

2010 14th International Telecommunications Network Strategy and Planning Symposium

(NETWORKS 2010)

Warsaw, Poland
27 – 30 September 2010



IEEE Catalog Number: CFP10568-PRT
ISBN: 978-1-4244-6704-4

TABLE OF CONTENTS

TECHNICAL SESSION I – OPTICAL NETWORK DESIGN AND MANAGEMENT

Photonic Technologies for New Generation Network.....	1
<i>N. Wada, H. Furukawa</i>	
Investigating the Interoperability between Packet and Optical Transport Platforms: "Black Link" (ITU-T G.698.2) and Alternatives	4
<i>M. Fricke, J. Rose, R. Herber, R. Ries</i>	
Shared Protection of Demands with Physical Impairment Constrained Routing.....	7
<i>T. Cinkler, P. Soproni, G. Sallai</i>	
Lightpath Design & Management Tool for IP-over-CWDM Networks with ROADM.....	13
<i>Y. Katsuyama, R. Zahilah, Y. Ogino, S. Nishiuma, M. Nooruzzaman, O. Koyama</i>	

TECHNICAL SESSION II – QUALITY OF SERVICE

Modeling and Computing End-to-End Key Performance Indicators for Voice Over IP Services	
Availability.....	19
<i>M. Chardy, A. Lauret, S. Senecal</i>	
Analysis and Monitoring of End-user Perceived QoS in Mobile Networks	25
<i>A. Kajackas, A. Vindasius</i>	
A Basic Study of the Flow Admission Control of Mixed Loss and Delay System Based on Equality of Heterogeneous Traffic	29
<i>S. Miyata, K. Yamaoka</i>	
FPGA Implementation of the MMRSS Scheduling Algorithm for VOQ Switches	35
<i>W. Kabacinski, A. Baranowska, L.R. Poznan</i>	

TECHNICAL SESSION III – OPTIMIZATION TECHNIQUES FOR OPTICAL NETWORKS – HOW TO BUILD MOST EFFICIENT NETWORKS

Multiperiod Planning for Optical Networks.....	41
<i>D.A. Schupke, C. Kronberger</i>	
Design of Optical WDM Networks	47
<i>A. Benhamiche, A.R. Mahjoub, N. Perrot</i>	
Joint Optimization of Anycast and Unicast Flows in Survivable Optical Networks	54
<i>K. Walkowiak, J. Rak</i>	

TECHNICAL SESSION IV- NETWORK SECURITY

A Diameter based Testing System in Next Generation Mobile Network	60
<i>T.Q. Thanh, D. Vingarzan, Y. Rebai, T. Magedanz</i>	
A Theoretical Signaling Game Model For Intrusion Detection In Wireless Sensor Networks	65
<i>M. Estiri, A. Khademzadeh</i>	
High Performance DFA-based String Matching.....	71
<i>J. Kim</i>	
Information Hiding Using Improper Frame Padding	77
<i>B. Jankowski, W. Mazurczyk, K. Szczypiorski</i>	

TECHNICAL SESSION V – ADVANCES IN NETWORK MANAGEMENT

Use of Cross Layer Interactions for Detecting Denial of Service Attacks in WMN	83
<i>D. Bansal</i>	
Proactive Recovery Method Against Multiple Network Failures with Overlay Networking Technique	89
<i>T. Horie, G. Hasegawa, M. Murata</i>	

Towards Interdomain Transit Traffic Reduction in Peer-assisted Content Delivery Networks	95
<i>H. Asai, H. Esaki</i>	

TECHNICAL SESSION VI – ECONOMIC ASPECTS OF NETWORK DESIGN

The Network as a Service: A Primer on the Fundamentals of Network Economics	101
<i>R.J. Bailey</i>	
Dynamic Migration Planning towards FTTH	107
<i>R. Zhao, L. Zhou, C.M. Machuca</i>	
Multi-layer Aspects in Modeling Bandwidth Trading	113
<i>W. Stanczuk, J. Lubacz</i>	
Migration to VoIP over Mobile Networks: Technical Challenges and Economic Opportunity Analysis	118
<i>B. Badard, V. Diascorn, G. Boulnier, A.D. Vicard, V. Renard, A.H. Dimassi</i>	

TECHNICAL SESSION VII – ROUTING IN FUTURE GENERATION NETWORKS

Dynamic Unattended Measurement Based Routing Algorithm for DiffServ Architecture	125
<i>M. Czarkowski, S. Kaczmarek</i>	
Differentiated Crosslayer Network Mapping in Multilayered Network Architectures	131
<i>P. Pacharintanakul, D. Tipper</i>	
Link Load Balancing Optimization of Telecommunication Networks: a Column Generation based Heuristic Approach	137
<i>D. Santos, A. De Sousa, F. Alvelos, M. Pioro</i>	
Schedulilng Content Multicast Trees with Minimal Repetitions	143
<i>S. Bessler, L.F. Lang, N. Musliu</i>	

TECHNICAL SESSION VIII – NETWORK MANAGEMENT

IMS Management based eTOM Framework for Multimedia Service	149
<i>B. Raouyane, M. Bellafkih, M. Errais, M. Ramdani</i>	
Operations Impact Analysis for Applications Onboarding Strategies	155
<i>S. Izzo, L.E. Matthews, V. Katkar</i>	
Remote DHCPv6 Autoconfiguration for Mobile IPv6 Nodes	160
<i>T. Mrugalski, J. Wozniak, K. Nowicki</i>	
Developing Network Configuration Management Database System and its Applications: Data Federation for Network Management	167
<i>H. Yamada, T. Yada, H. Nomura</i>	

