# Table of Contents

## Service Management

A QoS Network Management System for Robust and Reliable Multimedia Services ........................................................... 1  
*Shirshanka Das, Kenshin Yamada, Heeyeol Yu, Scott S. Lee, Mario Gerla*  
(University of California, Los Angeles, USA)

Federated Accounting Management System Architecture for Multimedia Service Management .......................... 12  
*Bharat Bhushan, Thomas Gringel* (Fraunhofer-FOKUS, Germany), *Conor Ryan, Éric Leray, Eamonn de Leastar, James Cloney*  
(TSSG, Ireland)

Policy-Based Quality of Service and Security Management for Multimedia Services on IP Networks in the RTIPA Project .......................... 25  
*Valérie Gay, Sandrine Duflos, Brigitte Kervella, Éric Horlait* (Laboratoire d’Informatique de Paris 6, France), *Gladys Diaz* (L2TI - Institut Galilée - Université Paris 13, France)

Formal Modeling of Service Session Management .................... 36  
*Minh van Le, B.J.F. van Beijnum, B.L. de Goede*  
(University of Twente, The Netherlands)

## Management of Wireless Multimedia

Network Requirement for Management of Multimedia over Wireless Channel 49  
*Bing Zheng* (New Focus, USA), *Mohammed Atiquzzaman*  
(University of Oklahoma, USA)

Agile Systems Manager for Enterprise Wireless Networks ............... 62  
*Sandeep Adwankar, Venu Vasudevan*  
(Motorola Labs, USA)

System Performance of HiperLAN/2........................................... 77  
*Kamiran Haider, Hamed S. Al-Raweshidy*  
(University of Kent at Canterbury, England)

## Bandwidth Sharing Protocols

Streaming Media Congestion Control Using Bandwidth Estimation ...... 89  
*Nadeem Aboobaker, David Chanady, Mario Gerla, M.Y. Sanadidi*  
(University of California, Los Angeles, USA)

Signaling Protocol for Session-Aware Popularity-Based Resource Allocation, 101  
*Paulo Mendes, Henning Schulzrinne*  
(Columbia University, USA), *Edmundo Monteiro*  
(University of Coimbra, Portugal)
Distributed Video Architectures

A Scalable Video Server Using Intelligent Network Attached Storage .............................. 114
Guang Tan, Hai Jin, Liping Pang (Huazhong University of Science and Technology, Wuhan, China)

On Proxy-Caching Mechanisms for Cooperative Video Streaming in Heterogeneous Environments .................................................... 127
Naoki Wakamiya, Masayuki Murata, Hideo Miyahara (Osaka University, Japan)

Management Systems

Using CORBA’s Advanced Services to Enhance the Integrity of QoS Management Programmable Networks ........................................... 140
Qiang Gu, Alan Marshall (The Queen’s University of Belfast, Ireland)

Remote Multicast Monitoring Using the RTP MIB .............................................. 154
Julian Chesterfield, Bill Fenner, Lee Breslau (AT&T Labs—Research, USA)

Active Technology as an Efficient Approach to Control DiffServ Networks:
The DACA Architecture ............................................................................. 170
Nadjib Achir, Nazim Agoulmine, Mauro Fonseca, Yacine Ghamri-Doudane, Guy Pujolle (Pierre et Marie Curie University, Paris, France)

Efficient Implementation of Packet Scheduling Algorithm on High-Speed Programmable Network Processors ........................................ 184
Weidong Shi, Xiaotong Zhuang, Indrani Paul, Karsten Schwan (Georgia Institute of Technology, USA)

Differentiated Network Services

Distributed Dynamic Capacity Contracting: A Congestion Pricing Framework for Diff-Serv .......................................................... 198
Murat Yuksel, Shivkumar Kalyanaraman (Rensselaer Polytechnic Institute, Troy, USA)

Fair Stateless Aggregate Traffic Marking Using Active Queue Management Techniques ........................................................................ 211
Abhimanyu Das, Debjyoti Dutta, Ahmed Helmy (University of Southern California, USA)

A Dynamic Marking Scheme of Assured Service for Alleviating Unfairness among Service Level Agreements ........................................ 224
Seung-Joon Seok, Seok-Min Hong, Chul-Hee Kang (Korea University, Korea), Sung-Hyuck Lee (Samsung Advanced Institute of Technology, Korea)
Minimizing Transmission Costs through Adaptive Marking in Differentiated Services Networks .................................................. 237
Chen-Khong Tham, Yong Liu (National University of Singapore, Singapore)

Dynamic QoS Adaptation Using COPS and Network Monitoring Feedback 250
Toufik Ahmed, Ahmed Mchaoua (University of Versailles, France), Raouf Boutaba (University of Waterloo, Canada)

User Level Traffic Adaptation

Design and Implementation of an Application Layer Protocol for Reducing UDP Traffic Based on User Hints and Policies .................... 263
William Kulju (IBM Toronto Laboratory, Canada), Hanan Lutfiyya (University of Western Ontario, Canada)

A Management Framework for Service Personalization ............... 276
Govindan Ravindran, Muhammad Jaseemudin, Abdallah Rayhan (Ryerson University, Toronto, Canada)

Efficient Access Using Hierarchical WML Decks for Multimedia Services under Wireless and Mobile Networks ......................... 289
Dae-gum Kim (Korea Telecom, Seoul), Seung-Jin Lee (LG Electronic Inc, Anyang, Korea), Lynn Choi, Chul-Hee Kang (Korea University, Seoul, Korea)

Roaming Scenarios Based on SIP ............................................. 302
Andrea Floris, Luca Veltri (CoRiTeL, Rome, Italy)

Multicast Congestion Control

Low-Weight Congestion Control for Multi-sender Applications ....... 315
Jeremiah Scholl, Peter Parnes (Luleå University of Technology, Sweden)

Routing-Based Video Multicast Congestion Control .................. 328
Jun Peng, Biplab Sikdar (Rensselaer Polytechnic Institute, Troy, USA)

Random Early Detection Assisted Layered Multicast .................. 341
Yung-Sze Gan, Chen-Khong Tham (National University of Singapore, Singapore)

Author Index ................................................................. 355