2016 17th International Telecommunications Network Strategy and Planning Symposium (Networks 2016)

Montreal, Quebec, Canada 26-28 September 2016



IEEE Catalog Number: ISBN:

CFP16568-POD 978-1-4673-8992-1

Copyright © 2016 by the Institute of Electrical and Electronics Engineers, Inc All Rights Reserved

Copyright and Reprint Permissions: Abstracting is permitted with credit to the source. Libraries are permitted to photocopy beyond the limit of U.S. copyright law for private use of patrons those articles in this volume that carry a code at the bottom of the first page, provided the per-copy fee indicated in the code is paid through Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

For other copying, reprint or republication permission, write to IEEE Copyrights Manager, IEEE Service Center, 445 Hoes Lane, Piscataway, NJ 08854. All rights reserved.

***This publication is a representation of what appears in the IEEE Digital Libraries. Some format issues inherent in the e-media version may also appear in this print version.

 IEEE Catalog Number:
 CFP16568-POD

 ISBN (Print-On-Demand):
 978-1-4673-8992-1

 ISBN (Online):
 978-1-4673-8991-4

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) 758-2633

E-mail: curran@proceedings.com Web: www.proceedings.com



Networks 2016 - Table of Contents

Session 2 - Optimization I

1 Packet Routing and Frame Length Optimization in Wireless Mesh Networks with Multicast Communications

Artur Tomaszewski (Warsaw University of Technology, Poland) Michał Pióro (Warsaw University of Technology, Poland & Lund University, Sweden)

7 3G/4G load-balancing optimization for mobile network planning

Matthieu Chardy, Mariem Ben Yahia, and Yu Bao (Orange Labs, France)

13 Modeling and Optimization of Content Delivery Networks with heuristics solutions for the Multidimensional Knapsack Problem

Veronica Quintuna (Orange Labs, France) Maxime Laye (Orange, France)

19 Towards Automatic Performance Optimization of Networks Using Machine Learning

Fabien Geyer (Airbus Group Innovations, Germany) Georg Carle (Technische Universität München, Germany)

Session 3 - Invited Presentations

25 Elements of techno-economic modelling for the planning, provisioning and operation of virtualized networks (Invited 1)

Robin Bailey (Implied Logic Limited, UK)

Session 4A - Security

31 Embedding Security and Privacy into the Development and Operation of Cloud Services (Invited 5)

Tran Quang Thanh, Stefan Covaci, and Thomas Magedanz (Technical University Berlin, Germany) Panagiotis Gouvas and Anastasios Zafeiropoulos (Ubitech Ltd., Athens, Greece)

37 Security Analysis of OpenDayLight, ONOS, Rosemary and RYU SDN Controllers

Ramachandra Kamath Arbettu (Technische Universität Darmstadt, Germany) Rahamatullah Khondoker, Kpatcha Bayarou, and Frank G. Weber (Fraunhofer Institute for Secure Information Technology, Germany)

45 Evaluation of EAP Re-authentication Protocol (ERP)

Piotr Pacyna and Rafal Chrabaszcz (AGH University of Science and Technology, Poland)

50 Adaptive Bubble Burst (ABB): Mitigating DDoS Attacks in Software-Defined Networks

Danish Sattar, Ashraf Matrawy, and Olufemi Adeojo (Carleton University, Canada)

Session 4B - Planning

56 Walk test simulator for LTE/LTE-A network planning

Diego Castro-Hernandez and Raman Paranjape (University of Regina, Canada)

62 Volume-based Pricing in Stackelberg Duopoly Wireless Markets

Behdad Heidarpour (École de Technologie Supérieure, Canada) Shahin Vakilinia (Synchromedia, Canada) Zbigniew Dziong (École de Technologie Supérieure, Canada)

68 Global Queue Management for the Provision of QoS in Computer Networks

Rossano P. Pinto (School of Technology of Americana - Centro Paula Souza, Brazil)

Session 7A - Infrastructures and services

75 Estimates of the economic impact of energy savings in the E2E chain for Video on Demand service

Kinga Pilarska (Orange LabS Networks, Poland)

Nancy Perrot (Orange Labs, France)

Bernard Liau (France Telecom, France)

81 Real-Time Optimized NFV Architecture for Internetworking WebRTC and IMS

Duong Tuan Nguyen, Kim Khoa Nguyen, Saida Khazri, and Mohamed Cheriet (École de Technologie Supérieure, Canada)

89 Non-intentional mobility of data sessions across mobile networks while roaming because of operators' mobile DNS architecture

Guillaume Boulmier (Orange Labs, France)

95 On the Relationship between Packet Jitter and Buffer Loss Probabilities

Hadhami Dbira (École polytechnique de Montréal, Canada)

Andre Girard (INRS-EMT and GERAD, Canada)

Brunilde Sansò (École polytechnique de Montréal, Canada)

Session 7B - Optimization II

101 Reward-based Online Routing and Spectrum Assignment in Flex-grid Optical Networks

Ronald Romero Reyes and Thomas Bauschert (Technische Universität Chemnitz, Germany)

109 Optimisation for Energy Reduction of Aerial Backhauled Networks Based on Cluster Aggregation Stanislas Francfort (Orange Labs, France)

