities and to encourage communication between academic researchers and engineers throughout the world in the areas related to high-speed networks and multimedia communications.

The seventh edition of HSNMC was held in Toulouse, France, on June 30–July 2, 2004. There were 266 submissions to HSNMC this year from 34 countries, which were evaluated by program committee members assisted by external reviewers. Each paper was reviewed by several reviewers. One hundred and one papers were selected to be included in these proceedings. The quality of submissions was high, and the committee had to decline some papers worthy for publication.

The papers selected in this book illustrate the state of the art, current discussions, and development trends in the areas of networks, telecommunication and multimedia applications. The contributions published in this book underline the international importance of the related field of research. They cover a variety of topics, such as QoS in DiffServ networks, QoS analysis and measurement, performance modelling, TCP modelling and analysis, MPLS for QoS provision, scheduling and resource allocation, routing, multicast, security and privacy issues, peer-to-peer applications, video applications, software and middleware for networks, mobile networks, mobility, satellite, mobile IP, wireless networks, WLAN, ad hoc networks, 3G/UMTS, IEEE 802.11, optical networks, opto-VLSI, hardware for communications/networks, and WDM.

We heartily thank the program committee, and the external reviewers, for their efforts and hard work. Without their support, the program organization of this conference would not have been possible. We would like to thank all the authors for their paper submission, as well as Springer-Verlag for the good cooperation during the preparation of the manuscript. We are also indebted to many individuals and organizations that made this conference possible: Paul Sabatier University, IEEE and IEE. Finally, many thanks to the local organizers, and all the other people who helped with the conference organization.

June 2004
Zoubir Mammeri
Pascal Lorenz
HSNMC 2004 Conference Committees

General Chair
Zoubir Mammeri, IRIT, University of Toulouse, France

General Co-chairs
Pascal Lorenz, University of Haute Alsace, France
Mike Myung-Ok Lee, Dongshin University, Korea

Steering Committee
Kamran Eshraghian, Edith Cowan University, Australia
Mario Freire, University of Beira Interior/IT Coimbra, Portugal
Pascal Lorenz, University of Haute Alsace, France
Zoubir Mammeri, University of Toulouse, France
Mike Myung-Ok Lee, Dongshin University, Korea

International Program Committee

Ron Addie University of Southern Queensland, Australia
Khalid Al-Begain University of Glamorgan, UK
Benny Bing Georgia Institute of Technology, USA
Abderrahim Benslimane Avignon University, France
Fernando Boavida University of Coimbra, Portugal
Raouf Boutaba University of Waterloo, Canada
Alexandre Brandwajn UC Santa Cruz, USA
Michel Diaz LAAS-CNRS, Toulouse, France
Petre Dini Cisco, USA
Kamran Eshraghian Edith Cowan University, Australia
Mario Freire University of Beira Interior, Portugal
Bezalel Gavish Southern Methodist University, USA
Zbigniew Hulicki University of Cracow, Poland
Guy Juanole LAAS-CNRS, Toulouse, France
Mike Myung-Ok Lee Dongshin University, Korea
Pascal Lorenz University of Haute Alsace, France
Zoubir Mammeri University of Toulouse, France
Guy Omidyar Institute for Infocomm Research, Singapore
Jean-Jacques Pansiot University of Strasbourg, France
Martin Potts Martel, Switzerland
Guy Pujolle Pierre et Marie Curie University, Paris, France
Enrique Vazquez Technical University of Madrid, Spain
Victor A. Villagran Technical University of Madrid, Spain
Jun Zheng University of Ottawa, Canada
External Reviewers

