1. S Szabo, L Gyongyosi, S Imre
   Lang: English
   Journal Paper/Article/Scientific

2. Peter Andras Kara, Laszlo Bokor, Sándor Imre
   Distortions in QoE measurements of ubiquitous mobile video services caused by the preconceptions of test subjects.
   Lang: English
   Conference Paper/Paper of lecture or poster/Scientific

3. L Hanzo, H Haas, S Imre, D O'Brien, M Rupp, L Gyongyosi
   Wireless Myths, Realities and Futures: From 3G/4G to Optical and Quantum Wireless.
   IF: 5.956**, Lang: English
   Journal Paper/Article/Scientific

4. L Gyongyosi, S Imre
   The Pilot Quantum Error-Correction Protocol.
   Lang: English
   Conference Paper/Paper of lecture or poster/Scientific
   The results discussed above are supported by the grant TAMOP-4.2.1/B-09/1/KMR-2010-0002, 4.2.2.B-10/1--2010-0009 and COST Action MP1006.

5. L Gyongyosi, S Imre
   Superactivation of Zero-Capacity Quantum Channels is Limited by the Quantum Relative Entropy Function.
   Lang: English
   Conference Paper/Paper of lecture or poster/Scientific
   The results discussed above are supported by the grant TAMOP-4.2.1/B-09/1/KMR-2010-0002, 4.2.2.B-10/1--2010-0009 and COST Action MP1006.

6. L Gyongyosi, S Imre
   Superactivation of Quantum Channels is Limited by the Quantum Relative Entropy Function.
   IF: 2.085**, Lang: English, Full document
   Accepted, In Press (2012)
   Journal Paper/Article/Scientific
   The results discussed above are supported by the grant TAMOP-4.2.2.B-10/1--2010-0009 and COST Action MP1006.

7. L Gyongyosi, S Imre
   Secure Long-Distance Quantum Communication over Noisy Optical Fiber Quantum Channels.
   In: Yasin Moh (ed.)
   Kötet megjegyzések: Optical Fibers / Book 2
   Accepted, In preparation, date expected: 2012.
   Lang: English
   Chapter in Book/Part of Monography/Scientific

8. L Gyongyosi, S Imre
   Secure Communication over Zero Private-Capacity Quantum Channels.
   Lang: English
   Conference Paper/Paper of lecture or poster/Scientific
   The Alan Turing Centenary Conference (Turing-100), June 22-25, 2012, University of Manchester, Manchester, United Kingdom.
   The results discussed above are supported by the grant TAMOP-4.2.2.B-10/1--2010-0009 and COST Action MP1006.

9. L Gyongyosi, S Imre
   Quasi-Superactivation of Classical Capacity of Zero-Capacity Quantum Channels.
   IF: 0.988**, Lang: English, Full document
   Accepted, In Press (2012)
10. L Gyongyosi, S Imre
Quantum Polar Coding for Noisy Optical Quantum Channels, APS DAMOP 2012 Meeting.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
PHD GRANT AWARD OF APS DAMOP12, AMERICAN PHYSICAL SOCIETY, CALIFORNIA, USA.
The results discussed above are supported by the grant TAMOP-4.2.1/B-09/1/KMR-2010-0002, 4.2.2.B-10/1--2010-0009 and COST Action MP1006.

11. L Gyongyosi, S Imre
Quantum Mechanics based Communications.
(Budapest University of Technology and Economics, Faculty of Electrical Engineering and Informatics)
ISBN:978 963 9968 45 5
Lang: English
Book/Monography/Scientific
The results discussed above are supported by the grant TAMOP-4.2.1/B-09/1/KMR-2010-0002, 4.2.2.B-10/1--2010-0009 and COST Action MP1006.

12. L Gyongyosi, S Imre
Quantum Cryptographic Protocols and Quantum Security.
Cryptography, Steganography and Data Security, Privacy and Identity Protection
ISBN: 978-1-62100-779-1
Lang: English, Full document
Chapter in Book/Part of Monography/Scientific
2012 1st quarter

13. L Gyongyosi, S Imre
Private Classical Communication over Zero-Capacity Quantum Channels Using Quantum Polar Codes.
Kötet megjegyzések: The 7th Conference on Theory of Quantum Computation, Communication, and Cryptography (TQC 2012), May. 2012, The University of Tokyo, Tokyo, Japan.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
The results discussed above are supported by the grant TAMOP-4.2.1/B-09/1/KMR-2010-0002, 4.2.2.B-10/1--2010-0009 and COST Action MP1006.

14. L Gyongyosi, S Imre
Polarization of Zero-Capacity Quantum Channels.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
Quantum Theory: Reconsideration of Foundations - 6 (QTRF6) Conference, International Centre for Mathematical Modelling in physics, engineering and cognitive sciences (ICMM), Linnaeus University, Vaxjö, Sweden.
The results discussed above are supported by the grant TAMOP-4.2.2.B-10/1--2010-0009 and COST Action MP1006.

15. L Gyongyosi, S Imre
On-the-Fly Quantum Error-Correction for Space-Earth Quantum Communication Channels.
Kötet megjegyzések: Quantum Laboratory, Center for Applied Physics, NASA Ames Research Center, Moffett Field, California, USA.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
The results discussed above are supported by the grant TAMOP-4.2.1/B-09/1/KMR-2010-0002, 4.2.2.B-10/1--2010-0009 and COST Action MP1006.

16. L Gyongyosi, S Imre
On the Mathematical Boundaries of Communication with Zero-Capacity Quantum Channels.
Lang: English
Conference Paper/Paper of lecture or poster/Scientific
The Alan Turing Centenary Conference (Turing-100), June 22-25, 2012, University of Manchester, Manchester, United Kingdom.
The results discussed above are supported by the grant TAMOP-4.2.2.B-10/1--2010-0009 and COST Action MP1006.

17. L Gyongyosi, S Imre
Mathematical Limit in the Superactivation of Zero-Capacity Quantum Channels.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
Quantum Theory: Reconsideration of Foundations - 6 (QTRF6) Conference, International Centre for Mathematical Modelling in physics, engineering and cognitive sciences (ICMM), Linnaeus University, Vaxjö, Sweden.
The results discussed above are supported by the grant TAMOP-4.2.2.B-10/1--2010-0009 and COST Action MP1006.

18. L Gyongyosi, S Imre
Long-Distance Quantum Communications with Superactivated Gaussian Optical Quantum Channels.
IF: 0.815**, Lang: English, Full document
L. Gyongyosi, S. Imre
IF: 0.356**, Lang: English, Full document
Journal Paper/Article/Scientific
Accepted, In Press.
The results discussed above are supported by the grant TAMOP-4.2.1/B-10/1-2010-0002, 4.2.2.B-10-1-2010-0009 and COST Action MP1006.

L. Gyongyosi, B. Boda, K. Földes, Á. Máté, G. Gulyás, G. György, M. Keaton, M. Mowery, H. Hovav Shacham
L. Bacsardi, H. Hanzo, H. Haas, G. Győző Gódor

20. L. Gyongyosi, S. Imre
Classical Communication with Zero-Capacity Quantum Channels.
Kötet megjegyzései: The 7th Conference on Theory of Quantum Computation, Communication, and Cryptography (TQC 2012), May. 2012, The University of Tokyo, Tokyo, Japan.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
The results discussed above are supported by the grant TAMOP-4.2.1/B-10/1-2010-0002, 4.2.2.B-10-1-2010-0009 and COST Action MP1006.

21. L. Gyongyosi, S. Imre
Classical Communication with Stimulated Emission over Zero-Capacity Optical Quantum Channels.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
PHD GRANT AWARD OF APS DAMP12, AMERICAN PHYSICAL SOCIETY, CALIFORNIA, USA.
The results discussed above are supported by the grant TAMOP-4.2.1/B-10/1-2010-0002, 4.2.2.B-10-1-2010-0009 and COST Action MP1006.

22. L. Gyongyosi, S. Imre
Classical and Quantum Communication with Superactivated Quantum Channels.
Kötet megjegyzései: TAMOP-4.2.2/B-10/1-2010-0009
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
TAMOP-4.2.2/B-10/1-2010-0009

23. L. Gyongyosi, S. Imre
Achieving Classical Communication with Quantum Entanglement and Stimulated Emission over Zero-Capacity Quantum Channels.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
Quantum Theory: Reconsideration of Foundations - 6 (QTRF6) Conference, International Centre for Mathematical Modelling in physics, engineering and cognitive sciences (ICMM), Linnaeus University, Vaxjö, Sweden.
The results discussed above are supported by the grant TAMOP-4.2.2.B-10-1-2010-0009 and COST Action MP1006.