115 Ultra broadband network performance in a multi operator scenario

Alessandro Valenti and Arianna Rufini (Fondazione Ugo Bordoni, Italy)

Guido Maier and Giacomo Verticale (Politecnico di Milano, Italy)

Stefano Penna (Istituto Superiore delle Comunicazioni - Ministry of Economic Development, Italy)

Vincenzo Attanasio (Iscom, Italy)

Session 8 - Invited Presentations

121 ILP Modeling of Flexgrid SDM Optical Networks (Invited 3)

Krzysztof Walkowiak, Mirosław Klinkowski, and Piotr Lechowicz (Wrocław University of Technology, Poland) Arunabha Sen (Wrocław University of Technology, Poland, and Arizona State University, USA)

127 A Taxonomy of Challenges to Resilient Message Dissemination in VANETs (Invited 4)

Jacek Rak (Gdansk University of Technology, Poland)

Magnus Jonsson and Alexey Vinel (Halmstad University, Sweden)

Session 9A - Software Defined Networks (SDN)

133 Software Architecture for Hybrid Electrical/Optical Data Center Network

Victor Mehmeri and Juan Jose Vegas Olmos (Technical University of Denmark, Denmark)
Idelfonso Tafur Monroy (Technical University of Denmark, Denmark & ITMO University, Russia)

138 Energy-Efficient Load Balancing in a SDN-based Data-Center Network

Yannick Carlinet and Nancy Perrot (Orange Labs, France)

144 Dynamic Priority-adjustment for Real-time Flows in Software-defined Networks

Namwon An and Taejin Ha (Gwangju Institute of Science and Technology, Korea) Kyung-Joon Park (DGIST, Korea) Hyuk Lim (Gwangju Institute of Science and Technology, Korea)

150 Adaptive Consistency for Distributed SDN Controllers

Mohamed Aslan and Ashraf Matrawy (Carleton University, Canada)

158 Performance Analysis of Resource Pooling for Network Function Virtualization

Veronica Quintuna and Fabrice M. Guillemin (Orange Labs, France)

Session 9B - Quality of Service (QoS)

164 Towards the Analysis of Transient Phases with Stochastic Network Calculus

Michael A. Beck (University of Kaiserslautern, Germany)

170 Supervised Learning Based Automatic Adaptation of Virtualized Resource Selection Policy

Takaya Miyazawa and Hiroaki Harai (National Institute of Information and Communications Technology, Japan)

176 Quality of Service monitoring adopting correlation among active and passive measurements: The experience from the FP7 mPlane project

Francesco Matera, Edion Tego, Arianna Rufini, and Alessandro Valenti (Fondazione Ugo Bordoni, Italy)
Marco Mellia and Stefano Traverso (Politecnico di Torino, Italy)

Ehran Kahveci and Mercedes Scarpino (Fastweb, Italy)

Fabrizio Invernizzi (TIM, Italy)

182 Network Management Based QoE Estimation for Adaptive Streaming over HTTP

Phan Tan and Eiji Kamioka (Shibaura Institute of Technology, Japan)

Session 11A - Network Design

188 Requirement Modeling Language for the Dynamic Node Integration Problem

Yu Nakayama and Kaoru Sezaki (The University of Tokyo)

195 Intelligent Configuration of the Limitation Mechanism in Flow-Aware Networks

Robert Wójcik and Jerzy Domżał (AGH University of Science and Technology, Poland)

199 Resource Survivability for Multicast in Elastic Optical Networks

Dylan A.P. Davis and Vinod M. Vokkarane (University of Massachusetts Lowell, USA)

207 Aircraft harness measurement campaign and investigations on introducing one pair Ethernet

Alexandros Elefsiniotis and Sebastian Hahn (Airbus Group Innovations, Germany)

213 Virtual Topologies for Topology Abstraction Service for IP-VPNs

Lavanya Sivakumar (SRM Research Institute, SRM University, India) Jayaram Balabaskaran (VIT University, India)

Krishnaiyan Thulasiraman (University of Oklahoma, USA)

S. Arumugam (Kalasalingam University, India)

Session 11B - Wireless networks

221 A Coalitional Game for Femtocell Clustering in OFDMA Macro-femtocell Networks

Katty Rohoden-jaramillo (École de Technologie Supérieure, Canada) Rebeca Estrada (Electrical Engineering and Computer Science Faculty, ESPOL, Ecuador) Hadi Otrok (Khalifa University of Science, Technology & Research, KUSTAR, Abu Dhabi, UAE) Zbigniew Dziong (École de Technologie Supérieure, Canada)

227 User cooperation mechanism for temporal traffic smoothing in mobile networks Yusuke Tanaka and Ryoichi Shinkuma (Kyoto University, Japan) Eiji Takahashi and Takeo Onishi (NEC Corporation, Japan)

Joint Path Relay Selection in 5G Multi-hop Relay Networks

Abderrahmane BenMimoune and Kadoch Michel (École de Technologie Supérieure, Canada)

238 Precise and Fast interactive Area QoE Management Framework toward 5G Era Takashi Satake (NTT, Japan)