October 4-8, 2010 Chicago, Illinois, USA



Advancing Computing as a Science & Profession



CCS'10

Proceedings of the 17th ACM Conference on Computer and Communications Security

Sponsored by:

ACM SIGSAC

Supported by:

National Science Foundation, US Army Research Office, Google, Microsoft, IBM, UNC Charlotte, and Indiana University



The Association for Computing Machinery 2 Penn Plaza, Suite 701 New York, New York 10121-0701

For other copying of articles that carry a code at the bottom of the first or last page, copying is permitted provided that the per-copy fee indicated in the code is paid through the Copyright Clearance Center, 222 Rosewood Drive, Danvers, MA 01923.

Notice to Past Authors of ACM-Published Articles

ACM intends to create a complete electronic archive of all articles and/or other material previously published by ACM. If you have written a work that has been previously published by ACM in any journal or conference proceedings prior to 1978, or any SIG Newsletter at any time, and you do NOT want this work to appear in the ACM Digital Library, please inform permissions@acm.org, stating the title of the work, the author(s), and where and when published.

ISBN: 978-1-4503-0244-9

Additional copies may be ordered prepaid from:

ACM Order Department

PO Box 11405 New York, NY 10286-1405

Phone: 1-800-342-6626 (USA and Canada) +1-212-626-0500 (all other countries)

Fax: +1-212-944-1318 E-mail: acmhelp@acm.org

ACM Order Number 537100

Printed in the USA

CCS 2010 General Chair's Welcome

ACM Conference on Computer and Communications Security (CCS) is the flagship annual conference of the Special Interest Group on Security, Audit and Control (SIGSAC) of the Association for Computing Machinery. CCS is ACM's oldest conference in security area. It brings together researchers and developers for academics, government agencies, research labs and corporate sectors from all over the world. It provides an environment to conduct intellectual discussions and exchange ideas that are instrumental in shaping the future of computer and communications security. From its inception, CCS has established itself as a high standard research conference in the area of computer and communications security. This reputation continues to grow and is reflected in high selective and prestige of the technical programs.

From 2002- 2008, the number of paper submissions increased from ~150 to ~300 submissions and selected papers reached 51 in 2008. CCS continues to increase in 2009 and 2010 and receives a new submission record in 2010 of 325 papers. CCS 2010 received funding support of ~\$60,000 from NSF, ARL, Google, IBM Research, Microsoft Research, University of North Carolina Charlotte, Indiana University and Thompson. The Organizing Committee of CCS 2010 has put together an outstanding program that includes 15 technical sessions, an invited talk, 9 pre- and post-conferences specialized workshops, 2 short and 3 long tutorials, 44 posters and two social events. We received around 69 posters in 2010, which is over 70% increase compared with 2009.

The CCS 2010 conference would not have been possible without the genuine and tireless efforts of the entire CCS 2010 Organizing Committee. We would like to congratulate them for their professionalism and commitment. We are most grateful to the authors who submitted their work to the main conference, workshops or posters. We would also like to thank the technical program committee members, the reviewers who diligently supported the peer review process, the workshop chairs who worked hard to organize the workshops, session chairs, and everyone else for their time and dedication to put together an outstanding program, as usual. We are also extremely grateful to those who are involved in making the local arrangements, designing the website, creating the publications and promotional materials, and handling registrations. A special acknowledgement goes to the staff of the ACM who supported us throughout. Last, but far from least, we would like to express our gratitude to the patrons who so generously contributed to the conference and/or workshops.

I hope that that you will enjoy staying in Chicago. Two social local events (Happy Hour and Banquet) have been arranged to provide an opportunity for you to get together with friends and colleagues. I hope that you will have a rewarding and enjoyable experience in CCS 2010.

Ehab Al-Shaer CCS 2010 General Chair University of North Carolina, Charlotte, USA

CCS 2010 Program Chairs' Welcome

It is our pleasure to report that the tradition of excellence established in previous years will again be manifest in this year's ACM Conference on Computer and Communications Security (CCS 2010), held October 4 - 8, 2010 in Chicago IL, USA.

