

International Symposium on Performance Evaluation of Computer and Telecommunication Systems 2007

(SPECTS'07)

**Part of the 2007 Summer Simulation Multiconference
(SummerSim'07)**

**San Diego, California, USA
15-18 July 2007**

ISBN: 978-1-62276-355-9

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571
www.proceedings.com



Some format issues inherent in the e-media version may also appear in this print version.

© 2007 SIMULATION COUNCILS, INC.

Responsibility for the accuracy of all statement in each paper rests solely with the author(s). Statements are not necessarily representative of, nor endorsed by, The Society for Modeling and Simulation International.

Printed by Curran Associates, Inc. (2012)

Permission is granted to photocopy portions of this publication for personal use and for the use of students provided credit is given to the conference and publication. Permission does not extend to other types of reproduction nor to copying for incorporation into commercial advertising nor for any other profit-making purpose. Other publications are encouraged to include 300- to 500-word abstracts or excerpts from any paper contained in this book, provided credits are given to the author and the conference. For permission to publish a complete paper write: The Society for Modeling and Simulation International (SCS), 2598 Fortune Way, Suite I, San Diego, CA 92081, USA.

Additional copies of the Proceedings are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571
curran@proceedings.com
www.proceedings.com/0128.html

or

The Society for Modeling
and Simulation International
2598 Fortune Way, Ste I
Vista, CA 92081 USA
www.scs.org

ISBN: 978-1-62276-355-9
PRINTED IN THE UNITED STATES

TABLE OF CONTENTS

<u>TRACK 1</u>	1
<u>WIRELESS AD-HOC NETWORKS 1</u>	3
SHR: Self-Healing Routing for Wireless Ad Hoc Sensor Networks	5
<i>Joel W. Branch, Mark Lisee, Boleslaw K. Szymanski</i>	
Routing Algorithm based on Swarm Intelligence over a Hap Constellation	15
<i>F. De Rango, M. Tropea, A. Provato, A. F. Santamaria, S. Marano</i>	
<u>WIRELESS AD-HOC NETWORKS 2</u>	23
Energy and Time Trade-Offs in Duplicate Packet Transmission	25
<i>E. Gelenbe, A. Filippopolitis, I. Eid</i>	
Evaluating Energy-aware Behavior of Proactive and Reactive Routing Protocols for Mobile Ad Hoc Networks	33
<i>Marco Fotino, Antonio Gozzi, Juan-Carlos Cano, Carlos Calafate, Floriano De Rango, Salvatore Marano, Pietro Manzoni</i>	
On the Pitfalls of Directional Location-based Randomized Routing	41
<i>Israat Tanzeena Haque, Ioanis Nikolaidis, Pawel Gburzynski</i>	
Impact of Dynamic Channel Assignment on Blocking Probability in Ad-Hoc Wireless Sensor Networks	49
<i>Ammar Muqaddas, Fadi Al-Turjman, Sami Habib</i>	
<u>WIRELESS AD-HOC NETWORKS 3</u>	57
Performance of Routing Protocols for Real Wireless Sensor Networks	59
<i>M. Becker, S. Schaust, E. Wittmann</i>	
Source Extraction in a Bandwidth Constrained Wireless Sensor Network	69
<i>Hongbin Chen, Chi K. Tse, Jiuchao Feng</i>	
Scheduling Method of Wireless I/O Control Network for Factory Automation Systems	76
<i>Dong-Sung Kim, Dong-Hyuk Choi</i>	
Exploiting Markov Chains to Reach Approximate Agreement in Partially Connected Networks	82
<i>Satish M. Srinivasan, Azad H. Azadmanesh</i>	
<u>TRACK 2</u>	91
<u>INTERNET ARCHITECTURE 1</u>	93
Architectural Implications of Performing Network Protocol Processing Closer to the Application	95
<i>Matthew Faulkner, Matthew Jakeman, Stephen Pink</i>	
Performance of Opposite TCP Connections on Asymmetric Capacities	101
<i>Denis Collange</i>	
Router Buffer Re-sizing for Short-lived TCP Flows	109
<i>Takeshi Tomioka, Go Hasegawa, Masayuki Murata</i>	
Packet Loss Recovery of Signaling Traffic in SCTP	117
<i>Per Hurtig, Anna Brunstrom</i>	
<u>INTERNET ARCHITECTURE 2</u>	127
Storage Efficient and Power Optimized TCAM Based Architecture for Forwarding IP Packets	129
<i>Alireza Mahini, Reza Berangi, Hossein Mohtashami, Mohammad Salah Esfahani, Hamidreza Mahini</i>	