24. L. Bacsardi, S. Imre
Supporting Space Communications with Quantum Communications Links.
Lang: English
Conference Paper/Paper of lecture or poster/Scientific

25. L. Bacsardi, S. Imre
Pilot Qubit based Quantum Satellite Communications.
Lang: English
Conference Paper/Paper of lecture or poster/Scientific

Prolog to the Section on Wireless Communications Technology.
IF: 10.1109/18.978-1-61350-477-2.ch009
Chapter in Book/Part of Monography/Scientific

27. Győző Gódor, Sándor Imre
In: Debashis Saha, Varadharajan Sridhar
Hannah Abebeck (ed.)
Lang: English, Full document at the publisher, DOI: 10.4018/978-1-61350-477-2.ch009
Chapter in Book/Part of Monography/Scientific

28. Boda Károly, Földes Adám Máté, Gulyás Gábor, Imre Sándor
User Tracking on the Web via Cross-Browser Fingerprinting.
Lang: English
Journal Paper/Proceedings paper/Scientific
Independent citations: 2 All citations: 2
1. Coping Mechanisms: Fingerprinting, CDI and How to Deal with it 2012
Lang: English
Full document
Egyéb
2. Keaton Mowery, Hovav Shacham
Pixel Perfect: Fingerprinting Canvas in HTML5
Konferendaðsk
30. T Jursonovics, S Imre
Analysis of a New Markov-model for Packet Loss Characterization in IPTV Solutions.
*INFOCOMMUNICATIONS JOURNAL* 3(2) pp. 28-33. (2011)
Lang: English, Full document at the publisher
Links to data bases: Materia link, Scopus link, Google scholar link
Journal/Paper/Scientific

31. Sandor Imre
Quantum and Classical Methods to Improve Infocom Systems.
(ISBN:978-3-8443-9224-1)
Lang: English
Book/Monography/Scientific

32. S Szabo, L Gyongyosi, K Lendvai, S Imre
In: Katalin Tarnay, Gazdav Adamis, Tibor Dulai (ed.)
Advanced Communication Protocol Technologies: Solutions, Methods, and Applications.
Lang: English
Chapter in Book/Part of Monography/Scientific

33. R Szabo, Hua Zhu, S Imre, R Chaparadza (ed.)
Access Networks: 5th International ICST Conference on Access Networks.
(LNICST; 63.)
Lang: English
Proceedings/no subtype/Scientific

34. Mate Galambos, Sandor Imre
New Method for Representation of Multi-qbit Systems Using Fractals.
Lang: English
Conference Paper/Paper of lecture or poster/Scientific

35. M Galambos, L Bacsardi, A Kiss, S Imre
Analyzing Quantum Based Protocols in LEO and GEO Satellite Communication.
In: Sias Mostert, Antonio Moccia (ed.)
Kötet megjegyzések: http://www.iwiafastro.net/iac/archive/browse/IAC-11/A5-.3/B3.6/9589/ Lang: English
Conference Paper/Paper of lecture or poster/Scientific

36. László Bokor, Szabolcs Nováczki, Sándor Imre
Host Identity Protocol: The Enabler of Advanced Mobility Management Schemes.
In: Katalin Tarnay, Gazdav Adamis, Tibor Dulai (ed.)
Advanced Communication Protocol Technologies: Solutions, Methods, and Applications.
Lang: English, Full document at the publisher, DOI: 10.4018/978-1-60960-732-4.ch012
Chapter in Book/Part of Monography/Scientific

This chapter is committed to give a comprehensive overview of the Host Identity Protocol (HIP), to introduce the basic ideas and the main paradigms behind it, and to show how HIP emerges from the list of potential alternatives with its wild range of possible usability in next generation mobile architectures. The broad scale of feasible advanced mobility management proposals and scenarios, together with the promising mobility management capabilities of HIP and its cryptographic identifier/locator separation technique, will be introduced based on an exhaustive survey of existing mobility solutions designed for the Host Identity Protocol. This broad and up-to-date outline of advanced HIP-based mobility supporting schemes will guide the readers from the basics of HIP through the protocol's main functions to its complex feature set and power to create a novel Internet architecture for future mobility-centric communications.

37. László Bokor, Zoltán Faigl, Sándor Imre
Flat Architectures: Towards Scalable Future Internet Mobility.
Lang: English, WoS link, Scopus link, Full document at the publisher, DOI: 10.1007/978-3-642-20898-0_3
Links to data bases: Scopus link, WoS link
Journal/Paper/Article/Scientific

This chapter is committed to give a comprehensive overview of the scalability problems of mobile Internet nowadays and to show how the concept of flat and ultra flat architectures emerges due to its suitability and applicability for the future Internet. It also aims to introduce the basic ideas and the main paradigms behind the different flat networking approaches trying to cope with the continuously growing traffic demands. The discussion of the above areas will guide the readers from the basics of flat mobile Internet architectures to the paradigm's complex feature set and power creating a novel Internet architecture for future mobile communications.

Independent citations: 4 All citations: 4
1. R Franklin, et al 
*Cloud Based* Collaboration Platform for Transport & Logistics Business Networks 
Konferenciaállak

2 Najah Abu Ali, Abd-Elhamid M Taha, Hossam S Hassanein
LTE, LTE-Advanced and WiMAX: Towards IMT-Advanced Networks
Könyv

3. Pentikousis K, Qing Zhou, Wang H 
Design considerations for mobility management in future infrastructure networks
Scopus link
Konferenciaállak
38. László Bokor, Vilmos Simon, Sándor Imre
Evaluation of the Location Privacy Aware Micromobility Domain Planning Scheme.
Lang: English, Scopus link, Full document
Links to data bases: Scopus link
Journal Paper/Article/Scientific

Next generation telecommunication systems are converging into a synergistic union of wired and wireless technologies, where integrated services are provided on a universal IP-based infrastructure. The concept of global reachability fuelled with the advanced mobility schemes and the “anytime, anywhere” paradigm caused that the requirements for security and privacy in the global Internet era differs a lot from the ones of a decade ago. We focus on a subset of this complex problem space and consider location privacy issues defined by the information leakage of IP addresses during the movement of users. In our previous work we proposed a special domain planning algorithm to optimize location privacy supporting potential of certain mobility management mechanisms by increasing the level of concealment of address changes in the network. In this paper we extensively evaluate the scheme by applying well-known location privacy metrics from the literature and using them as objective measures for our original algorithm and its variants first introduced here. The conducted series of simulations verified the efficiency of the scheme and also confirmed the performance enhancements commenced by our improvements and modifications to the original algorithm.

39. Laszlo Bacsardi, Sándor Imre
Analyzing the Quantum Based Satellite Communications.
(Procedia Computer Science; 7.)
Lang: English, WoS link, Scopus link, Full document at the publisher, DOI: 10.1016/j.procs.2011.09.036
Conference Paper/Paper of lecture or poster/Scientific

40. L. Gyongyosi, S. Imre
Perfect Quantum Communication with Very Noisy Gaussian Optical Fiber Channels.
Kötet megjegyzések: Frontiers in Optics (FO) 2011, OSA’s 95th Annual Meeting, Section on Quantum Computation and Communication
Lang: English
Conference Paper/Paper of lecture or poster/Scientific

41. L Gyongyosi, S Imre
Zero-Error Transmission of Classical Information over Superactivated Optical Quantum Channels.
Kötet megjegyzések: QuAMP 2011, International Conference on Quantum, Atomic, Molecular and Plasma Physics, Section on Quantum Information and Computing,
Lang: English
Conference Paper/Abstract/Scientific

42. L Gyongyosi, S Imre
Superactivated Quantum Repeaters.
Kötet megjegyzések: PhD Student Grant Award of Quantum Information Processing 2012 (QIP2012), University of Montreal, Canada.
Quantum Information Processing 2012 (QIP2012), Dec. 2011, University of Montreal, Quebec, Canada.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
PhD Student Grant Award of Quantum Information Processing 2012 (QIP2012), University of Montreal, Canada.
Quantum Information Processing 2012 (QIP2012), Dec. 2011, University of Montreal, Quebec, Canada.
The results discussed above are supported by the grant TAMOP-4.2.1/B-09/1/KMR-2010-0002, 4.2.2.B-10/1-2010-0009 and COST Action MP1006.

43. L Gyongyosi, S Imre
Quantum Informational Divergence in Quantum Channel Security Analysis.
Lang: English, Scopus link
Journal Paper/Article/Scientific
Paper accepted.

44. L Gyongyosi, S Imre
Quantum Cellular Automata Controlled Self-Organizing Networks.
Publisher: InTech, Publishing date: April 2011
Lang: English, Full document at the publisher
Chapter in Book/Part of Monography/Scientific

45. L Gyongyosi, S Imre
Pilot Quantum Error-Correction for Noisy Quantum Channels.
54. L Gyongyosi, S Imre
Channel Capacity Restoration of Noisy Optical Quantum Channels.
Kötet megjegyzések: ICOAA '11 Conference, Section on Optical Quantum Communications, University of Cambridge, Cambridge, United Kingdom.
55. L Gyongyosi; S Imre
   Capacity Recovery of Very Noisy Optical Quantum Channels.
   Lang:  English
   Journal Paper/Article/Scientific
   Issue 3, Volume 5, 2011

56. L Gyongyosi; S Imre
   Algorithmic Superactivation of Quantum Capacity of Zero-Capacity Quantum Channels.
   IF: 2.833 *, Lang:  English, Full document
   Journal Paper/Article/Scientific
   Accepted, In Press
   Information Sciences, Informatics and Computer Science
   Intelligent Systems Applications, ELSEVIER, ISSN: 0020-0255.
   The results discussed above are supported by the grant TAMOP-4.2.1.B-09/1/KMR-2010-0002, 4.2.2.B-10/1-2010-0009 and COST Action MP1006.