We received a record 325 submissions from 36 countries. Each paper was reviewed by at least three of the 54 program committee members, with 20% of submissions receiving additional reviews (in some cases, up to 6 total reviews). This effort corresponded to a massive 1029 reviews, with each PC member responsible for 18 papers on average. The evaluation was made on the basis of each submission's significance, novelty, and technical quality. After the reviews were completed, the program committee conducted a month-long online discussion for each submission. Of the papers submitted, 55 were selected for presentation at the conference (with two of these submissions merged into a single paper), representing an acceptance rate of 17%. The quality of many of the papers that we could not accept was also very high; we are confident that with only a little (if any) additional work, many will be accepted and appear in other high-quality conferences. In this, we hope they will have benefited from the hard work of the excellent program committee members whom we had the pleasure to work with. We wish to thank the committee for the collegiality, diligence, responsiveness, and enthusiasm they exhibited throughout this grueling, but also extremely rewarding process. We also wish to thank the 223 external reviewers who provided additional input to the process.

This year, we introduced two innovations to the conference review process: review rebuttals and supplemental material. We expect both of these experiments to be repeated at least once more.

The rebuttal process proved popular with the authors, with 256 responses submitted during the designated two-day period. These helped clarify and guide the subsequent deliberation by the program committee, and we hope that they have further improved the quality of the feedback received by the authors.

In our experiment with supplemental material, authors were allowed to provide a 3-minute video (preferred) or a small number of slides with their submissions. Our goal was to improve understanding of the work by the reviewers by supplying them with an executive summary of the work in a different format. We received 27 submissions (8% of the total) with supplemental material, the large majority of which consisted of slides. The acceptance rate among these submissions was 15%, matching that of the overall conference. However, the acceptance rate for the few submissions that provided video demonstrations of their system was 42%.

We are very grateful to all other CCS 2010 organizers and the members of the CCS Steering Committee, whose efforts ensured a smooth organizational process. Last, but certainly not least, our thanks go to all the authors who submitted papers and all the attendees. We hope that, once again, you will find the program stimulating.

Angelos D. Keromytis

Columbia University, USA CCS 2010 Program Chair Vitaly Shmatikov

University of Texas at Austin, USA CCS 2010 Program Chair

Table of Contents

A	CM CCS 2010 Conference Organization	xii
Α	CM CCS 2010 Additional Reviewers	XV
Α	CM CCS 2010 Sponsor & Supporters	xvii
	eynote Address ssion Chair: Vitaly Shmatikov	
•	Adventures in Symbolic Protocol Analysis Jonathan K. Millen (The MITRE Corporation)	
	ession 1A: Security Analysis ssion Chair: XiaoFeng Wang (Indiana University Bloomington)	
•	Security Analysis of India's Electronic Voting Machines Scott Wolchok, Eric Wustrow, J. Alex Halderman (The University of Michigan), Hari K. Prasad, Arun Kankipati, Sai Krishna Sakhamuri, Vasavya Yagati (Netindia, (P) Ltd.), Rop Gonggrijp	1
•	Dissecting One Click Frauds	15
•	@Spam: The Underground on 140 Characters or Less Chris Grier (University of California, Berkeley), Kurt Thomas (University of Illinois, Champaign-Urbana), Vern Paxson, Michael Zhang (University of California, Berkeley)	27
	ession 1B: System Security ssion Chair: Angelos Stavrou (George Mason University)	
•	HyperSentry: Enabling Stealthy In-Context Measurement of Hypervisor Integrity	38
•	Trail of Bytes: Efficient Support for Forensic Analysis Srinivas Krishnan, Kevin Z. Snow, Fabian Monrose (University of North Carolina at Chapel Hill)	50
•	Survivable Key Compromise in Software Update Systems Justin Samuel (University of California, Berkeley), Nick Mathewson (The Tor Project), Justin Cappos (University of Washington), Roger Dingledine (The Tor Project)	61
	ession 2A: Wireless and Phone Security ssion Chair: Fabian Monrose (University of North Carolina)	
•	A Methodology for Empirical Analysis of Permission-Based Security Models and Its Application to Android David Barrera, H. Güneş Kayacik, Paul C. van Oorschot, Anil Somayaji (Carleton University)	73
•	Mobile Location Tracking in Metro Areas: Malnets and Others Nathaniel Husted, Steven Myers (Indiana University, Bloomington)	85
•	On Pairing Constrained Wireless Devices Based on Secrecy of Auxiliary Channels: The Case of Acoustic Eavesdropping Tzipora Halevi, Nitesh Saxena (Polytechnic Institute of New York University)	97
•	PinDr0p: Using Single-Ended Audio Features to Determine Call Provenance	109