A. Alonso, Univ. Politecnica de Madrid, Spain
T. Ahmed, University of Versailles, France
L. Bellido, Technical University of Madrid, Spain
L. Bernardo, Universidade Nova de Lisboa, Portugal
J. Berrocal, Univ. Politecnica de Madrid, Spain
C. Bockstal, LAAS, Toulouse
N. Bouabdellah, Alcatel, France
O. Brun, LAAS, Toulouse
Y. Cao, University of Glamorgan, UK
J. Capka, University of Waterloo, Canada
G. Carvalho, Cisco, Lisbon, Portugal
P. Carvalho, University of Minho, Portugal
C. Chassot, LAAS, Toulouse, France
J. Collet, LAAS, Toulouse, France
B. Daheb, LIP6, Paris, France
B. Dias, University of Minho, Portugal
J.C. Duenas, Technical University of Madrid, Spain
R. El Azouzi, University of Avignon, France
M. Esseghir, LIP6, Paris, France
D. Fernandez, Technical University of Madrid, Spain
P. Ferreira, ESEC, CISUC, Portugal
A.B. Garcia, Technical University of Madrid, Spain
M. Ghaderi, University of Waterloo, Canada
W. Golab, University of Waterloo, Canada
F. Gonzalez, Univ. Politecnica de Madrid, Spain
Y. Iraqi, University of Waterloo, Canada
B. Ishibashi, University of Waterloo, Canada
D. Larrabeiti, Univ. Carlos III de Madrid, Spain
Z. Li, University of Southern Queensland, Australia
J.E. Lopez de Vergara, Technical University of Madrid, Spain
F. Martignon, Politecnico di Milano, Italy
J.-J. Mercier, ICARE, IUT de Blagnac, France
I. O’Connor, École Centrale de Lyon, France
J. Orvalho, ESEC, CISUC, Portugal
P. Pinto, Universidade Nova de Lisboa, Portugal
A. Santos, University of Minho, Portugal
J. Silva, University of Coimbra, Portugal
P. Simoes, University of Coimbra, Portugal
P.D. Sorenson, TDC, Aarhus, Denmark
D. Tianshu, University of Waterloo, Canada
Th. Val, ICARE, IUT de Blagnac, France
J.M. Vozmediano, University of Seville, Spain
S. Waharte, University of Waterloo, Canada
B. Zhang, University of Ottawa, Canada
# Table of Contents

**Quality of Service, DiffServ, Performance Analysis**

Network Admission Control for Fault-Tolerant QoS Provisioning .......................... 1  
*Michael Menth, Stefan Kopf, and Joachim Charzinski*

Expedited Forwarding End to End Delay Jitter  
in the Differentiated Services Networks ........................................... 14  
*Hamada Alshaer and Eric Horlait*

Enhancing Delay Differentiation Semantics of Class-Based IP Networks .................. 26  
*Pedro Sousa, Paulo Carvalho, and Vasco Freitas*

Analyzing Unfairness Properties of Assured Service  
in Differentiated Services Network ............................................. 38  
*Seung-Joon Seok*

Analysis of Scalable TCP ............................................................................. 51  
*Eitan Altman, Konstantin Avrachenkov, Chadi Barakat,  
Arzad Alam Kherani, and B.J. Prabhu*

Improving the Performance of TCP in the Case of Packet Reordering ..................... 63  
*Arjuna Sathiaseelan and Tomasz Radzik*

Control-Theoretic Approach for a QoS Router ............................................. 74  
*Hyung Soo Jung, Inseon Lee, and Heon Y. Yeom*

Modelling of Individual and Aggregate Web Traffic ....................................... 84  
*Eduardo Casilari, José Manuel Cano-García,  
Francisco Javier González-Cañete, and Francisco Sandoval*

Internet Traffic Characterization – An Analysis of Traffic Oscillations .................. 96  
*Philippe Owezarski and Nicolas Larrieu*

Transatlantic Native 10 Gigabit Ethernet Experiments:  
Connecting Geneva to Ottawa .............................................................. 108  
*Bob Dobinson, René Hatem, Wade Hong, Piotr Golonka,  
Catalin Meirosu, Erik Radius, and Bill St. Arnaud*

Performance Evaluation of a Probabilistic Packet Filter  
Optimization Algorithm for High-Speed Network Monitoring .......................... 120  
*Jan Coppens, Stijn De Smet, Steven Van den Berghe, Filip De Turck,  
and Piet Demeester*
### Table of Contents

**Modeling TCP and High Speed TCP:**
A Nonlinear Extension to AIMD Mechanisms .......................... 132  
*Richard Marquez, Eitan Altman, and Solazver Solé-Alvarez*

HMM-Based Monitoring of Packet Channels ........................... 144  
*Pierluigi Salvo Rossi, Francesco Palmieri, and Giulio Iannello*