Bandwidth Dimension and Capacity Planning of Unicast and Multicast IP Networks	137
<i>Thi-Thanh-Mai Hoang</i>	
Congestion Propagation among Routers in the Internet	145
<i>Kouhei Sugiyama, Hiroyuki Ohsaki, Makoto Imase</i>	
An Integrated Approach for IT Assessment and Optimization of Telecommunication Sectors	151
<i>A. Azadeh, H. Izadbakhsh, A. Bukhari</i>	
<u>ALGORITHMS</u>	159
A New Method for Fast Integer Multiplication and its Application to Cryptography	161
<i>Michael E. Kounavis</i>	
Data Broadcast Scheduling in Wireless Mobile Computing	171
<i>John Tsiligaridis, Raj Acharya</i>	
Small Text Compression	179
<i>Dwight R. Wilcox, B. Scott Jaffa</i>	
Emotions Recognition Based on EEG Time Domain Feature Extraction	187
<i>Ma Li, Abdul Wahab, Teo Kaixiang</i>	
<u>TRACK 3</u>	193
<u>MODELS OF WIRELESS SYSTEMS</u>	195
A Statistical Radio Channel Model for Vegetation Dynamic Effects at 40GHz	197
<i>Sérgio Morgadinho, Rafael F. S. Caldeirinha, Iñigo Cuiñas, Manuel Sánchez</i>	
An Analytical Model for Wireless Networks with Stochastic Capacity	205
<i>Hongxia Sun, S. Dharmaraja, Carey Williamson, Vaneeta Jindal</i>	
Analytical Modeling of Link and Path Dynamics and Their Implications on Packet Length in MANETs	215
<i>Xianren Wu, Hamid R. Sadjadpour, J. J. Garcia-Luna-Aceves</i>	
<u>RADIOWAVE CHARACTERIZATION AND MODELING</u>	225
Performance of Over Constrained Channel Shortening Technique with Receive Diversity for MB-OFDM UWB System	227
<i>Jen-Ming Wu, Hung-Wen Yang</i>	
Performance of Serially Concatenated LDPC Codes	233
<i>Sang Hoon Lee, Joeng Goo Kim, Eon Kyeong Joo</i>	
Markov Chain Channel Modeling based on Degradation Level Concept for Ultra Wideband WPAN	240
<i>Floriano De Rango, Fiore Veltri, Peppino Fazio, Salvatore Marano</i>	
Comparison of Availability Performances of Simulated 850 nm/58 GHz and 850 nm/93 GHz Hybrid Systems	247
<i>Vaclav Kvicera, Martin Grabner</i>	
<u>OPTICAL NETWORKS</u>	255
Burst Variability Management and Modeling in OBS Networks	257
<i>Moez Cherif, Sihem El Fatmi, Noureddine Boudriga, Mohammad S. Obaidat</i>	
Design of Virtual Topologies using the Elitist Team of Multiobjective Evolutionary Algorithms	266
<i>José M. Fernandez Giangreco, Pere Vila, Eusebi Calle, Jose L. Marzo</i>	
Efficient Logical Topology Design for IP over WDM Backbone Networks: MILP and Heuristic Approach	272
<i>Phuong Nga Tran, Ulrich Killat</i>	

<u>TRACK 4</u>	281
<u>QUALITY OF SERVICE 1</u>	283
Feature Selection for Prediction of User-Perceived Streaming Media Quality	285
<i>Amy Cszizmar Dala, Jamie Olson</i>	
Call Server Clusters for Telecommunication Switches	295
<i>Bing Sun, Shikharesh Majumdar, Gerald Kopec</i>	
A Simulation Model to Develop QoS Control Strategies for Application Servers	305
<i>Daniel F. García, Manuel García, Javier García, Joaquín Entrialgo</i>	
Availability and QoS Performance Evaluation of Public IP Networks	315
<i>Tivadar Jakab, Gábor Horváth, Rozália Konkoly, Éva Csákány</i>	
<u>QUALITY OF SERVICE 2</u>	325
Reduced Complexity Algorithms for Cognitive Packet Networks	327
<i>Laurence A Hey</i>	
Traffic Prediction and Resource Allocation: A Statistical Delay Bound Approach	335
<i>Rosario G. Garroppo, Stefano Giordano, Michele Pagano, Gregorio Procissi</i>	
Resource Allocation for VoIP Services in IP Networks: Traffic Analysis, Design and Performance Evaluation	342
<i>Rosario G. Garroppo, Stefano Giordano, Gregorio Procissi, Franco Russo</i>	
<u>NETWORK SERVICES</u>	351
An eMule-like Modifier Strategy Based on Optimization	353
<i>Luca Caviglione, Cristiano Cervellera, Aldo Filippo Grassia, Franco Davoli</i>	
On the Efficiency of Service Discovery for Ubiquitous Computing	359
<i>Su Myeong Lee, Sung Keun Song, Seungwok Han, Hee Yong Youn, We-Duke Cho</i>	
Reliable Multicast: A Probabilistic Study	364
<i>Laurent Nadeau, Tricha Anjali</i>	
<u>TRACK 5</u>	375
<u>WIRELESS NETWORKS: PERFORMANCE, SERVICES, PLANNING 1</u>	377
A Distributed Adaptive Algorithm for QoS In 802.11e Wireless Networks	379
<i>Will Spearman, Jim Martin</i>	
Performance Analysis of Nomadic Mobile Services on Multi-homed Handheld Devices	387
<i>Pravin Pawar, Bert-Jan Van Beijnum, Marten Van Sinderen, Akshai Aggarwal, Frédéric De Clercq</i>	
Developing Agent-Based Biological Ontology Prediction for Resource Allocation Strategy in Cellular Systems	397
<i>Jamal Raiyn, Helena Szczerbicka</i>	
Demand Priority-Based Channel Assignment Algorithm with Borrowing	404
<i>Mona M. Riad El-Ghoneimy</i>	
<u>WIRELESS NETWORKS: PERFORMANCE, SERVICES, PLANNING 2</u>	409
Performance Evaluation of Mobile Phone Services: A Perspective from a Developing Nation	411
<i>Augustine C. Odinna</i>	
The Planning Approach for Interference Networks in QoS Parameters in a WLAN 802.11g	419
<i>Jasmine P. L. Araújo, Josiane C. Rodrigues, Simone G. C. Fraiha, Felipe M. Lamarão, Nandamudi L. Vijaykumar, Gervásio P. S. Cavalcante, Carlos R. L. Francês</i>	
Intelligent Network Functionalities in Wireless 4G Networks	429
<i>Faouzi Zarai, Noureddine Boudriga, Mohammad S. Obaidat</i>	
Performance of Different Methods of Protection in 60 GHz Radio Networks with IP Traffic	435
<i>Dragana Peric, Miroslav Peric, Grozdan Petrovic</i>	