57. L Bacsardi, L Gyongyosi, S Imre
   Redundancy-free Quantum Coding Methods in Space Communications.
   In: Sias Mostert, Antonio Moccia (ed.)
   Kötet megjegyzések: http://www.iafastro.net/iac/archive/browse/IAC-11/A5/3.-B3.6/9589/
   Lang:  English
   Conference Paper/Paper of lecture or poster/Scientific

58. Kára Péter András, Bokor László, Imre Sándor
   A méréslányok prekoncepciőit által okozott torzítások hatása 3G videotelefonálás QoE kiértékelési eredményeire.
   Lang: Hungarian
   Journal Paper/Article/Scientific
   Napjainkban a telekommunikációs szolgáltatások terén az objektív szolgáltatásparaméterek (Quality of Service) mellett egyre nagyobb
   szerepet tölt be a szakmai ismeret (Quality of Experience). Ebből kifolyólag elengedhetetlen követelmény, hogy a szolgáltatás
   minőségétől függő mérési eredményeit az alkalmazások használó szabadon tudja elfogadni, hisz a felhasználó ismereteitól függően
   szélesebb területen (Level of Experience) adott méréslálnak meg. A méréslányok prekoncepciőit által okozott torzításokkal foglalkozunk.
   A méréslányok prekoncepciőit által okozott torzításokkal foglalkozunk. A méréslányok prekoncepciőit által okozott torzításokkal foglalkozunk.
   A méréslányok prekoncepciőit által okozott torzításokkal foglalkozunk. A méréslányok prekoncepciőit által okozott torzításokkal foglalkozunk.
   A méréslányok prekoncepciőit által okozott torzításokkal foglalkozunk.

59. Imre Sándor, Lendvai Károly, Szabó Sándor
   Ring Based Call Admission Control Scheme For Future Mobile Networks.
   Paper 97-39382.
   Lang:  English
   Conference Paper/Paper of lecture or poster/Scientific

60. Ill Gergely, Milánkovich Ákos, Lendvai Károly, Imre Sándor, Szabó Sándor
   DASH7 alapú smart metering.
   Lang: Hungarian
   Journal Paper/Article/Scientific

61. Győző Gódor, Imre Sándor
   Elliptic Curve Cryptography Based Authentication Protocol for Low-Cost RFID Tags.
   Lang: English, Scopus link
   DOI: 10.1109/RFID-TA.2011.6068667
   Conference Papers/Paper of lecture or poster/Scientific

62. Gulyás Gábor György, Schulczt Róbert, Imre Sándor
   Separating Private and Business Identities.
   In: Dr Raj Sharman, Dr. Sanjukta Das Smith, Manish Gupta (ed.)
   Digital Identity and Access Management: Technologies and Frameworks.
   ISBN: 9781615094987
   Lang: English
   Chapter in Book/Part of Monography/Scientific

63. Gulyás Gábor György, Imre Sándor
   Analysis of Identity Separation Against a Passive Clique-Based De-anonymization Attack.
   Lang: English, Scopus link
   Journal Paper/Article/Scientific

64. Gergely Ill., Károly Lendvai, Ákos Milánkovich, Sándor Imre, Sándor Szabó
   Analysis of Wireless Smart Metering Solutions.
   Paper 1569476643.
   Lang: English
   Conference Paper/Paper of lecture or poster/Scientific

65. G. Ill, K. Lendvai, Á. Milánkovich, S. Imre, S. Szabó
   Energy and Frequency Analysis of Wireless Smart Metering Solutions.
   INFOCOMMUNICATIONS JOURNAL III.: (3) pp. 30-55. (2011)
   Lang: English, Scopus link
   Journal Paper/Article/Scientific

66. Besenyei Tamás, Földes Adám Máthé, Gulyás Gábor György, Imre Sándor
   StegoWeb: Towards the Ideal Private Web Content Publishing Tool.
   Lang: English
   Conference Paper/Paper of lecture or poster/Scientific

67. Bálint Ary, Sándor Imre
   Sizing of MAC Processing Systems.
   Kötet megjegyzések: Revised, selected papers
   Lang: English
   Conference Paper/Paper of lecture or poster/Scientific

68. Árpád Huszák, Sándor Imre
69. Sz Novaczkő, L Bokor, G Jeney, S Ímre
Emerging Mobility Applications of Host Identity Protocol.
In: Samuel Pierre (ed.)
Next Generation Mobile Networks and Ubiquitous Computing.
ISBN: 9781605662563
Lang: English, Full document at the publisher, DOI: 10.4018/978-1-60960-732-6
Chapter in Book/Part of Monography/Scientific

This chapter is devoted to give an overview of the Host Identity Protocol (HIP) and to discuss two different mobility management extensions built on it. We introduce the basic ideas and the main paradigms behind the HIP-scheme, and show its wild range usability in next generation mobile and ubiquitous networks. The broad scale of possible advanced mobility applications of HIP will be introduced based on the extensions of the protocol, both developed by the authors. The first one is a micromobility solution based on HIP (µHIP), while the second one provides a scalable and secure network mobility solution (HIP-NEMO).

70. Mate Galambos, Laszlo Bacsardi, Sandor Imre
Modeling the superdense coding in ground-satellite communications.
Lang: English
Conference Paper/Paper of lecture or poster/Scientific

Since the current implementation of quantum cryptography protocols is based on photons, we have to know the exact description of the atmosphere’s optical properties. In this paper we examined the models based on classical beam weakening. We created a model which describes the behaviour of weak laser pulses to simulate the communication process over a satellite quantum channel. In the model we examined the properties and performance of recently-used single-photon sources and the loss caused by the gases of the atmosphere.

72. László Bokor, Vilmos Simon, Sándor Imre
A Location Privacy Aware Network Planning Algorithm for Micromobility Protocols.
In: Rui Chibante
Rui Chibante (ed.)
Simulated Annealing, Theory with Applications.
Lang: English, Full document
Chapter in Book/Part of Monography/Scientific

The Ultra Flat Architecture is a new concept of fixed-mobile convergent networks that aims to scale well with the mobile Internet traffic explosion prognosticated for the next 5–10 years. This paper presents a new delegation-based UFA signaling framework using HIP, IEEE 802.21 and the context transfer protocol. The main procedures contributed by this signaling framework are terminal attachment, session establishment, pro-active handover preparation and handover execution services. The paper introduces several novel Host Identity Protocol extensions, i.e., two different HIP delegation service types for optimized message exchange in HIP-based UFA mobility and multihoming operations, a context transfer scheme for HIP and IPsec associations supporting and extending the mechanisms of the delegation-based UFA functions, and a fast operator-centric method for HIP-level access authorization. The proposed UFA signaling framework is compared with the existing SIP-based UFA signaling solution. The comparison shows that our scheme is able to support legacy Internet applications in an operator based environment, it is stronger in security, but its deployment requires more additional modules in the architecture.

74. Laszlo Bacsardi, Laszlo Gyongyosi, Sandor Imre
Using Redundancy-Free Quantum Channels for Improving the Satellite Communication.
Lang: English, DOI: 10.1007/978-3-642-13878-4_24
Journal Paper/Proceedings paper/Scientific

75. Laszlo Bacsardi, Laszlo Gyongyosi, Sandor Imre
Solutions for Redundancy-Free Error Correction in Quantum Channel.
Lang: English, DOI: 10.1007/978-3-642-11731-2_15
Journal Paper/Proceedings paper/Scientific

76. Laszlo Bacsardi, Laszlo Gyongyosi, Marton Berces, Sandor Imre
Quantum Solutions for Future Space Communication.
In: Jaclyn E Morris (ed.)
Computer Science Research and the Internet.
Lang: English
Chapter in Book/Part of Monography/Scientific
77. Laszlo Bacsardi, Sándor Imre
Quantum Based Information Transfer in Satellite Communication.
Lang: English, Full document at the publisher
Chapter in Book/Part of Monography/Scientific
Independent citations: 1 All citations: 1

78. L. Bacsardi, L. Gyongyosi, S. Imre
Using Redundancy-free Quantum Channels for Improving the Satellite Communication.
Paper 8560.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific

79. L. Gyongyosi, S. Imre
Quantum information theoretical based geometrical representation of eaves dropping activity on the quantum channel.
Lang: English
Journal Paper/Article/Scientific