	ssion Chair: Nikita Borisov (University of Illinois Urbana-Champaign)	
•	Building Efficient Fully Collusion-Resilient Traitor Tracing and Revocation Schemes	21
•	Algebraic Pseudorandom Functions with Improved	2.1
	Efficiency from the Augmented Cascade	31
•	Practical Leakage-Resilient Pseudorandom Generators Yu Yu, François-Xavier Standaert, Olivier Pereira (Université catholique de Louvain), Moti Yung (Columbia University and Google Inc.)	41
•	Practical Leakage-Resilient Identity-Based Encryption from Simple Assumptions	52
_	ession 3A: Passwords and CAPTCHAs ssion Chair: George Danezis (Microsoft Research Cambridge)	
•	Testing Metrics for Password Creation Policies	
	by Attacking Large Sets of Revealed Passwords 10 Matt Weir, Sudhir Aggarwal (Florida State University), Michael Collins (Redjack LLC), Henry Stern (Cisco IronPort Systems)	62
•	The Security of Modern Password Expiration: An Algorithmic Framework and Empirical Analysis	76
•	Attacks and Design of Image Recognition CAPTCHAs Bin B. Zhu (Microsoft Research Asia), Jeff Yan (Newcastle University), Qiujie Li (Nanjing University of Science and Technology), Chao Yang (University of Science and Technology of China), Jia Liu (iCare Vision Tech. Co., Ltd.), Ning Xu (Microsoft Research Asia), Meng Yi (Temple University), Kaiwei Cai (Beijing University)	87
	ession 3B: Sandboxing ssion Chair: Engin Kirda (Eurecom)	
•	Robusta: Taming the Native Beast of the JVM Joseph Siefers, Gang Tan (Lehigh University), Greg Morrisett (Harvard University)	01
•	Retaining Sandbox Containment Despite Bugs in Privileged Memory-Safe Code	12
•	A Control Point for Reducing Root Abuse of File-System Privileges	24
	ession 4A: Attacks on Secure Hardware ssion Chair: J. Alex Halderman (University of Michigan)	
•	Modeling Attacks on Physical Unclonable Functions 2. Ulrich Rührmair, Frank Sehnke, Jan Sölter (TU München), Gideon Dror (The Academic College of Tel-Aviv-Jaffa), Srinivas Devadas (Massachusetts Institute of Technology), Jürgen Schmidhuber (TU München)	37
•	Dismantling SecureMemory, CryptoMemory and CryptoRF	50
•	Attacking and Fixing PKCS#11 Security Tokens Matteo Bortolozzo, Matteo Centenaro, Riccardo Focardi (Università Cà Foscari), Graham Steel (LSV INRIA & CNRS & FNS-Cachan)	60

Session 4B: Information Flow Session Chair: Emery Berger (University of Massachusetts) An Empirical Study of Privacy-Violating Information Dongseok Jang, Ranjit Jhala, Sorin Lerner, Hovav Shacham (University of California, San Diego) William R. Harris, Somesh Jha, Thomas Reps (University of Wisconsin, Madison) Aslan Askarov, Danfeng Zhang, Andrew C. Myers (Cornell University) Session 5A: Anonymity Networks Session Chair: Roger Dingledine (Tor Project) In Search of an Anonymous and Secure Lookup: Attacks on Structured Peer-to-Peer Anonymous Communication Systems308 Qiyan Wang, Prateek Mittal, Nikita Borisov (University of Illinois at Urbana-Champaign) Rob Jansen, Nicholas Hopper, Yongdae Kim (University of Minnesota)

Session 5B: Formal Methods

Session Chair: Ralf Kuesters (University of Trier)

Can Tang, Ian Goldberg (University of Waterloo)

Henry Corrigan-Gibbs, Bryan Ford (Yale University)

Abstraction by Set-Membership:
 Verifying Security Protocols and Web Services with Databases
 Sebastian A. Mödersheim (Technical University of Denmark)

