Lecture Notes in Computer Science 2015

Edited by G. Goos, J. Hartmanis and J. van Leeuwen

Springer Berlin

Berlin
Heidelberg
New York
Barcelona
Hong Kong
London
Milan
Paris
Singapore
Tokyo

Dongho Won (Ed.)

Information Security and Cryptology – ICISC 2000

Third International Conference Seoul, Korea, December 8-9, 2000 Proceedings



Series Editors

Gerhard Goos, Karlsruhe University, Germany Juris Hartmanis, Cornell University, NY, USA Jan van Leeuwen, Utrecht University, The Netherlands

Volume Editors

Dongho Won Sungkyunkwan University, School of Electronical and Computer Engineering 300 Chunchun-dong, Jangan-gu, Suwon, Kyonggi, Korea E-mail: dhwon@simsan.skku.ac.kr

Cataloging-in-Publication Data applied for

Die Deutsche Bibliothek - CIP-Einheitsaufnahme

Information security and cryptology: third international conference; proceedings / ICISC 2000, Seoul, Korea, December 8 - 9, 2000. Dongho Won (ed.). - Berlin; Heidelberg; New York; Barcelona; Hong Kong; London; Milan; Paris; Singapore; Tokyo: Springer, 2001 (Lecture notes in computer science; Vol. 2015) ISBN 3-540-41782-6

CR Subject Classification (1998): E.3, G.2.1, D.4.6, K.6.5, F.2.1, C.2, J.1

ISSN 0302-9743 ISBN 3-540-41782-6 Springer-Verlag 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-Verlag. Violations are liable for prosecution under the German Copyright Law.

Springer-Verlag Berlin Heidelberg New York a member of BertelsmannSpringer Science+Business Media GmbH

http://www.springer.de © Springer-Verlag Berlin Heidelberg 2001 Printed in Germany

Typesetting: Camera-ready by author, data conversion by PTP-Berlin, Stefan Sossna Printed on acid-free paper SPIN: 10782183 06/3142 5 4 3 2 1 0

Preface

I would like to welcome all the participants to the 3rd International Conference on Information Security and Cryptology (ICISC 2000). It is sponsored by the Korea Institute of Information Security and Cryptology (KIISC) and is being held at Dongguk University in Seoul, Korea from December 8 to 9, 2000. This conference aims at providing a forum for the presentation of new results in research, development, and application in information security and cryptology. This is also intended to be a place where research information can be exchanged.

The Call for Papers brought 56 papers from 15 countries and 20 papers will be presented in five sessions. As was the case last year the review process was totally blind and the anonymity of each submission was maintained. The 22 TPC members finally selected 20 top-quality papers for presentation at ICISC 2000.

I am very grateful to the TPC members who devoted much effort and time to reading and selecting the papers. We also thank the experts who assisted the TPC in evaluating various papers and apologize for not including their names here. Moreover, I would like to thank all the authors who submitted papers to ICISC 2000 and the authors of accepted papers for their preparation of cameraready manuscripts. Last but not least, I thank my student, Joonsuk Yu, who helped me during the whole process of preparation for the conference.

I look forward to your participation and hope you will find ICISC 2000 a truly rewarding experience.

December 2000 Dongho Won

Organization

The 3rd International Conference on Information Security and Cryptology (ICISC 2000) is organized and sponsored by the Korea Institute of Information Security and Cryptology (KIISC).

Executive Committee

Kil Hyun Nam General Chair (Presient of KIISC, Korea)
Dong Ho Won TPC chair (Sungkyunkwan University, Korea)
Jae Ho Shin Organizing Chair (Dongguk University, Korea)

Technical Program Committee

Dong Ho Won Sungkyunkwan University, Korea

Zongduo Dai Academia Sinica, P.R.C.