80. L Gyongyosi, S. Imre
Quantum Singular Value Decomposition Based Approximation Algorithm.
IF: 0.215, Lang: English, WoS link, Scopus link, DOI: 10.1142/10.1142/S0218126610006797
Journal Paper/Article/Scientific

81. L Gyongyosi, S. Imre
Novel Geometrical Solution to Additivity Problem of Classical Quantum Channel Capacity.
Paper 51.
Lang: English
Conference Paper/Paper of lecture or poster/Scientific

82. L Gyongyosi, S. Imre
Method for Discovering of Superactive Zero-Capacity Optical Quantum Channels.
Kötet megjegyzések: PhD Student Grant Award of University of Arizona, Optical Society of America (OSA), 2010, USA.
Lang: English
Conference Paper/Paper of lecture or poster/Scientific
PhD Student Grant Award of University of Arizona, Optical Society of America (OSA), 2010, USA.
IONS-NA Conference, (Optical Society of America (OSA), American Physical Society (APS), SPIE—The International Society for Optical Engineering, Rochester Institute of Optics, University of Maryland), 2010, University of Arizona, Tucson (Arizona), USA

83. L Gyongyosi, S. Imre
Information Geometrical Solution to Additivity of Non-Unital Quantum Channels.
Kötet megjegyzések: QCMC 2010, 10th Quantum Communication, Measurement & Computing Conference, Section on Quantum Computing and Quantum Information Theory (Centre for Quantum Computer Technology) July 2010, University of Queensland, Brisbane, Queensland, Australia
Lang: English
Conference Paper/Paper of lecture or poster/Scientific

84. L Gyongyosi, S. Imre
Information Geometrical Approximation of Quantum Channel Security.
Lang: English
Journal Paper/Article/Scientific

85. L Gyongyosi, S. Imre
Information Geometric Superactivation of Zero-Capacity Quantum Channels.
Lang: English
Conference Paper/Paper of lecture or poster/Scientific

86. L Gyongyosi, S. Imre
Lang: English, Scopus link
Journal Paper/Article/Scientific
Independent citations: 5 All citations: 5

1. K Lemr, J Bartkiewicz, A Cernoch, J Soubusta, A Miranowicz
Experimental aspects of a multifunctional optimal quantum cloner
Konferencia

2. Karel Lemr, Karel Bartkiewicz, Antonín Cernoch, Jan Soubusta, Adam Miranowicz
Experimental linear-optical implementation of a multifunctional optimal cloner
Lang: English
Full document
Radio frequency identification technology is becoming ubiquitous and, as a side effect, more authentication solutions come to light, which include numerous security issues. The authors have previously introduced a solely hash-based secure authentication algorithm that is capable of providing protection against most of the well-known attacks, which performs exceptionally well in very large systems. In this paper, the authors give a detailed examination of small computational capacity systems from the point of view of security. This paper defines the model of attacker and the well-known attacks that can be achieved in these kinds of environments, as well as an illustration of the proposed protocol's performance characteristics with measurements carried out in a simulation environment. This paper shows the effects of numerous attacks and the system's different parameters on the performance and security characteristics of two other protocols chosen from the literature to compare the SLAP algorithm and give a proper explanation for the differences between them.


3. Karel Lemr, Karol Bartkiewicz, Antonín Černoch, Jan Soubusta, Adam Miranowicz
Experimental linear-optical implemenstion of a multifunctional optmal quib doner

4. Karol Bartkiewicz, Adam Miranowicz
Cloning of arbitrary mirror-symmetric distributions on Bloch sphere: Optimality proof and proposal for practical photonic realization

5. Bartkiewicz K, Miranowicz A
Optimal cloning of qubits given by an arbitrary axysymmetric distribution on the Bloch sphere

6. Sándor Imre
Algorithmic Solution to Superactivation of Zero-Capacity Optical Quantum Channels.

7. L Gyöngyosi, Sándor Imre
Algorithmic analysis of information-theoretic aspects of secure comunication over optical-fiber quantum channels.

8. L Gyöngyosi, S Imre
Computational Geometric Analysis of Quantum Channel Additivity.

9. L Gyöngyosi, S Imre
Computational Geometric Analysis of Physically Allowed Quantum Cloning Transformations for Quantum Cryptography.
In the last few years RFID technology widespread. This technology can be found in each field of our daily life, e.g. supply-chain management, libraries, access management etc. For the sake of small computational capacity of RFID Tags, at first, only mathematical and logical operations and lightweight authentication methods could be used. However, thanks to the evolution of RFID technology, nowadays PKI infrastructure is also usable in this environment. In this paper we present our elliptic curve cryptography based mutual authentication protocol which proofs against the well-known attacks. We give a brief comparison with other EC based protocols in the point of view of security. Moreover, we show that our protocol is better than the others in case of performance, too.

Independent citations: 1

1. Paternía R K, Vasudevan S
Elliptic curve cryptography in constrained environments: A review
Scopus link, DOI: 10.1109/CSNT.2011.32
References
Konferenciai

RFID technology can be found in the most fields of our daily life, e.g. personal identification, supply-chain management, access control etc. For the sake of small computational capacity of RFID Tags, at first, only mathematical and logical operations and lightweight authentication methods could be used. However, thanks to the evolution of RFID technology, nowadays PKI infrastructure is also usable in this environment. In this paper we present our elliptic curve cryptography based mutual authentication protocol which proofs against the well-known attacks. We give a brief comparison with other EC based protocols in the point of view of security. Moreover, we show that our protocol is better than the others in case of performance, too. In order to measure the performance characteristics of our proposed ECC based authentication protocol and to make a comparison with others we implemented these algorithms in OMNeT++.

Independent citations: 2

1. Meng Wei Fang, Jun Jun Wu, Xin Fang Zhang, Hong Chen
A Novel ECC-Based RFID Authentication Protocol
DOI: 10.4028/www.scientific.net/KEM.474-476.1764
Polyviriótkok
2. Paternía R K, Vasudevan S
Elliptic Curve Cryptography in Constrained Environments: A Review
Scopus link, DOI: 10.1109/CSNT.2011.32
Konferenciai

In the last few years RFID technology widespread. This technology can be found in each field of our daily life, e.g. supply-chain management, libraries, access management etc. For the sake of small computational capacity of RFID Tags, at first, only mathematical and logical operations and lightweight authentication methods could be used. However, thanks to the evolution of RFID technology, nowadays PKI infrastructure is also usable in this environment. In this paper we present our elliptic curve cryptography based mutual authentication protocol which protects against the well-known attacks. We give a brief comparison with other EC based protocols in the point of view of security. Moreover, we show that our protocol is better than the others in case of performance, too.

Independent citations: 1

1. Győző Góbor, Norbert Giczi, Sándor Imre
Lang: English, Scopus link, DOI: 10.1109/ISWPC.2010.5483740
Conference Paper/Paper of lecture or poster/Scientific

Conference Paper/Paper of lecture or poster/Scientific

Lang: English, DOI:

Lang: English, WoS link, Scopus link, DOI: 10.1109/WCNIS.2010.5541860
Conference Paper/Paper of lecture or poster/Scientific

RFID technology can be found in the most fields of our daily life, e.g. personal identification, supply-chain management, access control etc. For the sake of small computational capacity of RFID Tags, at first, only mathematical and logical operations and lightweight authentication methods could be used. However, thanks to the evolution of RFID technology, nowadays PKI infrastructure is also usable in this environment. In this paper we present our elliptic curve cryptography based mutual authentication protocol which proofs against the well-known attacks. We give a brief comparison with other EC based protocols in the point of view of security. Moreover, we show that our protocol is better than the others in case of performance, too.

Independent citations: 2

1. Győző Góbor, Norbert Giczi, Sándor Imre
Lang: English, WoS link, Scopus link, DOI: 10.1109/WCNIS.2010.5541860
Conference Paper/Paper of lecture or poster/Scientific

In the last few years RFID technology widespread. This technology can be found in each field of our daily life, e.g. supply-chain management, libraries, access management etc. For the sake of small computational capacity of RFID Tags, at first, only mathematical and logical operations and lightweight authentication methods could be used. However, thanks to the evolution of RFID technology, nowadays PKI infrastructure is also usable in this environment. In this paper we present our elliptic curve cryptography based mutual authentication protocol which proofs against the well-known attacks. We give a brief comparison with other EC based protocols in the point of view of security. Moreover, we show that our protocol is better than the others in case of performance, too.

Independent citations: 1

1. Győző Góbor, Norbert Giczi, Bálint Ary, Pateriya R K, Vasudevan S
Lang: English, WoS link, Scopus link, DOI: 10.1109/WCNIS.2010.5541860
Conference Paper/Paper of lecture or poster/Scientific

Elliptic Curve Cryptography in Constrained Environments: A Review
Lang: English, WoS link, Full text
Conference Paper/Paper of lecture or poster/Scientific

In the last few years RFID technology widespread. This technology can be found in each field of our daily life, e.g. supply-chain management, libraries, access management etc. For the sake of small computational capacity of RFID Tags, at first, only mathematical and logical operations and lightweight authentication methods could be used. However, thanks to the evolution of RFID technology, nowadays PKI infrastructure is also usable in this environment. In this paper we present our elliptic curve cryptography based mutual authentication protocol which proofs against the well-known attacks. We give a brief comparison with other EC based protocols in the point of view of security. Moreover, we show that our protocol is better than the others in case of performance, too.