Survey on the End-to-End Internet Delay Measurements ............ 155  
*Junfeng Wang, Mingtian Zhou, and Yuxia Li*

Performance Evaluation of the RSVP Reservation Aggregation Model . . . 167  
*Rui Prior, Susana Sargento, Pedro Brandão, and Sérgio Crisóstomo*

**Scheduling, Resource Allocation**

LAS Scheduling to Avoid Bandwidth Hogging in Heterogeneous TCP Networks .................................................. 179  
*Idris A. Rai, Guillaume Urvoy-Keller, and Ernst W. Biersack*

iRGRR: A Fast Scheduling Scheme with Less Control Messages for Scalable Crossbar Switches ................................. 191  
*Laixian Peng, Chang Tian, and Shaoren Zheng*

Design and Implementation of a New Adaptive Algorithm for Dynamic Bandwidth Allocation .................................. 203  
*Giorgio Calarco and Carla Raffaelli*

Protective Queue Management for TCP Friendly Flows ............... 213  
*Sanjeewa A. Athuraliya and Harsha Sirisena*

Leaky Bucket Based Buffer Management Scheme for TCP/IP Traffic over GFR Service .................................................. 224  
*Kwan-Woong Kim, Sang-Tae Lee, Dae-Ik Kim, Mike Myung-Ok Lee, and Byoung-Sil Chon*

Handling Two-Way TCP Traffic in Asymmetric Networks ........... 233  
*Fatma Louati, Chadi Barakat, and Walid Dabbous*

Packet Delay Analysis under Class Based Queueing .................. 244  
*Anne Millet and Zoubir Mameri*

Distributed Scheduling Policies of Low Complexity for Networks of Input-Queued Switches .................................. 257  
*Claus Bauer*

Design and Analysis of a Virtual Output Queuing Based Windowing Scheduling Scheme for IP Switching System ............... 268  
*Jin Seek Choi and BongSue Suh*
MPLS

New MPLS Switch Architecture Supporting DiffServ for High-Speed Switching and QoS ......................................... 280

Tae-Won Lee, Young-Chul Kim, and Mike Myung-Ok Lee

Network Convergence over MPLS ................................................ 290

Enrique Vázquez, Manuel Álvarez-Campana, and Ana B. García

MPLS DiffServ-Enabled Traffic Engineering: A Scalable QoS Model for Optical-Speed Media Streaming Networks .................. 301

Francesco Palmieri

CoS Based LSP Selection in MPLS Networks .................................. 314

Praveen Kumar, Niranjan Dhanakoti, Srividya Gopalan, and Varadarajan Sridhar

Routing, Multicast

Fast Update Algorithm for IP Forwarding Table Using Independent Sets ........................................ 324

Xuehong Sun, Sartaj K. Sahni, and Yiqiang Q. Zhao


Karl Hendling, Gerald Franzl, Brikena Statovci-Halimi, and Artan Halimi

Embedded BGP Routing Monitoring ............................................. 348

Thomas Lévy, Olivier Marcé, and Damien Galand

Neural Net Based Approach for Adaptive Routing Policy in Telecommunication Networks ........................................... 360

Said Hoceini, Abdelhamid Mellouk, and Yacine Amirat

Hybrid Unicast and Multicast Flow Control:
A Linear Optimization Approach .................................................. 369

Homayoun Yousefi’zadeh, Fatemeh Fazel, and Hamid Jafarkhani

A New Adaptive Layered Multicast Protocol .............................. 381

Kon Papazis, Naveen K. Chilamkurti, and Ben Soh

A Novel Scalable Explicit Multicast Protocol .............................. 390

Yewen Cao and Khalid Al-Begain

Multicast Routing with Delay and Delay Variation Constraints for Multimedia Applications ................................. 399

Shankar M. Banik, Sridhar Radhakrishnan, and Chandra N. Sekharan
# Table of Contents

