

International Symposium on Performance Evaluation of Computer and Telecommunication Systems 2011

(SPECTS 2011)

**2011 Summer Simulation Multiconference – Book 1 of 3
Simulation Series Volume 43 # 4**

**The Hague, Netherlands
27 – 30 June 2011**

Editors:

**Mohammad S. Obaidat
Jose L. Sevillano
Pere Vila**

**Isaac Woungang
Raffaele Bolla
Daniel Cascado**

ISBN: 978-1-61782-309-1

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.

© 2011 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. (2011)

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), 6 Jillicree Avenue, Alexandria, Virginia 22304

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

ISBN: 978-1-61782-309-1
PRINTED IN THE UNITED STATES

PAGE INDEX

Contents	Page	Author(s)
SPECTS 2011 Conference Chairs' Message	iii	Mohammad S. Obaidat and Jose L. Sevillano
Coference Committee	iv	
Technical Program Committee	v	
Modeling and Simulation for Complex Design and Verification	vii	Joachim Fuchs
M&S Standards for Innovative and Affordable NL Armed Forces	viii	Klass Visser
Risk Analysis and Simulation Modeling	xix	Tayfur Altioek
Performance of Grids and Clouds – Challenges and Research Directions	xi	Helen D. Karatza
Design Issues in Time-Driven Sensor Networks	xii	Sebastià Galmés
S01 Wireless and Grid Systems		
A Cache Management Strategy to Replace Wear Leveling Techniques for Embedded Flash Memory	1	Jalil Boukhobza, Pierre Olivier and Stéphane Rubini
Directing Requests in a Large-Scale Grid System based on Resource Categorization	9	Konstantinos Karaoglanoglou and Helen Karatza
Fire monitoring in coal mines using wireless sensor networks: a protocol and its performance evaluation	16	Sudip Misra and Mohammad S. Obaidat
Performance Impact of Job Arrivals on Clusters and Grids through Realistic Model-Based Simulation	22	Ngoc Minh Tran and Lex Wolters
S02 Computer Architecture I		
An Approach using Node Operating Point for Performance Analysis with Network Calculus	30	Kishore Angrishi

Contents	Page	Author(s)
A performance comparison study between synchronous and asynchronous FPGA for spike based Systems.	38	Rafael Paz-Vicente, Elena Cerezuela-Escudero, Manuel Dominguez-Morales, Angel Jimenez-Fernandez, Alejandro Linares-Barranco and Gabriel Jiménez-Moreno
A Program Phase Detection Method based on Architectural Signature for Multicore Processors	46	Hamid Reza Khaleghzadeh and Hossein Deldari
Improving Quality in a Distributed IP Telephony System by the use of Multiplexing Techniques	54	Jenifer Murillo, Jose Saldana, Julián Fernández-Navajas, José Ruiz-Mas, Jose I. Aznar and Eduardo Viruete Navarro
S03 Internet Technologies		
State of the Art of Existing Standards for the Evaluation of Network Performance and Energy Consumption	62	Raffaele Bolla, Roberto Bruschi and Chiara Lombardo
Extrapolation tool for load testing results	69	Subhasri Duttagupta and Rajesh Mansharamani
Self-Reconfiguration Approach for Web-Caches	77	Rachid El Abdouni Khayari, Adisa Musovic, Robert Siegfried and Ingo Zschoch
S04 Networking Technologies		
Performance Analysis of Ubiquitous Web System for SmartPhones	84	Scott Fowler, Anders Peterson and Katrin Hameseder
Network requirements evaluation of a multi-user virtual environment	90	Juan Luis Font, Daniel Cascado, Jose Luis Sevillano, Gema Lopez, Salvador Romero and Gabriel Jimenez
A New Interference Aware On Demand Routing Protocol for Vehicular Networks	98	Peppino Fazio, Floriano De Rango and Cesare Sottile
S05 Computer Architecture II		
Using virtualization for online kernel profiling, code coverage and instrumentation	104	Eviatar Khen, Nezer Jacob Zaidenberg and Amir Averbuch
A Fluid Model for High-End Network Equipment with QoS policied aggregated traffic	111	Raffaele Bolla and Roberto Bruschi