Independent citations: 1

1. Győző Góbor, Norbert Giczi, Bálint Ary, Pateriya R K, Vasudevan S
Lang: English, WoS link
Conference Paper/Paper of lecture or poster/Scientific

Lang: English, WoS link
Conference Paper/Paper of lecture or poster/Scientific

Lang: English, WoS link
Conference Paper/Paper of lecture or poster/Scientific

Lang: English, Full document
Effelek kötet
Conference Paper/Paper of lecture or poster/Scientific

Postpaid billing systems in most cases are using one charging methods to rate the calls. Since latency is an accepted property, the throughput can be lower than the capacity required to process peak-hour traffic in a real-time manner. In this paper we will give an efficient mathematical model to calculate the processing power while taking the maximum queue size and maximum record age constraints into consideration.

Bálint Ary, Sándor Imre
Charging in Mobile Telecommunication Networks.
Lang: English, DOI: 10.4018/978-1-60566-250-3.ch005
Effelek kötet
Chapter in Book/Part of Monography/Scientific

The tariff packages in the mobile telecommunication industry got more and more complex in the last few years. The telecommunication companies have introduced several different services along with different discounts and allowances. The price calculation of the services
and the understanding of prices became harder for the subscribers. This chapter describes the basic architecture and the major flows of a billing system in the telecommunication area. It introduces a novel concept for price calculation, which could aid the Advance of Charge and Income Prediction functionalities.

100. Bacsárdi László, Galambos Máté, Inre Sándor
Kvantumcsatorna a műhold-Föld és a műhold-műhold kommunikációban.

Lang: Hungarian
Journal Paper/Article/Scientific

101. Árpád Huszák, Sándor Imre

Lang: English, Full document
Links to data bases: WoS
Conference Paper/Paper of lecture or poster/Scientific
Independent citations: 2 All citations: 2

1. Faisal Kaleem
VTHTS: Vertical Handoff Initiation and Target Selection in a Heterogeneous Wireless Network
Florida International University, USA
Diszsertáció/PhD

2. Heng Luo, Laurensen O I
QoS Based Performance Evaluation for MANETs
Konferenciacikk

102. Árpád Huszák, Sándor Imre

Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
Independent citations: 7 All citations: 7

1. Riker A, Mo H, Zeadally S, Cerqueira E, Abelem A
Real-time QoE prediction for multimedia applications in Wireless Mesh Networks
Konferenciacikk

2. Sarwar G, Bentil R, Lochn E
Konferenciacikk

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A method for seamless codec changeover during active video calls
Scopus link, DOI: 10.1109/CAMAD.2011.5941102
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On the way to high-quality video calls in future mobile networks
Scopus link, DOI: 10.1109/QoMEX.2011.6065710
Konferenciacikk

Video quality in next generation mobile networks — Perception of time-varying transmission
Konferenciacikk

6. Zhengyong Feng, Guangjun Wen, Zixuan Zou, Changwen Chen
Wireless Video Streaming QoS Guarantees Based on Virtual Leaky Bucket
Konferenciacikk

7. Samia Sharmin Shimu
Performance Analysis of H.264 Encoder for High-definition Video Transmission over Ultra-wideband Communication Link.

MSc Theses, Department of Electrical and Computer Engineering, University of Saskatchewan, Saskatoon. 2010.
Lang: English
100 pages.
Egyéb

103. A Mraz, S Imre, T Zámbo

Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific
Independent citations: 2 All citations: 2

1. Bascedilturk Ilhan, Ozbek Beren
Fairness aware resource allocation for downlink MISO–OFDMA systems
Konferenciacikk

2. Basturk I, Ozbek B
Fair resource allocation for multi-user MISO–OFDMA systems
Konferenciacikk

104. A Mráz, T Zámbo, S Imre
In this paper a new mobility management is introduced. The main idea in this approach is that the mobil node should manage the mobility for itself not the network. The network nodes provide only basic services for mobile entities: connectivity and administration. We construct a framework called the Client-based Mobility Frame System (CMFS) for this mobility environment. We developed the CMFS protocol as a solution over IPv4 and we show how to use Mobile IPv6 to realize our concept. We propose some basic mobility management solutions that can be implemented into the mobile clients and give details about a working simulation of a complete Mobility Management System. Example mobility management approaches such as the centralized- and hierarchical- or cellular-like ones are also defined and hints are given what kind of algorithms might be implemented upon the Client-based Mobility Frame System over IPv4 and IPv6 as well.

Independent citations: 2 All citations: 2

1. Sándor Szabo
   The effects of user mobility on the performance of wireless networks
   ISBN 978-3-8465-4784-7
   Könyv

2. Árpád Huszák
   Improving Multimedia Quality in IP Networks: Algorithms, Methods and Solutions
   Könyv

105. Vilmos Simon, Sándor Imre
   Location Area Design Algorithms for Minimizing Signalling Costs in Mobile Networks.
   (ISBN: 978-1-60566-054-7)
   Lang: English, Full document
   Chapter in Book/Part of Monography/Scientific
   Independent citations: 1 All citations: 1
   1. Hassein Dargahi, Niluvar Mohammad Zadeh, Hamid Reza Rezaian
      E-Business in Health Care Systems
      Folyóiratokk

106. Vilmos Simon, László Bokor, Sándor Imre
   Lang: English, Full document at the publisher
   Journal Paper/Article/Scientific
   Rinton Press

   Over the past years a number of IP micro-mobility protocols have been proposed as an extension or complement of Mobile IP. Although the development of these protocols has generated considerable interest in industry and academia, none of them have been widely deployed. The main reason of this lack of real-life usage of micro-mobility proposals is that the RFCs or drafts of these protocols do not address the problems regarding the micro-mobility structures in detail during the procedures of network design. This shortage is true in case of Mobile IPv6 as well (RFC 4140), which is one of the most significant micro-mobility solutions aiming to reduce the signaling delay and the number of signaling messages of Mobile IP.

   In order to provide guidelines for network designers we propose a new a hierarchical network design algorithm (HIENDA) based on the structure given by a Location Area planning algorithm, aligned with a MAP allocation algorithm in Hierarchical Mobile IPv6 to optimize the mobility management in Mobile IP networks. HIENDA considers the topology constraints, and takes the available mobility pattern and Access Router handover rate information as input, and finds a near optimal hierarchical structure for which the total signaling cost will be minimal. From the simulation results the conclusion could be drawn that HIENDA outperforms the other existing hierarchy optimizing solutions in the term of Location Update Cost, at the same time keeping the Packet Delivery Cost on a low level.

   Independent citations: 2 All citations: 2
   1. Sándor Szabo
      The effects of user mobility on the performance of wireless networks
      ISBN 978-3-8465-4784-7
      Könyv

107. P Fülöp, S Imre, S Szabó, T Szálka
   The Accuracy of Location Prediction Algorithms Based on Markovian Mobility Models.
   (2009)
   Lang: English, Scopus link, Full document
   Journal Paper/Article/Scientific

108. P Fülöp, B Kovács, S Imre
   Mobility Management Algorithms for the Client-driven Mobility Frame System - Mobility from a Brand New Point of View.
   MOBILE INFORMATION SYSTEMS 5:(4) pp. 313-337. (2009)
   IF: 0.972, Lang: English, WoS link, Scopus link, DOI: 10.3233/MIS-2009-0086
   Journal Paper/Article/Scientific

   In this paper a new mobility management is introduced. The main idea in this approach is that the mobil node should manage the mobility for itself not the network. The network nodes provide only basic services for mobile entities: connectivity and administration. We construct a framework called the Client-based Mobility Frame System (CMFS) for this mobility environment. We developed the CMFS protocol as a solution over IPv4 and we show how to use Mobile IPv6 to realize our concept. We propose some basic mobility management solutions that can be implemented into the mobile clients and give details about a working simulation of a complete Mobility Management System. Example mobility management approaches such as the centralized- and hierarchical- or cellular-like ones are also defined and hints are given what kind of algorithms might be implemented upon the Client-based Mobility Frame System over IPv4 and IPv6 as well.

   We introduce some example algorithms that can work with the CMFS making mobility management efficient by minimizing signalling load on the network. In the present work modeling and detailed discussion on the parameters of the algorithms is given and comparison to existing mobility management protocols is done. We prepared a simulation to test our protocols and to back up the proposals we provide the reader with simulation results. We stress that still one the most important benefit of our findings is that all the MNs can run different management strategies and can optimize mobility for themselves.

