# Table of Contents

**Preface** ........................................................................................................................................................... xiii

**Committees** .................................................................................................................................................. xv

**Reviewers** .................................................................................................................................................... xxi

### ICNS 1: SERVI I

- An Automatic-Payment Parking Service Integrated within the 3G-IMS Architecture ................................................................. 1  
- Constraint-Based Dynamic Conversations .................................................................................................................. 7  
  Diletta Cacciagrano, Flavio Corradini, Rosario Culmone, and Leonardo Vito
- A Model for Enabling Context-Adapted Deployment and Configuration Operations for the Banking Environment ................................................................. 13  
  Félix Cuadrado, Juan C. Dueñas, Rodrigo García, and José L. Ruiz
- Adaptive Quality of Service in Voice over IP Communications ................................................................................. 19  
  Nelson Costa and Mário Serafim Nunes

### ICNS 2: SERVI II

- Implementing Endpoint Services Using the SIP Servlet Standard .................................................................................. 25  
  Eric Cheung
- Supporting High-Tech Crime Investigation through Dynamic Service Integration ............................................................ 31  
  Cezary Mazurek, Maciej Stroński, Dariusz Walczak, and Marcin Wolski
- A New Approach for Semantic Web Service Discovery and Propagation Based on Agents .................................................. 37  
  Azadeh Ghari Neiat, Mehran Mohsenzadeh, Sajjad Haj Shavalady, and Amir Masoud Rahmani
User Preferences-Based Automatic Device Selection for Multimedia User Tasks in Pervasive Environments .................................................................43

Hamid Mukhtar, Djamel Belaïd, and Guy Bernard

ICNS 3: SERVI III
Measuring Performance Metrics of WS-BPEL Service Compositions .................................................................49

Branimir Wetzstein, Steve Strauch, and Frank Leymann
Multicast TV over WLAN in a University Campus Network ........................................................................57

Alejandro Canovas, Fernando Boronat, Carlos Turro, and Jaime Lloret
BPEL Fragments for Modularized Reuse in Modeling BPEL Processes ............................................................63

Zhilei Ma and Frank Leymann

ICNS 4: EDNA
Design, Implementation and Performance Evaluation of a Home Agent Redundancy Solution .................................................................69

Vincent Gay, Tobias Hof, Vincent Perrier, and Eric Robert
Optical WDM Mesh Networks with Dedicated Optical Path Protection with Finite Differences .................................................................76

Stefanos Mylonakis
The Effect of the Complex Topology on the Robustness of Spanish SDH Network .................................................................86

J. P. Ćardenas, R. M. Benito, M. L. Mouronte, and V. Feliu
The Use of Reciprocal Trade as a Model of Sharing Resources in P2P Networks .................................................................91

Luiz G. L. Moura Carlo, E. T. Oliveira Felipe, and M. G. França

ICNS 5: COMAN I
Novel Queue-Grouping Based Round-Robin Protocols for Reducing Collision of OBS Ring Networks .................................................................97

Li-Mei Peng, Bing-Bing Li, Won-Hyuk Yang, Young-Chon Kim, and Xin-Wan Li
Survey of Wireless Sensor Networks Simulation Tools for Demanding Applications .................................................................102

Markko Korkalainen, Mikko Sallinen, Niilo Kärkkäinen, and Pirkka Tukeva
Fairness in Double Star Ad Hoc Networks ..............................................................................................................107

Abderrahim Makhlouf, Marc Gilg, and Pascal Lorenz
Real-Time Context-Aware Network Security Policy Enforcement System (RC-NSPES) .................................................................112

ICNS 6: COMAN II
A Practical Method for Testing High-Speed Networking Hardware
Architectures .............................................................................................................................................122
  Vukasin Pejović, Slobodan Bojanić, Carlos Carreras, and Atta Badii
Detection of Trial and Error Traffic Engineering with BGP-4 .................................................................131
  Pedro A. Aranda Gutiérrez
Advanced Hash Algorithms with Key Bits Duplication for IP Address Lookup ........................................137
  Christopher Martinez and Wei-Ming Lin
Architecture and Principles for the Customer Self-Service Management in Telecommunication ..............143
  Boban Panajotovic and Borislav Odadzic

ICNS 7: COMAN III
Proactive Future Internet: Smart Semantic Middleware for Overlay Architecture ........................................149
  Vagan Terziyan, Dmytro Zhovtobryukh, and Artem Katasonov
Transmission Scheduling in Wireless Networks with SINR Constraints ....................................................155
  Evelina Klerides and Themistoklis Charalambous
Measuring Botnet Size by Using URL and Collaborative MailServers .....................................................161
  Jun Hu, Zhitang Li, Dezhong Yao, and Junfeng Yu