 Developing Security Protocols by Refinement
 Christoph Sprenger, David Basin (ETH Zurich)

 Computational Indistinguishability Logic
 Silles Barthe (IMDEA Software, Spain), Marion Daubignard (University of Grenoble),
 Bruce Kapron (University of Victoria), Yassine Lakhnech (University of Grenoble)

 Computationally Sound Verification of Source Code

 387
 Michael Backes (Saarland University, MPI-SWS), Matteo Maffei, Dominique Unruh (Saarland University)

Session 6A: Malware

Session Chair: Thomas Reps (University of Wisconsin Madison)

- Inference and Analysis of Formal Models of Botnet Command and Control Protocols ... 426 Chia Yuan Cho, Domagoj Babić, Eui Chul Richard Shin, Dawn Song (University of California, Berkeley)
- BLADE: An Attack-Agnostic Approach for Preventing Drive-By Malware Infections 440 Long Lu (Georgia Institute of Technology), Vinod Yegneswaran, Phillip Porras (SRI International), Wenke Lee (Georgia Institute of Technology)

Session 6B: Applied Cryptography II

Session	Chair:	Jonathan	Trostle	(JHU APL)

•	TASTY: Tool for Automating Secure Two-party Computations Wilko Henecka, Stefan Kögl, Ahmad-Reza Sadeghi, Thomas Schneider, Immo Wehrenberg (Ruhr-University Bochum)	451
•	Worry-Free Encryption: Functional Encryption with Public Keys. Amit Sahai, Hakan Seyalioglu (University of California, Los Angeles)	463
•	Synchronized Aggregate Signatures: New Definitions, Constructions and Applications Jae Hyun Ahn, Matthew Green, Susan Hohenberger (Johns Hopkins University)	473
•	Secure Text Processing with Applications to Private DNA Matching Jonathan Katz, Lior Malka (University of Maryland)	485
	ession 7A: Cryptographic Protocols ssion Chair: Steve Myers (Indiana University Bloomington)	
•	On the (In)Security of IPsec in MAC-then-Encrypt Configurations Jean Paul Degabriele, Kenneth G. Paterson (Royal Holloway, University of London)	493
•	On the Soundness of Authenticate-then-Encrypt: Formalizing the Malleability of Symmetric Encryption Ueli Maurer, Björn Tackmann (ETH Zurich)	505
•	A New Framework for Efficient Password-Based Authenticated Key Exchange	516
•	Accountability: Definition and Relationship to Verifiability Ralf Küsters, Tomasz Truderung, Andreas Vogt (University of Trier)	526
	ession 7B: Memory Safety and Binary Code ssion Chair: Ulfar Erlingsson (Google)	
•	Mimimorphism: A New Approach to Binary Code Obfuscation	536
•	Platform-Independent Programs Sang Kil Cha, Brian Pak, David Brumley (Carnegie Mellon University), Richard J. Lipton (Georgia Institute of Technology)	547
•	Return-Oriented Programming without Returns Stephen Checkoway (University of California, San Diego), Lucas Davi, Alexandra Dmitrienko, Ahmad-Reza Sadeghi (Ruhr-Universität Bochum), Hovav Shacham (University of California, San Diego), Marcel Winandy (Ruhr-Universität Bochum)	559
•	DieHarder: Securing the Heap	573
	ession 8: Web Security ssion Chair: Mihai Christodorescu (IBM T.J. Watson Research Center)	
•	Symbolic Security Analysis of Ruby-on-Rails Web Applications Avik Chaudhuri, Jeffrey S. Foster (University of Maryland, College Park)	585
•	Sidebuster: Automated Detection and Quantification of Side-Channel Leaks in Web Application Development Kehuan Zhang, Zhou Li, Rui Wang, XiaoFeng Wang (Indiana University), Shuo Chen (Microsoft Corporation)	595