   Independent citations: 3 All citations: 3
   1. Sándor Szabo
      The effects of user mobility on the performance of wireless networks
      ISBN 978-3-8465-4784-7
      Könyv

2. Ciou YF, Leu FY, Huang YL, Yim K
   A handover security mechanism employing the Diffie-Hellman key exchange approach for the IEEE802.16e wireless networks
   MOBILE INFORMATION SYSTEMS 7:(Fukuoka, JAPAN) 241-269. (2011)
   WoS link, Scopus link, DOI: 10.3233/MIS-2011-0120
   Folyóiratokk

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   Mobile broadcast services with MIMO antennae in 4G wireless networks
   WORLD WIDE WEB 14: (4) 351-375. (2011)
   WoS link, Scopus link, DOI: 10.1007/s12280-011-0113-9
Solutions for Redundancy-Free Error Correction in Quantum Channel.

In: PROCEEDINGS OF THE 31ST INTERNATIONAL CONFERENCE ON ANTONOMIC COMMUNICATION. Springer-Verlag, 2009, pp. 221-228. DOI: 10.1109/ComputationWorld.2009.28

Lang: English, WoS link

Conference Paper/Paper of lecture or poster/Scientific

All free-space quantum communications require the use of a quantum channel, which transports quantum bits in such a way that the quantum mechanical states of the qubits remain preserved from one end of the channel to the other one. In quantum computing the classical error correction methods could not be used, however we can construct a classical channel with zero redundancy error correction for any unitary channel. In our basically new quantum error correction approach, the classical states are coded into the eigenvectors and unitary transformations. In this paper, we show that with our new algorithm it’s possible to create redundancy-free quantum error correction.

We also consider the redundancy-free implementation of a unitary error correcting operator. Our protocol achieves the redundancy-free correction.
Radio frequency identification technology is becoming ubiquitous and as an unfortunate side effect, more and more authentication solutions come to light that have plenty of security issues to deal with.

In our former contribution we introduced a solely hash-based secure authentication algorithm that is capable of providing protection against most of the well-known attacks and performs exceptionally well even in very large systems. We gave a theoretical analysis of the SLAP protocol in the point of view of security and performance.

In this paper we illustrate the proposed protocol's performance characteristics with measurements carried out in a simulation environment and compare with the theoretical results. We show the effects of numerous attacks and the system's different parameters on the authentication time. Finally, we examine the performance of two other protocols chosen from the literature in order to compare with SLAP algorithm and give proper explanation for the differences between them.

123. Gulyás Gábor György, Schulcz Róbert, Imre Sándor
Modeling Role-Based Privacy in Social Networking Services.
Lang: English, WoS link, Scopus link, DOI: 10.1109/SECURWARE.2009.34
Conference Paper/Paper of lecture or poster/Scientific

Independent citations: 2

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Privacy Awareness: Icons and Expression for Social Networks.
Konferenciai

2. RIDINGER Tamás
Személyes adatok védelmének gyakorlata mobil közösségi hálókon
2010 Lang: Hungarian Full document

124. Fulop P, Imre S, Szabo S, Szalka T
Accurate mobility modeling and location prediction based on pattern analysis of handover series in mobile networks.
IF: 0.972, Lang: English, WoS link, Scopus link, DOI: 10.3233/MIS-2009-0084
Journal Paper/Article/Scientific

The efficient dimensioning of cellular wireless access networks depends highly on the accuracy of the underlying mathematical models of user distribution and traffic estimations. Mobility prediction also considered as an effective method contributing to the accuracy of IP multicast based multimedia transmissions, and ad hoc routing algorithms. In this paper we focus on the tradeoff between the accuracy and the complexity of the mathematical models used to describe user movements in the network. We propose mobility model extension, multicast based multimedia transmissions, and ad hoe routing algorithms. In this paper we focus on the tradeoff between the accuracy and the complexity of the mathematical models used to describe user movements in the network. We propose mobility model extension, multicast based multimedia transmissions, and ad hoe routing algorithms. In this paper we focus on the tradeoff between the accuracy and the complexity of the mathematical models used to describe user movements in the network. We propose mobility model extension, multicast based multimedia transmissions, and ad hoe routing algorithms.
125. Fazekas Péter, Íme Sándor, Jeney Gábor, Pap László, Schulz Róbert, Szabó Sándor
Nagyebességű vezetéknélküli hálózatok – a közeljövő technológiái.
HIRÁDASTEKNIKA LVIII: pp. 34–42. (2009)
Lang: Hungarian
Journal Paper/Article/Scientific

126. Árpád Huszák, Sándor Íme
TFRC and RTT Thresholds Interdependence in a Selective Retransmission Scheme.
Lang: English, WoS link, Scopus link, Full document, DOI: 10.1109/ISCC.2009.5202239
Conference Paper/Paper of lecture or poster/Scientific

127. Árpád Huszák, Sándor Íme
Multi-path Video Streaming Using GRA Network Ordering Algorithm without Rank Inconsistency.
JOURNAL ON INFORMATION TECHNOLOGIES AND COMMUNICATIONS - RESEARCH DEVELOPMENT AND APPLICATION ON ELECTRONICS TELECOMMUNICATIONS TELECOMMUNICATIONS AND INFORMATION TECHNOLOGY E-1(1(5)) pp. 43-58. (2009)
Lang: English, Full document
Journal Paper/Article/Scientific

128. Árpád Huszák, Sándor Íme
Content-aware Interface Selection Method for Multi-Path Video Streaming in Best-effort Networks.
Lang: English, WoS link, Full document, DOI: 10.1109/ICTEL.2009.5168643
Conference Paper/Paper of lecture or poster/Scientific
Independent citations: 6 All citations: 6

2008

129. Íme Sándor, Balaj F
Квантовые вычисления и связь. Инженерный подход.
Lang: Russian
Book/Monography/Scientific
Independent citations: 2 All citations: 2

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Lang: Russian
http://www.kfti.knc.ru/resursi/monografii.html
Egyéb

2. F K Alley, A M Borodin, A V Kluev
K Vaproso o Separavestnosti Sostoscní Trehkuvitih Kvantovih Sistem

130. Zsoó Butyka, Tamás Jurszonoics, Sándor Íme
New fair QoS-based charging solution for mobile multimedia streams.
Lang: English, Full document at the publisher, DOI: 10.1504/IJVTMM.2008.017107
Link to data bases: Google scholar link
Journal Paper/Article/Scientific

131. Vilmos Simon, Sándor Íme
Network Planning Algorithms for Optimizing Signalling Load in Mobile Networks: Chapter IX.
The rapid growth of IP-based mobile telecommunication technologies in the past few years has revealed situations where not only a single node but an entire network moves and changes its point of attachment to the Internet. The main goal of any protocol supporting network mobility is to provide continuous, optimal and secure Internet access to all nodes and even recursively nested mobile subnetworks inside a moving network. For this purpose, the IETF (Internet Engineering Task Force) has developed the Network Mobility Basic Support (NEMO BS) protocol which extends the operation of Mobile IPv6 (MIPv6). In order to bypass the same problems suffered by MIPv6 and NEMO BS, a novel Host Identity Protocol (HIP) extension called HIP-NEMO is introduced, proposed and evaluated in this paper. Our proposal is based on hierarchical topology of mobile RVSs (mRVS), signaling delegation and inter-mRVS communication to enable secure and efficient network mobility support in the HIP layer. The method provides secure connectivity and reachability for every node and nested subnet in the moving network and supports nested scenarios as well. Moreover, HIPNEMO reduces signaling and packet overhead during network mobility management by achieving route optimization inside any moving network even in nested scenarios. To evaluate the proposed scheme we present a simulation model implemented in OMNeT++ and discuss the results of our simulation based analysis to show the efficiency of the approach compared to the NEMO BS protocol formulated by the IETF.
This paper describes an advanced timing attack scheme on cryptographic algorithms. An attacker can use our method to break a cryptographic algorithm by reconstructing the secret key. The paper contains a detailed explanation of our novel algorithm, furthermore, a practical example for its use. As a proof-of-concept, the method is shown on a specific implementation of the RSA algorithm revealing a 128-bit secret key. Timing attacks assume that the attacker has partial or full knowledge of the internal structure of the attacked algorithm and have gathered time-specific information on a number of known messages, that were encrypted or decrypted with the specific key. In our simplified proof-of-concept example, the attacker knows the total number of extra-reduction steps of the Montgomery multiplication in the RSA for a number of known messages. We demonstrate in practice how this information can be used to achieve complete and fast key recovery with statistical tools, i.e. analysis of variance (ANOVA) and t-test. Similar timing attacks have already been presented by others, however to our knowledge, none of them applied these statistical tools in their methods with such efficiency, and showed the complete recovery in practice by attacking the Montgomery multiplication. However, this is not the main contribution of the paper. The main contribution is, that we have introduced the new concept of key trees and goodness values, which lets the recovery algorithm examine only a very small key space, even if the decision criteria for guessing the key bits are highly biased. This concept can be extended to any other timing attack.