## Mobile Networks, Mobile IP, 3G/UMTS

<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Performance Analysis of IP Mobility Protocols in Wireless Mobile Networks</td>
<td>412</td>
</tr>
<tr>
<td>Ki-Sik Kong, Ui-Sung Song, Jin-Su Kim, and Chong-Sun Hwang</td>
<td></td>
</tr>
<tr>
<td>Connection Admission Control Using Transient QoS Measures in Broadband Satellite Systems</td>
<td>424</td>
</tr>
<tr>
<td>Yeong M. Jang</td>
<td></td>
</tr>
<tr>
<td>Reliable Multicast Transport by Satellite: A Hybrid Satellite/Terrestrial Solution with Erasure Codes</td>
<td>436</td>
</tr>
<tr>
<td>Florestan de Belleville, Laurent Dairaine, Jérôme Lacan, and Christian Fraboul</td>
<td></td>
</tr>
<tr>
<td>A Rate Adaptation Scheme for out of Profile Packets in a DiffServ Enabled CDMA Network</td>
<td>446</td>
</tr>
<tr>
<td>Vasilis Friderikos, Lin Wang, Mikio Iwamura, and Hamid Aghvami</td>
<td></td>
</tr>
<tr>
<td>QoS Aware Multicast Using Mobile Agents Technique</td>
<td>459</td>
</tr>
<tr>
<td>Mohamed El Hachimi, Abdel hafid Abouaissa, and Pascal Lorenz</td>
<td></td>
</tr>
<tr>
<td>RBU+: Recursive Binding Update for End-to-End Route Optimization in Nested Mobile Networks</td>
<td>468</td>
</tr>
<tr>
<td>Hosik Cho, Eun Kyoung Paik, and Yanghee Choi</td>
<td></td>
</tr>
<tr>
<td>An Architecture for User Location in Heterogeneous Mobile Networks</td>
<td>479</td>
</tr>
<tr>
<td>Maarten Wegdam, Jeroen van Bemmel, Ko Lagerberg, and Peter Leijdekkers</td>
<td></td>
</tr>
<tr>
<td>Enhancing Hierarchical Mobile IPv6 Addressing for the Annex Architecture</td>
<td>492</td>
</tr>
<tr>
<td>Duncan A. Grove, Mark Anderson, and Chris J. North</td>
<td></td>
</tr>
<tr>
<td>Performance Analysis of Binding Update in Mobile IP during Handoff</td>
<td>503</td>
</tr>
<tr>
<td>Djamel Tandjaoui, Nadjib Badache, and Abdelmadjid Bouabdallah</td>
<td></td>
</tr>
<tr>
<td>TCP Performance Enhancement Incorporating Handoff Analysis in Mobile IPv6 Networks</td>
<td>512</td>
</tr>
<tr>
<td>Dongwook Lee and JongWon Kim</td>
<td></td>
</tr>
<tr>
<td>Packet Loss Analysis in Mobile IP</td>
<td>524</td>
</tr>
<tr>
<td>Qinglin Zhao and Li Feng</td>
<td></td>
</tr>
<tr>
<td>Integration of 3G Protocols into the Linux Kernel to Enable the Use of Generic Bearers</td>
<td>533</td>
</tr>
<tr>
<td>Nils Aschenbruck, Matthias Frank, Wolfgang Hansmann, Peter Martini, Christoph Scholz, and Jens Tölle</td>
<td></td>
</tr>
</tbody>
</table>
# Table of Contents

Managing Mobility in Beyond-3G Environments ........................................... 545
   Mortaza S. Bargh, Hans Zandbelt, and Arjan Peddemors

Signaling Traffic Optimization in UMTS IP Multimedia Subsystem ........... 556
   Igor Miladinovic and Klaus Umschaden

Call Admission Control and Scheduling Policies for UMTS Traffic
for QoS Provisioning ................................................................. 566
   Sourav Pal, Mainak Chatterjee, and Sajal K. Das

### IEEE 802.11 Networks, Ad Hoc Networks

Throughput Analysis of IEEE 802.11e EDCA Protocol .............................. 579
   Min-Su Kim, Jung-Pil Ryu, Taeyoung Byun, and Ki-Jun Han

Design of a New IFFT/FFT for IEEE 802.11a WLAN Based
on the Statistics Distribution of the Input Data .................................. 589
   Jong-Chan Choi, Won-Chul Choi, Sun-Gu Hwang,
   Mike Myung-Ok Lee, and Kyong-Rok Cho

Enhancing QoS in 802.11e with Beacon Management .............................. 598
   Kiran Anna, Abhishek Karnik, Ratan Guha, and Mainak Chatterjee