•	NoTamper: Automatic Blackbox Detection of Parameter Tampering Opportunities in Web Applications Prithvi Bisht, Timothy Hinrichs, Nazari Skrupsky, Radoslaw Bobrowicz, V. N. Venkatakrishnan	607
	(University of Illinois at Chicago)	
•	Protecting Browsers from Cross-Origin CSS Attacks Lin-Shung Huang, Zack Weinberg (Carnegie Mellon University), Chris Evans (Google), Collin Jackson (Carnegie Mellon University)	619
D	emonstration Presentations	
•	A Privacy Recommendation Wizard for Users of Social Networking Sites	630
•	SecTag: A Multi-Policy Supported Secure Web Tag Framework	633
•	Demonstrating Cognitive Packet Network Resilience to Worm Attacks	636
•	In God We Trust All Others We Monitor	639
P	oster Presentations	
•	Enhancing Resilience of Probabilistic Key Pre-Distribution Schemes for WSNs Through Hash Chaining Walid Bechkit, Abdelmadjid Bbouabdallah, Yacine Challal (Universite de Technologie de Compiegne)	642
•	TAPS: Automatically Preparing Safe SQL Queries Prithvi Bisht, A. Prasad Sistla, V. N. Venkatakrishnan (University of Illinois at Chicago)	645
•	XACML Policy Performance Evaluation Using a Flexible Load Testing Framework Bernard Butler, Brendan Jennings, Dmitri Botvich (<i>Waterford Institute of Technology</i>)	648
•	Protecting Portable Storage with Host Validation Kevin R. B. Butler (University of Oregon), Stephen E. McLaughlin, Patrick D. McDaniel (The Pennsylvania State University)	651
•	Virtual Browser: A Web-Level Sandbox to Secure Third-Party JavaScript without Sacrificing Functionality Yinzhi Cao, Zhichun Li, Vaibhav Rastogi, Yan Chen (Northwestern University)	654
•	Cardspace in the Cloud	657
•	Secure Latency Estimation with Treeple Eric Chan-Tin, Nicholas Hopper (University of Minnesota)	660
•	TEE: A Virtual DRTM Based Execution Environment for Secure Cloud-End Computing Weiqi Dai (Huazhong University of Science and Technology & University of Texas at San Antonio), Hai Jin, Deqing Zou (Huazhong University of Science and Technology), Shouhuai Xu (University of Texas at San Antonio), Weide Zheng, Lei Shi (Huazhong University of Science and Technology)	663
•	Laptop Theft: A Case Study on the Effectiveness of Security Mechanisms in Open Organizations Trajce Dimkov, Wolter Pieters, Pieter Hartel (University of Twente)	666
•	Information Security for Sensors by Overwhelming	((0
	Random Sequences and Permutations Shlomi Dolev, Niv Gilboa (Ben-Gurion University), Marina Kopeetsky (Sami-Shamoon College of Engineering, Israel), Giuseppe Persiano (Università di Salerno), Paul Spirakis (University of Patras and CTI)	669
•	On Verifying Stateful Dataflow Processing Services in Large-Scale Cloud Systems	672