Contents	Page	Author(s)
Energy-Optimal Scheduling in Low Duty Cycle Sensor Networks	119	Nursen Aydin, Mehmet Karaca and Ozgur Ercetin
Dynamic Performance Stubs to Simulate the Main Memory Behavior of Applications	127	Peter Trapp, Markus Meyer and Christian Facchi
S06 Wireless Systems and Networks		
A Simple Nonsaturated IEEE 802.11e EDCA Model	135	Qinglin Zhao, D. H. K. Tsang and Taka Sakurai
Relay Node Insertion in Sparse Time-Driven Wireless Sensor Networks	143	Sebastià Galmés
On the Efficiency of Multicasting for IPTV Delivery over IEEE 802.16j Networks	151	Alireza Abdollahpouri and Bernd E. Wolfinger
Improving the Equal-Spacing Design in IEEE 802.11e HCCA Wireless Networks	160	Li Feng and Jianqing Li
S07 Distributed Architectures		
Performance study of spike visual processing on a Supercomputer.	167	Rafael Montero-Gonzalez, Fernando Perez-Pena, Arturo Moragado-Estevez, Alejandro Linares-Barranco, Miguel Angel Rodriguez-Jodar, Gabriel Jimenez-Moreno and Rafael Paz-Vicente
Comparative Study of Cost Distribution Charging Schemes for Multicast Services	174	Antonio Bueno, Pere Vilà and Ramon Fabregat
Out-of-Order execution in Master/Slave Speculative Parallelization Architecture for Computer Clusters	179	Joan Puiggalí, Teo Jové and Jose Luis Marzo
S08 Tools, Methodologies and Applications I		
Research on Multi-policy Supporting Access Control Model	185	Jing Wang, Lian-xing Jia and Zhi Lin
Decreasing Call Blocking Probability of Broadband TV Services in Networks with Tree Topology	196	Junyu Lai, Bernd E. Wolfinger and Stephan Heckmüller
Towards an Automated Client-Side Framework for Evaluating HTTP/TCP Performance	205	Paul Davern, Noor Nashid, Ahmed Zahran and Cormac J Sreenan

Contents	Page	Author(s)
S09 Tools, Methodologies and Applications II		
LoGPX: A New Communication Model for Message-Passing Programs	213	Yufei Lin, Yuhua Tang, Xiaowei Guo and Xinhai Xu
A New Parallel Recomputing Code Design Methodology for Fault-Tolerant Parallel Algorithm	220	yunfei du, lin peng and keja zha
Bandwidth Efficiency Improvement of Online Games by the use of Tunneling, Compressing and Multiplexing Techniques	227	Jose Saldana, Jenifer Murillo, Julián Fernández-Navajas, José Ruiz-Mas, José I. Aznar and Eduardo Viruete Navarro
S10 Work in Progress I		
Towards Mature Temporal Accuracy Assessment of Processors Models and Simulators for Real-Time Systems Development	235	Rehab Massoud, Mohamed Abdelhalim and Mahmoud Allam
A Conservative Time Management Model with Optimized Degree of Parallelism for Distributed Simulation	241	Zexin JIANG, Wei DONG and Yindong JI
A SystemC-AMS Simulation Environment for the Evaluation of Energy Harvesting Wireless Sensor Networks	247	Leander Bernd Hörmann, Philipp Maria Glatz, Christian Steger and Reinhold Weiss
S11 Work in Progress II		
Influence of the Router Buffer on Online Games Traffic Multiplexing	253	Jose Saldana, Julián Fernández-Navajas, José Ruiz-Mas, José I. Aznar, Eduardo Viruete and Luis Casadesus
A Reconfiguration Technique for Area-efficient Network-on-Chip Topologies	259	Alexander Logvinenko and Dietmar Tutsch
Design of a Flexible and Scalar Hypervisor Module for Simulating Cloud Computing Environments	265	Alberto Núñez, Gabriel González, Jose Vázquez-Poletti, Agustín Caminero, Jesús Carretero and Ignacio Llorente
Author Index	271	