QoS Mechanisms for IEEE 802.11 Wireless LANs ................................ 609
   Francisco Micó, Pedro Cuenca, and Luis Orozco-Barbosa

Minimum Energy Maximum Residual Battery Capacity Routing
in Wireless Ad Hoc Network ......................................................... 624
   Chor Ping Low, Jim Mee Ng, and Mohammed Iqbal Mohammed Safiq

PatchPSMP: A New Multicast Protocol for Ad-Hoc Network .................... 636
   Cai ShaoBin, Yang XiaoZong, Yao WenBin, and Zhao Jing

An Adaptive Probabilistic Broadcast Scheme for Ad-Hoc Networks .......... 646
   Jung-Pil Ryu, Min-Su Kim, Sung-Ho Hwang, and Ki-Jun Han

Optimized Dissemination of Alarm Messages
in Vehicular Ad-Hoc Networks (VANET) ........................................... 655
   Abderrahim Benslimane

### Wireless and WLAN

Analysis on Call Blocking Probability of Streaming Data Service
in CDMA System Interworking with WLAN for Different Cell Geometry .. 667
   Chi Hun Ahn, Young Min Ki, and Dong Ku Kim

Overlay Wireless Sensor Networks for Application-Adaptive Scheduling
in WLAN .................................................................................. 676
   Sonia Waharte, Jin Xiao, and Raouf Boutaba
<table>
<thead>
<tr>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>A New Design and Analysis of M-ary PPM UWB</td>
<td>685</td>
</tr>
<tr>
<td>Byung Lok Cho, Mike Myung-Ok Lee, and Tae-Young Kim</td>
<td></td>
</tr>
<tr>
<td>A Variation of the WTLS Authentication Protocol for Reducing Energy</td>
<td>696</td>
</tr>
<tr>
<td>Consumption in Wireless Devices</td>
<td></td>
</tr>
<tr>
<td>Phongsak Prasithsangaree and Prashant Krishnamurthy</td>
<td></td>
</tr>
<tr>
<td>Priority Based Packet Scheduling with Tunable Reliability</td>
<td>707</td>
</tr>
<tr>
<td>for Wireless Streaming</td>
<td></td>
</tr>
<tr>
<td>Jan Kritzner, Uwe Horn, Markus Kampmann, and Joachim Sachs</td>
<td></td>
</tr>
<tr>
<td>Modeling Wireless Discovery and Deployment</td>
<td>718</td>
</tr>
<tr>
<td>of Hybrid Multimedia N/W-Web Services Using Rapide ADL</td>
<td></td>
</tr>
<tr>
<td>Ahmed Sameh, Rehab El-Kharboutly, and Hazem El-Ashmawi</td>
<td></td>
</tr>
<tr>
<td>Two-Tier Geographic Location of Internet Hosts</td>
<td>730</td>
</tr>
<tr>
<td>Bamba Gueye, Artur Ziviani, Serge Fdida, José F. de Rezende,</td>
<td></td>
</tr>
<tr>
<td>and Otto Carlos M.B. Duarte</td>
<td></td>
</tr>
<tr>
<td>Multi-protocol Header Protection (MPHP), a Way</td>
<td>740</td>
</tr>
<tr>
<td>to Support Error-Resilient Multimedia Coding in Wireless Networks</td>
<td></td>
</tr>
<tr>
<td>Fabrice Arnal, Laurent Dairaine, Jérôme Lacan, and Gérard Maral</td>
<td></td>
</tr>
<tr>
<td>Optical Networks, WDM</td>
<td>750</td>
</tr>
<tr>
<td>An Adaptive Unconstrained Routing Algorithm in All-Optical Networks</td>
<td></td>
</tr>
<tr>
<td>Quang-Dzung Ho and Man-Seop Lee</td>
<td></td>
</tr>
<tr>
<td>Fiber Delay Line-Random Early Detection QoS Scheme</td>
<td>761</td>
</tr>
<tr>
<td>for Optical Burst Switching Networks</td>
<td></td>
</tr>
<tr>
<td>Li Hailong, Tan Wei Liak, Li-Jin Thng Ian, and Li Xiaorong</td>
<td></td>
</tr>
<tr>
<td>Effects of Slotted Optical Packet Assembly on End-to-End Performance</td>
<td>766</td>
</tr>
<tr>
<td>Carla Raffaelli and Paolo Zaffoni</td>
<td></td>
</tr>
<tr>
<td>Resource Allocation in User-Controlled Circuit-Switched</td>
<td>776</td>
</tr>
<tr>
<td>Optical Networks</td>
<td></td>
</tr>
<tr>
<td>Wojciech M. Golab and Raouf Boutaba</td>
<td></td>
</tr>
<tr>
<td>QoS Guaranteed Optimal Offset-Time Decision Algorithm</td>
<td>788</td>
</tr>
<tr>
<td>for Prioritized Multi-classes in Optical Burst Switching Networks</td>
<td></td>
</tr>
<tr>
<td>Sungchang Kim, Jin Seek Choi, and Minho Kang</td>
<td></td>
</tr>
<tr>
<td>A Bandwidth Allocation Scheme in Optical TDM</td>
<td>801</td>
</tr>
<tr>
<td>Abdelilah Maach, Hassan Zeineddine, and Gregor von Bochmann</td>
<td></td>
</tr>
<tr>
<td>Reconfigurable Add/Drop Multiplexing Topology</td>
<td>813</td>
</tr>
<tr>
<td>Employing Adaptive MicroPhotonic Technology</td>
<td></td>
</tr>
<tr>
<td>Selam Ahderom, Mehrdad Raisi, Kamal E. Alameh, and Kamran Eshraghian</td>
<td></td>
</tr>
</tbody>
</table>
## Applications, Software Development