•	Assessing Trust in Uncertain Information Using Bayesian Description Logic	675
•	Timing Attacks on PIN Input Devices Denis Foo Kune, Yongdae Kim (University of Minnesota)	678
•	Detecting and Characterizing Social Spam Campaigns Hongyu Gao (Northwestern University), Jun Hu (HUST, China), Christo Wilson (University of California, Santa Barbara), Zhichun Li, Yan Chen (Northwestern University), Ben Y. Zhao (University of California, Santa Barbara)	681
•	Fingerprinting Websites Using Remote Traffic Analysis Xun Gong, Negar Kiyavash, Nikita Borisov (University of Illinois at Urbana-Champaign)	684
•	Efficient Sensor Node Authentication via 3GPP Mobile Communication Networks Kyusuk Han, Jangseong Kim, Kwangjo Kim (Korea Advanced Institute of Science and Technology), Taeshik Shon (Samsung Electronics, Inc., Korea)	687
•	Rendezvous Tunnel for Anonymous Publishing	690
•	Exploiting Social Networking Sites for Spam	693
•	An Implementation of Event and Filter Confidentiality in Pub/Sub Systems and Its Application to e-Health Mihalea Ion, Giovanni Russello (CREATE-NET International Research Center), Bruno Crispo (University of Trento)	696
•	Privacy and Robustness for Data Aggregation in Wireless Sensor Networks	699
•	Designing Router Scheduling Policies: A Privacy Perspective Sachin Kadloor, Xun Gong, Negar Kiyavash (University of Illinois at Urbana-Champaign), Parv Venkitasubramaniam (Lehigh University)	702
•	CRAFT: A New Secure Congestion Control Architecture Dongho Kim, Jerry T. Chiang, Yih-Chun Hu (University of Illinois at Urbana-Champaign), Adrian Perrig (Carnegie Mellon University), P. R. Kumar (University of Illinois at Urbana-Champaign)	705
•	Dialog-Based Payload Aggregation for Intrusion Detection Tobias Limmer, Falko Dressler (<i>University of Erlangen</i>)	708
•	Protecting Location Privacy Against Inference Attacks Kazuhiro Minami (National Institute of Informatics, Japan), Nikita Borisov (University of Illinois at Urbana-Champaign)	711
•	Designs to Account for Trust in Social Network-Based Sybil Defenses Abedelaziz Mohaisen, Nicholas Hopper, Yongdae Kim (University of Minnesota)	714
•	Secure Encounter-Based Social Networks: Requirements, Challenges, and Designs Abedelaziz Mohaisen (University of Minnesota), Eugene Y. Vasserman (Kansas State University), Max Schuchard, Denis Foo Kune, Yongdae Kim (University of Minnesota)	717
•	Secure Online Banking on Untrusted Computers	720
•	iFriendU: Leveraging 3-Cliques to Enhance Infiltration Attacks in Online Social Networks Rahul Potharaju (Purdue University), Bogdan Carbunar (Motorola Laboratories), Cristina Nita-Rotaru (Purdue University)	723
•	Losing Control of the Internet: Using the Data Plane to Attack the Control Plane Max Schuchard, Abedelaziz Mohaisen, Denis Foo Kune, Nicholas Hopper, Yongdae Kim (University of Minnesota), Eugene Y. Vasserman (Kansas State University)	726
•	Size-Based Scheduling: A Recipe for DDOS? Abdul Serwadda, Vir V. Phoha (Louisiana Tech University), Idris A. Rai (Makerere University)	729

User-Friendly Matching Protocol for Online Social Networks Qiang Tang (University of Twente)	732
Hierarchical Attribute-Based Encryption for Fine-Grained Access Control in Cloud Storage Services Guojun Wang, Qin Liu (Central South University, P. R. China), Jie Wu (Temple University)	735
Secure Dynamic Code Generation Against Spraying Wei Tao, Wang Tielei, Duan Lei (Peking University), Luo Jing (Chinese Academy of Sciences)	738
• Ad Hoc Broadcast Encryption Qianhong Wu (Universitat Rovira i Virgili & Wuhan University), Bo Qin (Universitat Rovira i Virgili & Xi'an University of Technology), Lei Zhang, Josep Domingo-Ferrer (Universitat Rovira i Virgili)	741
Dynamic Window Based Multihop Authentication for WSN Yao Lan, Yu Zhiliang, Zhang Tie, Gao Fuxiang (Northeastern University, China)	744
Spectrum Based Fraud Detection in Social Networks Xiaowei Ying, Xintao Wu (University of North Carolina, Charlotte), Daniel Barbará (George Mason University)	
A Portable TPM Based on USB Key Dawei Zhang, Zhen Han (Beijing Jiaotong University), Guangwen Yan (Beijing Watchdata System Compa	
 On Efficient Ciphertext-Policy Attribute Based Encryption and Broadcast Encryption Zhibin Zhou, Dijiang Huang (Arizona State University) 	on 753
• Efficient Provable Data Possession for Hybrid Clouds Yan Zhu, Huaixi Wang, Zexing Hu (Peking University), Gail-Joon Ahn, Hongxin Hu, Stephen S. Yau (Arizona State University)	756
A Cloud Based SIM DRM Scheme for the Mobile Internet Peng Zou, Chaokun Wang, Zhang Liu, Jianmin Wang, Jia-Guang Sun (Tsinghua University)	759
Author Index	762

ACM CCS 2010 Conference Organization

General Chair: Ehab Al-Shaer (University of North Carolina, Charlotte, USA)

Program Chairs: Angelos D. Keromytis (Columbia University, USA)

Vitaly Shmatikov (University of Texas at Austin, USA)