TECHNICAL SESSION IX – ECONOMIC EVALUATION OF NEW SOLUTIONS

Economics of a Convergent Optical Backbone Transport with NG-OTN	173
<i>M. Mezhoudi, Y. Hu</i>	
Multicommodity Exchange Model for Trading Bandwidth in Undirected Networks	179
<i>P. Kacprzak, M. Kaleda, K. Koltys, P. Palka, K. Pienkosz, E. Toczyłowski, I. Zoltowska</i>	
COSTA: A Model to Analyze Next Generation Broadband Access Platform Competition	184
<i>A. Vergara, A. Moral, J. Perez</i>	
CAPEX Savings of Homing Architectures Considering OTN Equipment	190
<i>E. Palkopoulou, D.A. Schupke, T. Bauschert</i>	

TECHNICAL SESSION X – ROUTING METHODS AND ALGORITHMS: OPTIMIZING RESOURCE EFFICIENCY, ROBUSTNESS, AND COSTS

Multicast Routing Algorithm for Packet Networks with the Application of the Lagrange Relaxation	196
<i>M. Piechowiak, M. Stasiak, P. Zwierzynski</i>	
Volume Oriented Routing	202
<i>M. Zottkiewicz, W. Ben-Ameur</i>	
Optimized IP-Based vs. Explicit Paths for One-to-One Backup in MPLS Fast Reroute	209
<i>M. Pioro, A. Tomaszewski, C. Zukowski, D. Hock, M. Hartmann, M. Menth</i>	

TECHNICAL SESSION XI – SERVICES AND NETWORK MIGRATION TOWARDS NGN

An Integrated Planning Tool for Next Generation Network Modelling.....	215
<i>R.J. Harris, D.G. Bailey</i>	
Assessment of the Next Generation Mobile Network Candidate Technologies	221
<i>S. Berg, A. Chrestin, A. Schieder, D. Springer</i>	
Integrated Optimization of Aggregation and Core for Varying NGN Architectures	228
<i>U. Menne, R. Wessaly, M. Martens, A. Bley</i>	
PSTN Services Migration to IMS: Are SPs Finally Reaching the Tipping Point for Large Scale Migrations?	234
<i>J. Joseph</i>	

TECHNICAL SESSION XII – TRENDS IN NETWORK PLANNING

The Mobile Data Explosion and New Approaches to Network Planning and Monetization.....	240
<i>R. Thanawala, M. El-Sayed, T. Morawski, A. Mukhopadhyay, J. Zhao, C. Urrutia-Valdes</i>	
Evaluation of HTTP Video Classification Method Using Flow Group Information	244
<i>K. Takeshita, T. Kurosawa, M. Tsujino, M. Iwashita, M. Ichino, N. Komatsu</i>	
Performance Evaluation of a Method to Reduce Inter-ISP Transit Cost Caused by Overlay Routing	250
<i>K. Matsuda, G. Hasegawa, S. Kamei, M. Murata</i>	
Analyzing Influence of Network Topology on Designing ISP-operated CDN.....	256
<i>N. Kamiyama, T. Mori, R. Kawahara, S. Harada, H. Hasegawa</i>	

TECHNICAL SESSION XIII – EVOLUTION AN FUTURE GENERATION WIRELESS SYSTEMS

Routing Tree Construction in WiMAX Mesh Networks.....	262
<i>J.C. Nowinski, P. Gajowniczek</i>	
Experience from the Implementation and Use of the IEEE 802.21 Media Independent Handoff Mechanism	267
<i>M. Bozek, P. Pacyna</i>	
Model of the Cellular Network Servicing Multicast Connections in Iub and WCDMA Resources.....	273
<i>D. Pariewicz, M. Stasiak, P. Zwierzykowski</i>	
Analytic Uplink Cell Load Approximation for Planning Fractional Power Control in LTE Networks.....	279
<i>K. Majewski, M. Koonert</i>	

TECHNICAL SESSION XIV – OPTIMIZATION IN NETWORK PLANNING INCLUDING RESILIENCE

VI-Box - Virtualized Internets-in-a-Box: A Tool for Network Planning Experimentation.....	286
<i>B. Melander, J. Mangs, M. Johansson, D. Oman</i>	
Service Availability Analysis of GMPLS Network.....	292
<i>J. Korniak, P. Rozyci</i>	
Design of Path-Segment-Protecting p-Cycles in Survivable WDM Mesh Networks.....	297
<i>B. Jaumard, H. Li, S. Sebbah</i>	
LCR Solution for Performance and Cost-efficient Inter-domain Traffic Distribution.....	303
<i>M. Kantor, P. Cholda, A. Jajszczyk</i>	

TECHNICAL SESSION XV – ADVANCES IN WIRELESS NETWORKS

Support Mobility for Future Internet	309
<i>J. Hou, Y. Liu, Z. Gong</i>	
A New Clustering Algorithm for MANETs	315
<i>K. Drira, H. Kheddouci</i>	

TECHNICAL SESSION XVI – NEXT GENERATION NETWORK PLANNING

A Note on Joint Optimal Transmission Range Assignment and Sensor Deployment for Wireless Sensor Networks	321
<i>A. Gogu, D. Nace, Y. Challal</i>	
On the Design Problem of Two-Level IP Networks	327
<i>S. Chamberland</i>	
Kalman Filter based Capacity Adaptation for Network Profit Maximization	333
<i>C. Tran, Z. Dziong</i>	
Packing Problems in the Dimensioning of GMPLS-Controlled SDH Networks	339
<i>T. Karasz, L. Bajzik, Z. Lakatos, T. Jakab</i>	
Author Index	