Ed Dawson Queensland University of Technology, Australia

Chul Kim Kwangwoon University, Korea

Kwang Jo Kim Information and Communications University,

Korea

Kaoru Kurosawa Tokyo Inst. of Tech., Japan

Kwok-Yan Lam National University of Singapore, Singapore

Kyoung Goo Lee KISA, Korea

Pil Joong Lee Pohang University of Sci. and Tech., Korea

Chae Hoon Lim
Masahiro Mambo
Tohoku University, Japan
Jong In Lim
Korea University, Korea
University of London, U.K.

Sang Jae Moon Kyungpook National University, Korea

Kaisa Nyberg Nokia Research Center, Finland

Eiji Okamoto Toho University, Japan

Tatsuaki Okamoto NTT, Japan Choon Sik Park ETRI, Korea

Sung Jun Park BCQRE CO., LTD, Korea

Bart Preneel Katholieke Universiteit Leuven, Belgium

Heung Youl Youm Soonchunhyang University, Korea

Moti Yung CertCo, U.S.A.

Yuliang Zheng Monash University, Australia

VIII Organization

Organizing Committee

Jae Ho Shin Dongguk University, Korea Chee Sun Won Dongguk University, Korea Sang Kyu Park Hanyang University, Korea Ha Bong Chung Hongik University, Korea Dong Hoon Lee Korea University, Korea Jae Jin Lee Dogguk University, Korea Howang Bin Ryou Kwangwoon University, Korea Seok Woo Kim Hansei University, Korea Yong Rak Choi Taejon University, Korea

Hyun Sook Cho ETRI, Korea Hong Sub Lee KISA, Korea

Seung Joo Han Chosun University, Korea Min Surp Rhee Dankook University, Korea Seog Pal Cho Seonggul University, Korea

Kyung Seok Lee KIET, Korea

Joo Seok Song Yonsei University, Korea

Jong Seon No Seoul National University, Korea Tai Myoung Chung Sungkyunkwan University, Korea

Sponsoring Institutions

MIC (Ministry of Information and Communication), Korea IITA (Institute of Information Technology Assessment), Korea KISA (Korea Information Security Agency, Korea Dongguk University, Korea

The Electronic Times, Korea

Table of Contents

A Note on the Higher Order Differential Attack of Block Ciphers with Two-Block Structures
Ju-Sung Kang, Seongtaek Chee, Choonsik Park (Department of Basic Technology, NSRI, Korea)
On the Strength of KASUMI without FL Functions against Higher Order Differential Attack
On MISTY1 Higher Order Differential Cryptanalysis
Difference Distribution Attack on DONUT and Improved DONUT
New Results on Correlation Immunity
Elliptic Curves and Resilient Functions
Fast Universal Hashing with Small Keys and No Preprocessing: The PolyR Construction
Characterization of Elliptic Curve Traces under FR-Reduction
A Multi-party Optimistic Non-repudiation Protocol
Secure Matchmaking Protocol

An Improved Scheme of the Gennaro-Krawczyk-Rabin Undeniable Signature System Based on RSA
Efficient and Secure Member Deletion in Group Signature Schemes 150 Hyun-Jeong Kim, Jong In Lim, Dong Hoon Lee (Center for Information Security Technologies, Korea University, Korea)
An Efficient and Practical Scheme for Privacy Protection in the E-Commerce of Digital Goods
An Internet Anonymous Auction Scheme
Efficient Sealed-Bid Auction Using Hash Chain
Micropayments for Wireless Communications
Cryptographic Applications of Sparse Polynomials over Finite Rings 206 William D. Banks (Department of Mathematics, University of Missouri, USA), Daniel Lieman (Department of Mathematics, University of Georgia, USA), Igor E. Shparlinski, Van Thuong To (Department of Computing, Macquarie University, Australia)
Efficient Anonymous Fingerprinting of Electronic Information with Improved Automatic Identification of Redistributors
Hash to the Rescue: Space Minimization for PKI Directories
A Design of the Security Evaluation System for Decision Support in the Enterprise Network Security Management
Author Index