ICNS 8: COMAN IV
How Do Privatization and Competition Impact China Telecommunications Performances? ..................165
  Jian Cui, Peishan Lin, and Shoulian Tang
DARC: A Dynamic Architecture for Reconfiguration of Web Servers Clusters ........................................169
  Carla Katarina M. Marques, Sergio Ilarri, and Giovanni C. Barroso
NBK: A Novel Neighborhood Based Key Distribution Scheme for Wireless Sensor Networks ..................175
  Kaiping Xue, Wanxing Xiong, Peilin Hong, and Hancheng Lu
IEEE 802.16 Access Network in End to End Environment - Experimental Testbed .....................................180
  Eugen Borcoci, Radu Lupu, and Serban Obreja
IP Telephony Development and Performance over IEEE 802.11g WLAN ............................................186
  Miguel Edo, Miguel Garcia, Carlos Turro, and Jaime Lloret

ICNS 9: ENCOT I
Dynamic Pricing Based Congestion Control over Wireless Mesh Network ..............................................192
  Rong He, Xuming Fang, and Changsheng Wu
Analysis and Experimental Evaluation of Data Plane Virtualization with Xen ........................................198
  Fabienne Anhalt and Pascale Vicat-Blanc Primet
A New Efficient Multiple Broadcasters Signcryption Scheme (MBSS) for Secure Distributed Networks ..........................................................204
H. Elkamchouchi, M. Nasr, and Roayat Ismail
Evaluation of Free-Riding Traffic Problem in Overlay Routing and Its Mitigation Method ...........................................................................................................210
Go Hasegawa, Yuichiro Hiraoka, and Masayuki Murata

ICNS 10: ENCOT II

Exploiting Actuator Mobility for Energy-Efficient Data Collection in Delay-Tolerant Wireless Sensor Networks ..............................................................216
Xu Li, Amiya Nayak, and Ivan Stojmenovic
A Component Modular Modeling Approach Based on Object Oriented Petri Nets for the Performance Analysis of Distributed Discrete Event Systems ..........................................................222
Aladdin Masri, Thomas Bourdeaud’huy, and Armand Toguyeni
Protecting Scalable Video Flows from Congestion Loss ..................................................228
Bjørnar Libæk and Øivind Kure
Efficiency and Benefits of Wireless Network Segregation ........................................235
Athanasios Paraskelidis and Mo Adda

ICNS 11: ENCOT III

Performance Study of New OBS Channel Scheduling Algorithms in a Multiservice Network .........................................................................................242
M. A. Aydin, T. Atmaca, O. C. Tuna, and H. Zaim
Impact of Advertisements during Channel Zapping on Quality of Experience .................249
B. E. Godana, R. E. Kooij, and O. K. Ahmed
Security Solution for Mobile Ad Hoc Network of Networks (MANoN) ..................................255
Ali H. Al-Bayatti, Hussein Zedan, and Antonio Cau
Mobile WiMAX Handover Performance Evaluation ..........................................................263
Mikko Majanen, Pekka H. J. Perälä, Thomas Casey, Jari Nurmi, and Nenad Veselinovic

ICNS 12: ENCOT IV

Self-Configuration of Spontaneous Networks by Context-Aware Mechanisms .......................270
Raquel Lacuesta Gilaberte and Lourdes Peñalver Herrero
Empirical Analysis and Ranging Using Environment and Mobility Adaptive RSSI Filter for Patient Localization during Disaster Management .................................276
Ashok-Kumar Chandra-Sekaran, Prabu Dheenathayalan, Pascal Weisser, Christophe Kunze, and Wilhelm Stork
Dealing with Multi Security Policies in Communication Networks ........................................282
Ryma Abassi and Sihem Guemara El Fatmi
Multiservice Optical Packet Switched Networks: Modeling, Performance Evaluation and QoS Mechanisms in a Mesh Slotted Architecture .................................288
Thaere Eido, Ferhan Pekergin, Michel Marot, and Tülin Atmaca
ICNS 13: ENCOT V
SKIP: A Secure Key Issuing Scheme for Peer-to-Peer Networks ................................................................. 296
  Cong Tang, Ruichuan Chen, Zhuhua Cai, Anming Xie, Jianbin Hu,
  Liyong Tang, and Zhong Chen
IEEE 802.15.4 Performance on a Hierarchical Hybrid Sensor Network Platform ........................................ 303
  Eugène Pamba Capo-Chichi, Hervé Guyennet, and Jean-Michel Friedt
A New Metric for Network Load and Equation of State .................................................................................. 309
  Adriano Galati and Chris Greenhalgh
MANETSip - A Dependable SIP Overlay Network for MANET Including Presentity Service ................................................................. 314
  Sebastian Fudickar, Klaus Rebensburg, and Bettina Schnor

