

Lecture Notes of the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering

42

Editorial Board

Ozgur Akan

Middle East Technical University, Ankara, Turkey

Paolo Bellavista

University of Bologna, Italy

Jiannong Cao

Hong Kong Polytechnic University, Hong Kong

Falko Dressler

University of Erlangen, Germany

Domenico Ferrari

Università Cattolica Piacenza, Italy

Mario Gerla

UCLA, USA

Hisashi Kobayashi

Princeton University, USA

Sergio Palazzo

University of Catania, Italy

Sartaj Sahni

University of Florida, USA

Xuemin (Sherman) Shen

University of Waterloo, Canada

Mircea Stan

University of Virginia, USA

Jia Xiaohua

City University of Hong Kong, Hong Kong

Albert Zomaya

University of Sydney, Australia

Geoffrey Coulson

Lancaster University, UK

Qijun Gu Wanyu Zang Meng Yu (Eds.)

Security in Emerging Wireless Communication and Networking Systems

First International ICST Workshop, SEWCN 2009
Athens, Greece, September 14, 2009
Revised Selected Papers



Springer

Volume Editors

Qijun Gu
Texas State University-San Marcos
Department of Computer Science
601 University Drive
San Marcos, TX 78666, USA
E-mail: qijun@txstate.edu

Wanyu Zang
Meng Yu
Western Illinois University
Department of Computer Science
1 University Circle
Macomb, IL 61455, USA
E-mail: {w-zang; m-yu2}@wiu.edu

Library of Congress Control Number: 2009942991

CR Subject Classification (1998): C.2, D.4.6, K.6.5, E.3, G.2, I.1

ISSN 1867-8211
ISBN-10 3-642-11525-X Springer Berlin Heidelberg New York
ISBN-13 978-3-642-11525-7 Springer Berlin Heidelberg New York

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, re-use of illustrations, recitation, broadcasting, reproduction on microfilms or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permission for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

springer.com

© ICST Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering 2010
Printed in Germany

Typesetting: Camera-ready by author, data conversion by Scientific Publishing Services, Chennai, India
Printed on acid-free paper SPIN: 12830046 06/3180 5 4 3 2 1 0

Preface

The First ICST International Workshop on Security in Emerging Wireless Communication and Networking Systems (SEWCN 2009) was held in Athens, Greece, September 14, in conjunction with SecureComm 2009. SEWCN 2009 was sponsored by the Institute for Computer Sciences, Social-Informatics and Telecommunications Engineering (ICST). The Workshop Chairs were Qijun Gu from Texas State University-San Marcos, USA, and Wanyu Zang from Western Illinois University, USA.

The workshop invited 20 researchers from academia and industry around the world in the areas of networking and security to form the Program Committee. The workshop received nine submissions and each submission received two or three double-blind reviews. The review process started on July 6 and ended on July 27. In all, 21 reviews were received. Based on the review scores and comments, seven papers with average score 0 or better were accepted for presentation and inclusion in the workshop proceedings.

The workshop emphasized new ideas for secure architectures and protocols to enhance the emerging wireless systems. The accepted papers cover topics on applied cryptography, key management, vulnerability analysis, privacy, authentication, and intrusion detection for emerging wireless systems. The papers were presented in two sessions, chaired by Nikolaos Preve from the National Technical University of Athens, Greece, and Theofilos Chrysikos from the University of Patras, Greece.

For the success of SEWCN 2009, we would like to thank the Program Committee and the authors for their work and contributions. We would like to thank the technical sponsors CREATE-NET and ICST for their support and organization. We would also like to thank all the people involved in the organization of the workshop, in particular, the main Conference Chair Peng Liu, the conference coordinators Gergely Nagy, Eszter Hajdu and Effie Makri, and the general Workshop Chair Reza Curtmola.

Organization

Workshop Chairs

Qijun Gu Texas State University-San Marcos, USA
Wanyu Zang Western Illinois University, USA

Technical Program Committee

Abderrahim Benslimane	University of Avignon, France
Raheem Beyah	Georgia State University, USA
Ioannis Broustis	University of California, Riverside, USA
Timothy Brown	University of Colorado at Boulder, USA
Alvaro Cárdenas	University of California, Berkeley, USA
Hakima Chaouchi	Institut Telecom, France
Charles Clancy	Laboratory for Telecommunications Sciences, USA
Sghaier Guizani	Qatar University, Qatar
Wolfgang Hommel	Leibniz Supercomputing Centre, Germany
Jiankun Hu	RMIT University, Australia
Salil Kanhere	University of New South Wales, Australia
Frank Kargl	Ulm University, Germany
Costas Lambrinoudakis	University of the Aegean, Greece
Timothy Newman	Virginia Tech, USA
Raphael Phan	Loughborough University, UK
Elmar Schoch	Ulm University, Germany
Gritzalis Stefanos	University of the Aegean, Greece
Jay-Evan Tevis	LeTourneau University, USA
Yang Xiang	Central Queensland University, Australia
Meng Yu	Western Illinois University, USA

Table of Contents

Session 1 - Session Chair: Nikolaos Preve

- A Closed-Form Expression for Outage Secrecy Capacity in Wireless Information-Theoretic Security 3
Theofilos Chrysikos, Tasos Dagiuklas, and Stavros Kotsopoulos

- Enhanced Access Polynomial Based Self-healing Key Distribution 13
Ratna Dutta, Sourav Mukhopadhyay, and Tom Dowling

- Security Flaws in an Efficient Pseudo-Random Number Generator for Low-Power Environments 25
Pedro Peris-Lopez, Julio C. Hernandez-Castro, Juan M.E. Tapiador, Enrique San Millán, and Jan C.A. van der Lubbe

Session 2 - Session Chair: Theofilos Chrysikos

- RSSI-Based User Centric Anonymization for Location Privacy in Vehicular Networks 39
Yu-Chih Wei, Yi-Ming Chen, and Hwai-Ling Shan

- Integrating Wireless Sensor Networks with Computational Grids 53
Nikolaos Preve

- Security for Heterogeneous and Ubiquitous Environments Consisting of Resource-Limited Devices: An Approach to Authorization Using Kerberos 65
Jasone Astorga, Jon Matias, Purificacion Saiz, and Eduardo Jacob

- Signalprint-Based Intrusion Detection in Wireless Networks 77
Rob Mitchell, Ing-Ray Chen, and Mohamed Eltoweissy

- Author Index** 89