Independent citations: 2 All citations: 2

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   Improving timing attack on RSA-CRT via error detection and correction strategy
   Inform. Sciences 180 (1) 1-11, (2012)
   Folyóiratcikk

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   2010.
   Lang: English
   Egyéb

134. Peter Fulop, Benedek Kovacs, Sandor Imre
   Mobility Management Framework.
   pp. 1-5.
   Lang: English
   Further works/Manuscript/Scientific
   Independent citations: 1 All citations: 1

1. Md Shohrab Hossain, Mohammed Atiquzzaman
   Asymptotic scalability analysis of mobility protocols based on signalling overhead
   Int J Commun Netw Dist Syst 7 (1-2) 219-234, (2011)
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135. P Fulop, B Kovacs, S Imre
   Mobility Management Algorithms for the Client-driven Mobility Frame System - Mobility from a Brand New Point of View.
   Lang: English
   Conference Paper/Paper of lecture or poster/Scientific

136. P Fulop, T Szalak, S Szab, K Lendvai, S Imre
   Accurate Mobility Modeling and Location Prediction Based on Pattern Analysis of Handover Series in Mobile Networks.
   Lang: English
   Conference Paper/Paper of lecture or poster/Scientific
   Independent citations: 5 All citations: 5

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   Estimation of spectrum requirements for mobile networks with self-similar traffic, handover, and frequency reuse
   Mob Inf Syst 6 (4) 281-291, (2010)
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   DOI: 10.3233/MIS-2010-0104
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3. Abdulfaset Gaddah, Thomas Kunz
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   Lang: English
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5. Alfredo Milani, Eleonora Gentili, Valentina Pogioni
   Cellular Flow in Mobility Networks
   IEEE Intelligent Informatics Bulletin, ISSN 1727-5997 10: (1) 17-23, (2009)
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137. L Bacsardí, M Béres, S Imre
   Redundancy-Free Quantum Theory Based Error Correction Method in Long Distance Aerial Communication.
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   Chapter XXVIII: Novel Results on MBMS Service Provisioning in UTMS/WLAN Heterogeneous Architectures.
   In: Ismail Khalil Ibrahim (ed.)
139. **Imre Sándor**  
Kvantum és klasszikus módszerek alkalmazása infokommunikációs hálózatok teljesítképességének növelésére.  
24 p. 2008. (Dr. Habil.)  
Lang: Hungarian  
Thesis/Dr. Habil./Scientific

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Fair radio resource allocation in multiuser OFDMA networks.  
Lang: English, WoS link, Scopus link, Full document, DOI: 10.1109/MELCON.2008.4618552  
Conference Paper/Paper of lecture or poster/Scientific  
Independent citations: 1 All citations: 1

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Next Generation Mobile Communication Technology (MIMO-OFDMA System and RRM technique)  
51 pages.  
2010.  
Lang: English  
Full document  
Egyéb

141. **Győző Gódor, Máté Antal, Sándor Imre**  
Lang: English, WoS link, Scopus link, Full document, DOI: 10.1109/GLOCOM.2008.ECP.371  
Conference Paper/Paper of lecture or poster/Scientific  
Independent citations: 1 All citations: 1

Since tags have very limited memory and very low computational capacity a so-called lightweight authentication is needed. The earlier suggested algorithms do not satisfy all of the security requirements. In this paper we introduce our SLAP protocol which meets all the security requirements. Our solution provides an efficient mutual authentication method by which a given tag and the back-end can authenticate each other easily, quickly and securely even if large amount of tags are stored in the database. The protocol can defy the well-known attacks and does not demand high computational capacity.

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Mobile Payment.  
Lang: English, Full document  
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143. **Gyöngyösi L, Imre S**  
A kvantumkriptográfia infokommunikációs alkalmazásai.  
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Lang: Hungarian  
Egyéb

144. **Gulyás Gábor György, Schulzic Róbert, Imre Sándor**  
Comprehensive Analysis of Web Privacy and Anonymous Web Browsers: Are Next Generation Services Based on Collaborative Filtering?  
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Independent citations: 3 All citations: 3

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Fülöp Péter, Benedek Kovács, Imre Sándor
A Client-driven Mobility Frame System - Mobility Management From a New Point of View.
Lang: English
Conference Paper/Paper of lecture or poster/Scientific

Bokor László, Kanizsai Zoltán, Imre Sándor
Simple QoS Provisioning Framework for MBMS in all-IP UMTS Networks.
Lang: English, WoS link, Scopus link, Full document at the publisher, DOI: 10.1109/Melecon.2008.4618449
Conference Paper/Paper of lecture or poster/Scientific

The rapid development of high bit-rate mobile and wireless networking architectures offers a wide range of novel multimedia-based applications and services. The efficient delivery of these services requires mechanisms of broadcasting and multicasting, while the increasing user expectations require Quality of Service (QoS) support. We propose a new scheme for mobile and wireless networks, which has been seriously considered in mobile and wireless networks, has been adopted for the idea of IP-based Broadcast-Multicast Service (IPMBMS) for Universal Mobile Telecommunications System (UMTS) environments. In order to extend the QoS capabilities of MBMS in all-IP 3G networks and beyond, we introduce a simple QoS provisioning framework feasible for any policy-based architecture. In this paper we also evaluate our proposal using a lightweight UMTS MBMS simulation model implemented in OMNeT++.

Benedek Kovács, Péter Fülöp, Sándor Imre
Kliens vezérelt mobilitás, - mobilitás menedzsment új nézőpontból.
Lang: Hungarian
Journal Paper/Article/Scientific

In the past few years we have witnessed an explosive growth in the usage of media streaming applications. The newly appeared audio/video applications are becoming increasingly popular in IP networks, while in mobile environment the limited bandwidth and the higher error rate arise in spite of its popularity. Retransmission-based error recovery is considered inappropriate for multimedia applications, because of its latency. This solution can be attractive because it requires minimal network bandwidth, processing cost and efficiently improves the stream quality. Despite its latency, retransmission can be used successfully in many cases, especially if playback buffering is employed. Only the successfully retransmitted packets will improve the quality parameters of the multimedia stream, therefore it is worth to examine which packets should be retransmitted. In this paper we propose a selective retransmission algorithm which is based on a decision algorithm based on the actual RTT and sending rate determined by the TFRC. In our scheme the transmitter determines the retransmission delay caused by the retransmission delay of the receiver. This method improves the quality of the stream and the network delay are provided by the TFRC (TCP Friendly Rate Control) algorithm. Our proposal does not need additional administration messages because the decision procedure and its inputs are at the transmitter. The obtained results show that significant quality improvement is possible with the proposed selective retransmission scheme. (c) 2008 Elsevier B.V. All rights reserved.

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DCCP-based Multiple Retransmission Technique for Multimedia Streaming.
Lang: English, Full document
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Independent citations: 5 All citations: 5

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A Client-driven Mobility Frame System - Mobility Management From a New Point of View.
Lang: English
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Kliens vezérelt mobilitás, - mobilitás menedzsment új nézőpontból.
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149. Árpád Huszák, Sándor Imre
DCCP-based Multiple Retransmission Technique for Multimedia Streaming.
Lang: English, Full document
Conference Paper/Paper of lecture or poster/Scientific

Independent citations: 5 All citations: 5
In the next generation of mobile networks, we used our realistic mobile environment simulator to generate input data. We implemented two algorithms: a location area forming algorithm and a cell regrouping algorithm, which can help us to guarantee the QoS parameters of real-time services, which are the backbone of next generation mobile commercial services.

In the next generation IP-based mobile networks, one of the most important QoS parameters is the delay and the delay variation. The cell handover causes incremental signaling traffic, which can be critical from a delay point of view. It worsens the quality of real-time services, which are the backbone of next generation mobile commerce services. We have designed and implemented two algorithms: a location area forming algorithm and a cell regrouping algorithm, which can help us to guarantee QoS parameters in the next generation of mobile networks. We used our realistic mobile environment simulator to generate input data (cell changing and incoming call statistics) for our algorithms, and by comparing the values of the cost functions, we recognize that significant reduction was achieved in the amount of the signaling traffic, the location update cost was decreased by 40-60% in average.
Mobile networks have faced rapid increase in the number of mobile users and the solution for supporting the growing population is to reduce the cell sizes and to increase the bandwidth reuse. This will cause the number of location management operations and call deliveries to increase significantly, and result in high signaling overhead. We focus on minimizing this overhead, by efficient Location Area Planning (LAP). In this paper we seek to determine the location areas to achieve the minimization of the registration cost, constrained by the paging cost. For that we propose a simulated annealing algorithm, which is applied on a basic Location Area partition of cells formed by a greedy algorithm. We used our realistic mobile environment simulator to generate input (cell changing and incoming, call statistics) for our algorithm, and by comparing the values of the registration cost function we recognized that significant reduction was achieved in the amount of the signaling traffic.