ICNS 14: ENCOT VI
Balancing Load of APs by Concurrent Association of Every Wireless Node with Many APs .............................................. 320
  Dilip Sarkar and Uttam K. Sarkar
A Mobile Approach for a Physical Simulation Model in Wimax ........................................................................... 326
  Sergio Almagro-Carrion, Fernando Cerdan, Andres Cabrera-Lozoya,
  and Sergio Lujan-Fernandez
Impact of Obstacles on the Degree of Mobile Ad Hoc Connection Graphs ......................................................... 332
  Cedric Gael Aboue-Nze, Frederic Guinand, and Yoann Pigné

ICNS 15: ENCOT VII
Analysis and Computing of Association Degree of SMS Feature Words .......................................................... 338
  Qindong Sun, Hongli Qiao, and Nan Wang
QoS Protection in Cognitive Wireless Mesh Networks ......................................................................................... 342
  Dinh-Dung Luong, Jean-Charles Gregoire, and Zbigniew Dziong
A Model Predictive Approach to Fault-Tolerant WASNs .................................................................................. 348
  Michele Papalini, Alberto Polzonetti, and Oliviero Riganelli
A BitTorrent Performance Evaluation Framework .............................................................................................. 354
  Razvan Deaconescu, Razvan Rughinis, and Nicolae Tapus

ICNS 16: ENCOT VIII
A Macro View of Viral Propagation and Its Persistence in Heterogeneous Wireless Networks ........................................ 359
  Hoai-Nam Nguyen and Yoichi Shinoda
A Layered Routing Architecture for Infrastructure Wireless Mesh Networks .................................................. 366
  Daniel Charles Ferreira Porto, Gustavo Cavalcanti, and Gledson Elias
Global System for Location and Guidance of Disabled People: Indoor and Outdoor Technologies Integration ......................................................................................... 370
  Cesare Benavente-Peces, Victor Manuel Moracho-Oliva,
  Alfonso Dominguez-Garcia, and Manuel Lugilde-Rodriguez
Counter-Flooding: DoS Protection for Public Key Handshakes in LANs ..................................................376

Yves Igor Jerschow, Björn Scheuermann, and Martin Mauve

ICNS 17: ENCOT IX

IPv4 to IPv6 Evolution Strategies of Pakistan Internet Exchange ............................................................383

Asif Nawaz, Mahmood Ashraf, X. B. Hong, J. Wu, and J. T. Lin

Push-to-Talk in IMS Mobile Environment ..................................................................................................389

Rui Santos Cruz, Mário Serafim Nunes, Guido Varatojo, and Luis Reis

A Novel Channel Switching Scenario in Multicast IPTV Networks ..........................................................396

Mounir Sarni, Benoit Hilt, and Pascal Lorenz

Data Collection, Correlation and Dissemination of Medical Sensor Information in a WSN ..........................................................402

Elaine Lawrence, Karla Felix Navarro, Doan Hoang, and Yen Yang Lim

ICNS 18: NGNUS I

Architectural Framework for Application Level QoS Adaptation in Next Generation Networks ............409

Gordana Gardašević and Zoran Bojković

On GPS Tracking of Mobile Devices ........................................................................................................415

Sathiamoorthy Manoharan

A Phase Based Solution for the Rollout of Fixed Mobile Convergence ..................................................419

Ali Amer

A Framework for IM Interworking with Heterogeneous Networks ............................................................426

Jinho Hwang, Nakpo Kim, Taekseob Jeong, and Jongseog Koh

ICNS 19: NGNUS II

SIP-Based IMS Registration Analysis for WiMax-3G Interworking Architectures .....................................432

Arslan Munir and Ann Gordon-Ross

Mix Queues Approach for Indoor Network Traffic Modelling ..................................................................438

Omar Alani and Jaafar Elmirghani

A Generic Approach to Service Conflict Control in IMS ........................................................................444

Hua Liu and Fangchun Yang

Nozella: A Peer-to-Peer IPTV Distribution Service for an IMS-Based NGN ............................................450

Alex Bikfalvi, Jaime García-Reinoso, Iván Vidal, and Francisco Valera

ICNS 20: GRIDNS I

VO Intersection Trust in Ad Hoc Grid Environment ..................................................................................456