<u>WIRELESS NETWORKS: PERFORMANCE, SERVICES, PLANNING 3</u>	441
M-TCP⁺: Using Disconnection Feedback to Improve Performance of TCP in Wired/Wireless Networks	443
<i>Modupe Omueti, Ljiljana Trajkovic</i>	
Building Empirical Models of Mobile Ad Hoc Networks	451
<i>Abdelhamid Moursy, Ikhlas Ajbar, Dmitri Perkins, Magdy Bayoumi</i>	
Signal Traffic Estimation Layout for Measurement-Based Planning of Location Areas in Mobile Radio Networks	459
<i>Andreas Hecker, Thomas Kürner</i>	
<u>TRACK 6</u>	467
<u>MODELING AND SIMULATION STUDIES 1</u>	469
An Integrated Simulation Environment for the Investigation of Future Indoor THz Communication Systems	471
<i>Thomas Kürner, Martin Jacob, Radoslaw Piesiewicz, Joerg Schoebel</i>	
Simulation and Visualization Method of Wireless Sensor Network Performances	476
<i>T. Antoine-Santoni, J. F. Santucci, E. De Gentili, B. Costa</i>	
A Qualitative Comparison of Power Law Generators	484
<i>Javier Martin Hernandez, Tom Kleiberg, Huijuan Wang, Piet Van Mieghem</i>	
Modeling the Performance of Communication Framework Design Patterns Using Queuing Theory	494
<i>Shruti Gorappa, Raymond Klefstad</i>	
<u>MODELING AND SIMULATION STUDIES 2</u>	503
On System-Level Verification of VLSI Signal Processing	505
<i>Lan-Rong Dung, Tsung-Hsi Chiang</i>	
Spatial Distributions versus Multicast Distributions: Traffic Modeling of Chip Multiprocessor Networks	512
<i>Dietmar Tutsch, Daniel Lüdtke</i>	
Measuring and Modeling an Indoor Powerline Channel	521
<i>I. Val, F. J. Casajús, J. Bilbao, A. Arriola</i>	
Performance Evaluation of Cache Memory: A Simulation-Based Study on Related Design Issues for Embedded Systems	527
<i>Mohsen Soryani, Mohsen Sharif, Mohammad Hossein Rezyani</i>	
<u>TRACK 7</u>	533
<u>DISTRIBUTED SYSTEMS</u>	535
Matching of Independent Jobs on a Computing Grid	537
<i>Navdeep Kaur Kapoor, Shikharesh Majumdar, Biswajit Nandy</i>	
Performance of Gang Scheduling Policies in the Presence of Critical Sporadic Jobs in Distributed Systems	547
<i>Helen D. Karatza</i>	
Performance Models for Desktop Grids	555
<i>Paolo Cremonesi, Roberto Turrin</i>	
Performance Implications of Fluctuating Server Capacity	565
<i>Jingxiang Luo, Carey Williamson</i>	
<u>SECURITY AND TRUST</u>	575
Authorising HIP Enabled Communication	577
<i>Seppo Heikkinen</i>	
Incorporating Trust in the BitTorrent Protocol	586
<i>Purvi Shah, Jehan-François Pâris</i>	

On Evaluating Some Agent-Based Intrusion Detection Schemes in Mobile Ad-Hoc Networks	594
<i>R. Chandraseka, Sudip Misra, Mohammad S. Obaidat</i>	
Performance Analysis of a TTL-Based Dynamic Packet Marking Scheme in IP Traceback	602
<i>Xuan-Hien Dang, Shanmuga S. Devasundaram</i>	
Likelihood Ratios and Recurrent Random Neural Networks in Detection of Denial of Service Attacks	608
<i>Georgios Loukas, Gülay Öke</i>	
Author Index	