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157. Szabolics Novaczki, László Bokor, Sándor Imre
   A HIP Based Network Mobility Protocol.
   Lang: English, Scopus link, Full document at the publisher, DOI: 10.1109/SANT-W.2007.8
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The rapid growth of IP-based mobile telecommunication technologies in the past few years has revealed situations where not only a single node but an entire network moves and changes its point of attachment to the Internet. The main goal of any protocol supporting network mobility (NEMO) is to provide continuous, optimal and secure Internet access to all nodes and even recursively nested mobile subnetworks inside a moving network. This paper describes a Host Identity Protocol (HIP) extension called HIP-NEMO, based on hierarchical topology, signaling delegation and connection tracking to enable secure and efficient network mobility support in the HIP layer.

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S Imre
Dynamic Call Admission Control for Uplink in 3g/4g CDMA Based Systems.
Journal Paper/Article/Scientific

Call admission control (CAC) strongly influences the performance of 3G/4G spread spectrum systems because it determines the number of active users that are admitted to the network, i.e., influences spectral efficiency. A novel air interface CAC algorithm is introduced in this paper. It optimizes the utilization of radio resources and provides real-time adaptation to the radio channel with generalized multiplicative fading. Users are handled as memory-less traffic sources. The suggested CAC method was evaluated for lognormal fading and ON/OFF traffic.

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G Adiline Macriga, V S Surya
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Sandor Szabo
The effects of user mobility on the performance of wireless networks
Könyv

Indu L Shakya, Falah H Ali, Elias Stipidis
High user capacity collaborative code-division multiple access
In this paper we also evaluate the performance of our proposal using datacasting arises in more complicated ways. In order to extend MBMS for UMTS/WLAN heterogeneous architectures we approach a novel framework along with a suitable and efficient WLAN MAC extension. In this paper we also evaluate the performance of our proposal using

The support of broadcasting and multicasting as an efficient L3-based service poses rigorous requirements to the next generation mobile communication architectures. When IP multicasting has been seriously considered in mobile systems, soon has emerged the proposal of Multimedia Broadcast Multicast Service (MBMS) for 3G networks and beyond. However, with the spreading of versatile heterogeneous communication architectures. When IP multicasting has been seriously considered in mobile systems, soon has emerged the proposal of Multimedia Broadcast Multicast Service (MBMS) for 3G networks and beyond. However, with the spreading of versatile heterogeneous wireless systems, like the cooperation of European 3G (UMTS) and Wireless Local Area Network (WLAN), the problem of wireless IP datacasting arises in more complicated ways. In order to extend MBMS for UMTS/WLAN heterogeneous architectures we approach a novel framework along with a suitable and efficient WLAN MAC extension. In this paper we also evaluate the performance of our proposal using
In this paper we propose a new IPv6 micromobility framework together with a subnet forming algorithm for providing more seamless handover, while being able to coexist with the standard IPv6 micromobility protocol (MPMIPv6). Our framework is based on the IPv6 anycasting paradigm called anycast-based micromobility, where a scoped-anycast care-of-address is assigned for the visiting mobile nodes while moving in a given subnet (i.e. micromobility domain). According to the anycast communication model defined in IPv6, packets sent to the anycast CoA will be always optimally routed to the actual position of the mobile node in a given subnet A simulated annealing based anycast subnet forming algorithm (SABAS) is also elemental part of our work aiming to demonstrate how IPv6 anycasting can be utilized for efficient micromobility. SABAS uses the handover and incoming session metrics generated by our mobile environment simulator.

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The Host Identity Protocol (HIP) is a rather new concept that separates the identity and location information both represented by IP addresses in the current Internet architecture. HIP also has capabilities and efficient extensions to serve macromobility, but it shows unnecessary signaling overhead and handoff latency, when used in micromobility environments. This paper introduces a new method how HIP can be extended to serve as a micromobility protocol.

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Finding the extreme value of a database or a function plays an important role in computing and communication applications. Unfortunately, classical solutions suffer from computational complexity if the database is unsorted or, equivalently, the function has many local minimum/maximum points. Proposed quantum computing based solutions can guarantee success only in terms of the expected value of the database queries. In this paper we introduce a new technique exploiting the parallel processing capabilities of quantum computing in a different way. We derive quantum existence testing which allows adapting the classical logarithmic search algorithm suitable for structured databases to unstructured ones while maintaining its efficiency.

Spectral efficiency of WCDMA based spread spectrum 3G/4G air interface technology is highly influenced by the common channel interference, hence the applied Call Admission Control method has great importance because it determines the number of active users at a time. It also provides efficient usage of radio resources and allows real-time adaptation to the always changing network parameters. Required CAC parameters are derived for generalized multiplicative fading and generalized memory-less traffic sources. In order to validate its capabilities our proposed CAC method was investigated with ON/OFF traffic sources and lognormal fading channels.

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Signal processing techniques will lean on blind methods in the near future, where no redundant, resource allocating information will be transmitted through the channel. To achieve a proper decision, however, it is essential to know at least the probability density function (PDF), which to estimate is classically a time consuming and/or less accurate hard task that may make decisions to fail. This paper describes the design of a quantum assisted PDF estimation method also by way of an example, which promises to achieve the exact PDF by proper setting of parameters in a very rapid way.
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In this paper, we analyze and enhance previously achieved results related to the generalized Grover search algorithm in terms of arbitrary initial pure state, arbitrary unitary transformation, arbitrary phase rotations, and arbitrary number of marked items. This allows us to construct an unsorted database search algorithm which can be included inside a quantum computing system. Because of its constructive nature this algorithm is capable of handling any kind of amplitude distribution at its input, provides absolute success in case of measurement and allows its output to be connected to another algorithm.

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The SONG project was formed in 2001, when research team of Mobile Communications and Computing Laboratory (MCL) at Budapest University of Technology and Economics (BUTE) joined the Inter-University Centre for Telecommunications and Informatics (ETIK). ETIK consists of academic research teams form BUTE and Eotvos Lorand University of Sciences (ELTE) and industrial partners among the leaders of information technology in Hungary. Industrial members are: Ericsson Communications Systems Hungary Ltd., KFKI Computer Systems Sc., Hungarian Telecommunications Sc., Sun Microsystems Hungary Ltd., Westel Mobile Telecommunications Sc., Compaq Computer Hungary Ltd., Antenna Hungaria Sc., Computer Science and Automation Research Institute of the Hungarian Academy of

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Many mobile agent applications require the agents being constantly present on the network. We address the problem of fair agent distribution as a multi-agent game where agents gain the most revenue from hosts that were long not visited. We show that in the perfect information case there exist a Nash equilibrium. We also consider several local strategies where gaining information is associated with additional cost. At the end of the paper we provide simulation results and a comparison of several global and local strategies.
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Redes Domiciliares: Princípios e Desafios das Tecnologias sem Novos Fios
Könyvfajezet
As mobile networking is moving towards the direction of providing high-speed multimedia services, the presence of connections that do not generate traffic at constant rate is becoming reality in wireless environment. For preliminary network design purposes analytical models are necessary that examine the performance or wireless networks with such connections. In this paper an analytical method is presented to calculate call-level system parameters of cellular networks with multimedia connections. The method is based on an approximate recursive calculation. The accuracy of the approximation is verified by computer simulations. The derivation of the distributions of user describing time variables and two simple admission control policies are also presented and investigated.

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ismeretet adunk a biztonsági célkitűzésekről, megvalósítási módjukról. Cikkünkben a létező, illetve szabványosítás alatt álló mobilrendszerek biztonsági megoldásait elemezzük. Átfogó
mivel mindenki számára elérhető, éppen ezért nagy súlyt kell
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Manapság a vezetékes hírközlőrendszerek mellett egyre inkább teret hódítanak a vezetéknélküli mobilrendszerek. Ezek óriási
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Lang: English
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Performance Analysis of Ofdm in Wireless Communication
In this paper we study the problem of supporting quality-of-service (QoS) parameters during a handover event, from the view of the wired network. The future network concepts of the most significant telecommunication companies have three common aspects: a unified IP/ATM backbone, many different kinds of access technologies and QoS support. We propose a new handover supporting routing method, which can be applied both to ATM and IP backbone networks. The method shortens the time needed for completing the handover (or handoff) by the aspect of the wired network, making easier to support real-time sensitive multimedia traffic types. The performance of the proposed scheme is evaluated through simulations. Our simulations show that our scheme provides higher network utilization while achieving smaller handover dropping probability, and smaller signaling latency.

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Today's network management systems suffer from scalability problems and involve the transmission of large amounts of raw data towards the centralized network management station. Therefore mobile agent (MA) based solutions were presented to enhance the efficiency of network management tasks. The paper investigates the existing MA delegation schemes and migration policies, and proposes a solution for effective agent deployment using dynamic agent domains. The size of the domains is altered during the trading process, where agents exchange nodes in order to equalize their workload using a lightweight communication model. Cloning and merging operations can be initiated to modify the number of agents, providing adaptivity to changing network conditions. The presented method includes the population and load control for network management agents along with robustness and fault tolerance mechanisms to achieve a guaranteed visiting frequency for the managed hosts.

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