

Special issue on Novel Solutions for Next Generation Services

*maja.matijasevic@fer.hr
imre@hit.bme.hu*

As the convergence of “traditional” telecommunications and the Internet is gaining momentum, new network capabilities are being designed to support future services over Internet Protocol (IP) based network infrastructure. The papers selected for this special issue aim to address fundamental issues in creating an environment for better service support, including next generation broadband access networks, IP security and transition to IPv6, Session Initiation Protocol (SIP) signaling, VoIP performance, and new collaborative service provisioning models in mobile networks.

This special issue of the Infocommunications Journal comprises five original peer-reviewed research papers, based on those initially presented at the *10th International Conference on Telecommunications – ConTEL 2009*, held in Zagreb, Croatia, in June 2009. They were selected from a total of 67 papers accepted for publication at ConTEL 2009, and they were significantly extended before submission for potential journal publication. All submitted papers were reviewed by at least three independent reviewers for assessment. Authors had to satisfactorily respond to the reviewers' comments and to revise the papers accordingly before the final acceptance.

The first paper is “The Bridging Virtualization Approach to Next Generation Broadband Access Networks” by *J. Matias, E. Jacob, M. Aguado and J. Astorga* of the University of the Basque Country, Spain. The authors propose a new network convergence approach in next generation broadband access networks (NGBAN), called the bridging virtualization, which uses the concept of instances to deal with service requests. They introduce a secure instantiation mechanism for NGBAN and a profile-based configuration service based on XML profiles.

The second paper, entitled “VoIP Performance with IPsec in IPv4-IPv6 Transition Networks”, is authored by *R. Yasinovsky, A. L. Wijesinha and R. Karne* of Towson University, Maryland, USA. The paper presents and discusses the results of an extensive series of experiments in a LAN environment with the goal to determine the impact of IPsec on VoIP performance in IPv4 to IPv6 transition networks. The performance parameters of interest include packet inter-arrival time, jitter, packet loss, and throughput for voice packets. The overall voice quality was evaluated by using Mean Opinion Score (MOS), and the session performance metrics include IPsec key exchange time and call setup time when using SIP.

The third paper, entitled “Nature Inspired Self-healing Model for SIP-Based Services”, by *Z. Rusinovic* of Ericsson Nikola Tesla Zagreb, Croatia and *N. Bogunovic* of the Faculty of Computing and Electrical Engineering, University of Zagreb, Croatia, deals with improving the performance of Session Initiation Protocol (SIP) servers. The authors present a self-healing SIP model capable of recognizing and restarting failed SIP services without losing active SIP dialogs. The proposed approach results in swift problem detection and faster recovery as demonstrated by performance tests.

In the fourth paper entitled “Space-efficient signalling scheme for IP prefix and realm information in Virtual Networks”, *A. Mäkelä* from Aalto University, Espoo, Finland, and *J. Korhonen* of Nokia Siemens Networks, Helsinki, Finland, present a Mobile IP based approach to create virtual private IP networks. The proposed approach uses a scheme which compresses information on IPv4 network prefixes and realms, thus reducing the size of signalling messages and improving signaling efficiency. An extension of the proposed approach onto IPv6 network prefixes is considered.

Finally, the fifth paper entitled “Achieving Collaborative Service Provisioning for Mobile Network Users: The CollDown Example”, by *V. Podobnik, I. Bojic, L. Vrdoljak and M. Kusek* of the University of Zagreb, Croatia, Faculty of Electrical Engineering and Computing, presents a concept and a model of collaborative service provisioning in mobile networks. A prototype proof-of-concept service, called Collaborative Downloading or CollDown for short, demonstrates the proposed approach.

We would like to thank the authors who submitted articles for this issue, and the reviewers for providing a constructive and timely feedback. Our thanks also go to *Csaba Szabó*, the Editor-in-Chief of Infocommunications for offering this special issue, and to the editorial staff for their help.