Ladislav Huraj and Helmut Reiser

The Probes Coordination Protocol: Periodic Task Coordination and Control across Administrative Boundaries ........................................................................................................462

Paul Graham, Jeremy Nowell, Kostas Kavoussanakis, Florian Scharinger, Charaka Palansuriya, Bartosz Dobrzelecki, and Arthur Trew
Towards Adaptable Semantic Grid Services Execution Environments ........................................468
  Ignacio Sánchez-Peral, Francisco García-Sánchez, Rafael Valencia-García,
  Jesualdo T. Fernández-Breis, and Rodrigo Martínez-Béjar
A Formal Model of Web Services Transport Layer .................................................................474
  Jian Liu, Dianfu Ma, Zhuqing Li, and Dou Sun
TCP-AuthN: An Approach to Dynamic Firewall Operation in Grid Environments ....................481
  Jan Wiebelitz, Christopher Kunz, Stefan Piger, and Christian Grimm

ICNS 21: GRIDNS II
A Distributed Environment Approach for the GPS Radio Occultation Analysis .........................487
  O. Terzo, L. Mossucca, P. Ruiu, M. Molinaro, R. Notarpietro, M. Cucca,
  and S. Stigliano
Dynamic Scheduling Algorithms for Large File Transfer on Multi-user Optical
Grid Network Based on Efficiency and Fairness ........................................................................493
  Miaochao Hu, Wei Guo, and Weisheng Hu
Cost-Effective Burst-Over-Circuit-Switching in a Hybrid Optical Network .................................499
  Jens Buysse, Marc De Leenheer, Chris Develder, Bart Dhoedt, and Piet Demeester
A Concept for Grid Credential Lifecycle Management and Heuristic Credential
Abuse Detection ...................................................................................................................505
  Christopher Kunz, Jan Wiebelitz, Stefan Piger, and Christian Grimm
HGRID: Fault Tolerant, Log2N Resource Management for Grids .............................................511
  Antonia Gallardo, Kana Sanjeevan, and Luis Díaz de Cerío

ICNS 22: Work in Progress
Analysis of Unicast Routing Protocols for VANETs .....................................................................518
  Juan Angel Ferreiro-Lage, Cristina Pereiro Gestoso, Oscar Rubiños,
  and Fernando Aguado Agelet
A Standards-Based Alarms Service for Monitoring Federated Networks ..................................522
  Charaka Palansuriya, Jeremy Nowell, Florian Scharinger,
  Kostas Kavoussanakis, and Arthur Trew
Challenges for Ubiquitous Computing .....................................................................................526
  Santosh Kumar

LMPCNA 1: Learning Platforms and Strategies
Enhancing NetAcad by Offering Fully Flexible Student Services on
an Integrated Online Learning Platform ................................................................................536
  Mihai Logofatu and Cristian Logofatu
Learning Objects Reusability and Their Adaptation for Blended Learning ................................542
  Eugenijus Kurilovas
NCTT – NetAcad Curricula Translation Tool: Community Based Translation
of E-Learning Materials .......................................................................................................548
  Frantisek Jakab, Jozef Janitor, Jan Genci, Karol Kniewald, Michal Nagy,
  and Vladimir Sidimak
Psychometric and Evidentiary Approaches to Simulation Assessment in Packet Tracer Software .................................................................555

*Dennis C. Frezzo, John T. Behrens, Robert J. Mislevy, Patti West,*
*and Kristen E. DiCerbo*

**LMPCNA 2: Online and Remote Learning**

A Software and Hardware System for a Fully Functional Remote Access to Laboratory Networks ......................................................................................561

*Marek Michalski*

Remote Laboratory Access for Students with Vision Impairment ...............................................................566

*Iain Murray and Helen Armstrong*

The "Zero Cost" Remote Lab ..................................................................................................................................................572

*Jan Genci*

Virtual Lab in a Distributed International Environment - SVC EDINET ..........................................................................................576

*František Jakab, Jozef Janitor, and Michal Nagy*

**LMPCNA 3: New Learning Methodologies**

Hands-On Instruction in the Cisco Networking Academy ......................................................................................581

*Kristen E. DiCerbo*

Innovative Model in New CCNA Instructor Training ......................................................................................587

*Huaqing Wang, Adam Boyce, Henry Wiebell, and Stephen Besford*

Cisco Networking Academy Learning Technologies Integration into the National Academic Standardised Study Programme ......................................................................................592

*Jelena Revzina and Alexander Grakovski*

A Voice-Enabled E-Learning Service (VòIS) Platform ..........................................................................................597

*Luvai F. Motiwalla*

**Author Index** .................................................................................................................................................................603