### Performance Comparison of Different Cache-Replacement Policies for Video Distribution in CDN

Umesh Chejara, Heung-Keung Chai, and Hyunjoon Cho

---

### Robust Video Transmission with an SNR Scalable H.264 Codec

M. Mahdi Ghandi and Mohammed Ghanbari

---

### Subjective Video Codec Evaluation for Streaming Services up to 1 Mbps

Tilemachos Doukoglou, Stelios Androulidakis, and Dimitrios Kagklis

---

### A Smooth Recursive Frequency-Splitting Scheme for Broadcasting VBR-Encoded Hot Videos

Hsiang-Fu Yu, Hung-Chang Yang, Yi-Ming Chen, and Li-Ming Tseng

---

### Design and Implementation of a Semantic Peer-to-Peer Network

Kiyohide Nakauchi, Hiroyuki Morikawa, and Tomonori Aoyama

---

### A Signaling Protocol for Small Closed Dynamic Multi-peer Groups

Mario Zuehlke and Hartmut Koenig

---

### TAP: Topology-Aware Peer-to-Peer Network with Expanding-Area Lookup

Eungshin Kim, Jaesun Han, and Deayeon Park

---

### A Pull-Based Approach for a VoD Service in P2P Networks

Anwar Al Hamra, Ernst W. Biersack, and Guillaume Urvoy-Keller

---

### Benefits of Using Ontologies in the Management of High Speed Networks

Jorge E. López de Vergara, Víctor A. Villagrá, and Julio Berrocal

---

### QoS-Aware Network Design with UML

Cédric Teyssié and Zoubir Mammeri

---

### User-Aware Adaptive Applications for Enhanced Multimedia Quality in Heterogeneous Networking Environments

Pedro M. Ruiz, Juan Botia, and Antonio F. Gomez-Skarmeta

---

### Adaptive Media Streaming Using Self-reconfigurable Proxies

Oussama Layaida, Slim Benattalah, and Daniel Hagimont

## Security and Privacy Issues

### Hybrid and Adaptive Hash-Chaining Scheme for Data-Streaming Source Authentication

Yacine Challal, Hatem Bettahar, and Abdelmadjid Bouabdallah
SIP Extension and Some Approaches for Establishment of a Secure Large-Scale Conference ........................................ 1068
Masoumeh Torabzadeh and Siavash Khorsandi

An Efficient Domain Based Marking Scheme for IP Traceback .......... 1080
Ngai-Sin Lau and Moon-Chuen Lee

Intelligent Assessment of Distributed Security in TCP/IP Networks .... 1092
Rui Costa Cardoso and Mário Marques Freire

Author Index .......................................................... 1101