Maja Matijasevic
University of Zagreb,
Faculty of Electrical Engineering and Computing,
Croatia

Sándor Imre
Budapest University of Technology and Economics,
Department of Telecommunications,
Hungary

Guest Editors

MAJA MATIJASEVIC is a Professor in the Department of Telecommunications, Faculty of Electrical Engineering and Computing, University of Zagreb, Croatia. Her main research interests include quality of service for advanced multimedia services and networked virtual environments and the network functionality for supporting them in converged IP-based networks, with particular focus on session negotiation, adaptation, and mobility. She is a principal researcher in a national research project and a national research program, and she has been a principal investigator in several research projects in collaboration with industry. She has over 60 journal and conference publications and several book chapters. She has been involved in over 30 international conferences and workshops in the role of a Program Chair, Publicity Chair, Publication Chair, TPC member, and Organizing Committee member. She received her Ph.D. degree in Electrical Engineering from the University of Zagreb and the M.Sc. in Computer Engineering (1997) from the University of Louisiana at Lafayette, LA, USA. She is a member of IEEE and ACM.



SÁNDOR IMRE was born in Budapest in 1969. He received the M.Sc. degree in Electrical Engineering from the Budapest University of Technology (BUTE) in 1993. Next he started his Ph.D. studies at BUTE and obtained Dr.Univ. degree in 1996, Ph.D. degree in 1999 and DSc degree in 2007. Currently he is carrying his activities as a Professor and a Head of Department of Telecommunications at BUTE. He is a member of Telecommunication Systems Committee of the Hungarian Academy of Sciences. He participates in the Editorial Board of two journals: Infocommunications Journal and Hungarian Telecommunications. He was invited to join the Mobile Innovation Centre as R&D director in 2005. His research interests includes mobile and wireless systems. His main research interests and contributions are in the areas of various wireless access technologies, mobility protocols and reconfigurable systems.

List of reviewers

László Bokor, Budapest University of Technology and Economics, Dept. of Telecommunications, Hungary
 Ádám Máté Földes, Budapest University of Technology and Economics, Dept. of Telecommunications, Hungary
 Peter Fülöp, Budapest University of Technology and Economics, Dept. of Telecommunications, Hungary
 Győző Góðor, Budapest University of Technology and Economics, Dept. of Telecommunications, Hungary
 Ivan Gojmerac, FTW – Telecommunications Research Center Vienna, Austria
 Gábor Gulyás, Budapest University of Technology and Economics, Hungary
 Vlasta Hudek, Croatian Telecom Inc., Croatia
 Gábor Jeney, Budapest University of Technology and Economics, Hungary
 Zoltán Kanizsai, Budapest University of Technology and Economics, Dept. of Telecommunications, Hungary
 Mario Kusek, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia
 Ignac Lovrek, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia
 Maja Matijasevic, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia
 Miljenko Mikuc, University of Zagreb, Faculty of Electrical Engineering and Computing, Croatia
 Szabolcs Novaczki, Budapest University of Technology and Economics, Dept. of Telecommunications, Hungary
 Robert Schulcz, Budapest University of Technology and Economics, Hungary
 Sándor Szabó, Budapest University of Technology and Economics, Hungary

Infocommunications Journal**Editorial Office** (Subscription and Advertisements):

Scientific Association for Infocommunications
 H-1055 Budapest, Kossuth Lajos tér 6-8, Room: 422
 Mail Address: 1372 Budapest Pf. 451. Hungary
 Phone: +36 1 353 1027, Fax: +36 1 353 0451
 E-mail: info@hte.hu, Web: www.hte.hu

Articles can be sent also to the following address:

Budapest University of Technology and Economics
 Department of Telecommunications

Tel.: +36 1 463 3261, E-mail: szabo@hit.bme.hu

Subscription rates for foreign subscribers:
 4 issues 50 USD, single copies 15 USD + postage

Publisher: PÉTER NAGY • Manager: ANDRÁS DANKÓ

HU ISSN 2061-2079 • Layout: MATT DTP Bt. • Printed by: Regiszter Kft.