4th International ICST Conference on Performance Evaluation Methodologies and Tools

(VALUETOOLS 2009)

Pisa, Italy
20 – 22 October 2009

Editors:

G. Stea **J. Mendes**
J. Mairesse

ISBN: 978-1-63439-404-8

Printed from e-media with permission by:

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

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

Copyright© (2009) by The Institute for Computer Sciences,
Social Informatics and Telecommunications Engineering (ICST)
All rights reserved.

Printed by Curran Associates, Inc. (2014)

For permission requests, please contact European Alliance for Innovation (EAI)
at the address below.

European Alliance for Innovation (EAI)
c/o Volha Shaparava , Dr
Publications
Via alla Cascata 56/D - 38123 Povo,
Trento - Italy

publications@eai.eu

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2634
Email: curran@proceedings.com
Web: www.proceedings.com

TABLE OF CONTENTS

A Random Walk Model for Infection on Graphs 1
A. Ganesh, M. Draief

Network Calculus and Queueing Theory: Two Sides of One Coin 9
Y. Jiang

Parallelising a Simulator for the Analysis of Electromagnetic Radiation Using MUMPS Library 21
R. Lopez, V. Cabanas, R. Diaz, L. Garcia-Castillo, I. Gomez-Revuelto, J. Acebron

Heavy Traffic Steady State Approximations in Stochastic Networks with Levy Inputs 27
J. Haddad, R. Mazumdar

A Mean Field Approach for Optimization in Particle Systems and Applications 32
N. Gast, B. Gaujal

An Information-theoretic Look at MIMO Energy-efficient Communications 42
E. Belmega, S. Lasaulce

Complex Synchronizations in Markovian Models: A Tensor-based Proof of Product Form 52
T. Thi, J. Fourneau

A Game Theoretic Framework for joint Routing and Pricing in Networks with Elastic Demands 62
E. Altman, J. Elias, F. Martignon

Estimating Service Resource Consumption From Response Time Measurements 72
S. Kraft, S. Pacheco-Sanchez, G. Casale, S. Dawson

Throughput Loss in Task Scheduling due to Server State Uncertainty 82
C. Chan, N. Bambos

Measuring the Utility/Path Diversity Trade off in Multipath Protocols 92
F. Hunt, V. Marbukh

Asymptotic End-to-end Stochastic Evaluation for Tandem Networks with Many Flows 99
K. Kobayashi, Y. Takahashi, H. Takada

Population Effects in Multiclass Processor Sharing Queues 108
A. Tahar, J. Alain

The Concert/Cafeteria Queueing Problem: A Game of Arrivals 118
S. Juneja, R. Jain

Simulation Modeling of Secure Wireless Sensor Networks 124
T. Vu, C. Williamson, R. Safavi-Naini

Reliable and Secure Broadcast Communication Over Resource Constrained Systems 134
A. Kherani, S. Muthaiah, D. Bhattacharya, S. Padhy

Analytical Modeling Of Swarm Intelligence In Wireless Sensor Networks Through Markovian Agents 144
D. Bruneo, A. Bobbio, D. Cerotti, M. Scarpa, M. Gribaudo

Interfaces and Binding in Component Based Development of Formal Models 154
G. Franceschinis, M. Gribaudo, M. Iacono, S. Marrone, F. Moscato, V. Vittorini

A Power-Law Graph as a Distributed Hash Table with Quick Search and Small Tables 164
H. Reittu, I. Norros

Analysis of a TCP System under Polling-Type Reduction-Signal Procedures 174
O. Czerniak, E. Altman, U. Yechiali

From Partially to Fully Lumped Markov Chains in Stochastic Well Formed Petri Nets 180
S. Baarir, M. Beccuti, G. Franceschinis, C. Dutheillet

New Stochastic Network Calculus for Loss Analysis 190
A. Gulyas, J. Biro, F. Nemeth

Hybrid Simulation of Biochemical Systems Using Hybrid Adaptive Petri Nets 200
H. Yang, C. Lin, Q. Li

Response Time Distributions and Network Perturbation into Product-form 210
P. Harrison, M. Vigliotti

Spatial Fairness in Wireless Multi-Access Networks 219
P. Ven, J. Leeuwaarden, D. Denteneer, A. Janssen

Using Bulk Arrivals to Model I/O Request Response Time Distribution in Zoned Disks and RAID Systems 226
A. Lebrecht, N. Dingle, P. Harrison, W. Knottenbelt, S. Zertal

Enhanced Inferencing: Estimation of a Workload Dependent Performance Model 236
D. Kumar, L. Zhang, A. Tantawi

A Performance Experiment System Supporting Fast Mapping of System Issues 246
M. Mroz, G. Franks

Stability Properties of Linear File-Sharing Networks 256
L. Leskela, P. Robert, F. Simatos
Utility Optimization in Congested Queueing Networks 258
N. Watson
Regenerative Systems - Challenges and Opportunities for Modeling, Simulation and Visualization 260
A. Uhrmacher, H. Schulz, H. Schumann, L. Schwabe, D. Timmermann
A Practical View of Randomized Quasi-Monte Carlo 270
P. L'Ecuyer
A Scaling Framework for the Many Flows Asymptotic, through Large Deviations 274
J. Cruise
A Recursive Formula for Estimating the Packet Loss Rate in IP Networks 276
T. Bonald
COINC Library: A Toolbox for the Network Calculus 278
A. Bouillard, L. Hardouin, B. Cottenceau, S. Lagrange, B. Gaujal, M. Lhommeau
Community Detection Algorithms: A Comparative Analysis 280
S. Fortunato, A. Lancichinetti
Finding Structure in Blogs: Bipartite Networks Analysis 282
B. Tadic, M. Mitrovic
End-to-End Delay Analysis for Networks with Partial Assumptions of Statistical Independence 284
F. Ciucu
Author Index