Tutorial Chairs: Gail-Joon Ahn (Arizona State University, USA)

Jorge Lobo (IBM Research, USA)

Workshop Chairs: Ninghui Li (Purdue University, USA)

Ting Yu (North Carolina State University, USA)

Publication Chair: Hao Chen (University of California, Davis, USA)

Local Arrangements Committee: Yan Chen (Chair) (Northwestern University, USA)

Tricha Anjali (Illinois Institute of Technology, USA)

V.N. Venkatakrishnan (University of Illinois, Chicago, USA)

Publicity Chairs: Chris Kruegel (University of California, Santa Barbara, USA)

Carlos Becker Westphal (Federal University of Santa Catarina, Brazil)

Treasurer: Sencun Zhu (Pennsylvania State University, USA)

Poster & Demo Chairs: Adam J. Lee (University of Pittsburgh, USA)

Xinming Ou (Kansas State University, USA)

Regional Arrangements Yong Guan (Iowa State University, USA)

Committee: EJ Jung (University of Iowa, USA)

Alex Liu (Michigan State University, USA)

Kui (Quinn) Ren (Illinois Institute of Technology, USA)

Web Chair: Kun Bai (IBM Research, USA)

Student Travel Grant Chair: Angelos Stavrou (George Mason University, USA)

Patrons & Industry Outreach: Bill Chu (University of North Carolina at Charlotte, USA)

XiaoFeng Wang (Indiana University, USA)

Steering Committee: Elisa Bertino (*Purdue University, USA*)

Peng Ning (North Carolina State University, USA) Rei Safavi-Naini (University of Calgary, Canada) Paul Syverson (Naval Research Laboratory, USA) Gene Tsudik (University of California, Irvine, USA)

Marianne Winslett (University of Illinois at Urbana-Champaign, USA)

Moti Yung (Google, USA)

Program Committee: Ben Adida (Harvard University, USA)

Adam Barth (University of California, Berkeley, USA)
Emery Berger (University of Massachutsetts, USA)
Bruno Blanchet (CNRS, ENS, INRIA, France)
Steve Borbash (Department of Defense, USA)

Nikita Borisov (University of Illinois at Urbana-Champaign, USA)

Stephen Chong (Harvard University, USA)
Mihai Christodorescu (IBM Research, USA)
Veronique Cortier (LORIA-CNRS, France)
Jed Crandall (University of New Mexico, USA)

Weidong Cui (Microsoft Research, USA)

Marc Dacier (Eurecom, France)

George Danezis (Microsoft Research, UK)

Roger Dingledine (Tor Project, USA)

Ulfar Erlingsson (Microsoft Research, USA)

Cédric Fournet (Microsoft Research-INRIA, France)

Vanessa Friaz-Martinez (Telefonica Research, Spain)

Vinod Ganapathy (Rutgers University, USA)

Virgil Gligor (Carnegie Mellon University, USA)

Philippe Golle (PARC, USA)

Steven Gribble (University of Washington, USA)

Alex Halderman (University of Michigan, USA)

Susan Hohenberger (Johns Hopkins University, USA)

Trent Jaeger (Pennsylvania State University, USA)

Stas Jarecki (University of California, Irvine, USA)

Ari Juels (RSA Laboratories, USA)

Apu Kapadia (Indiana University, USA)

Engin Kirda (Eurecom, France)

Yoshi Kohno (University of Washington, USA)

Ralf Kuesters (University of Trier, Germany)

Michael Locasto (George Mason University, USA)

Tal Malkin (Columbia University, USA)

Patrick McDaniel (Pennsylvania State University, USA)

Dave Molnar (Microsoft Research, USA)

Fabian Monrose (University of North Carolina, USA)

Steven Murdoch (University of Cambridge, UK)

Steven Myers (Indiana University, USA)

David Naumann (Stevens Institute of Technology, USA)

Lasse Øverlier (FFI, Norway)

Benny Pinkas (University of Haifa, Israel)

Bart Preneel (KU Leuven, Belgium)

Tom Reps (University of Wisconsin, USA)

Reiner Sailer (IBM Research, USA)

Steve Schneider (University of Surrey, UK)

R. Sekar (SUNY Stony Brook, USA)

Anil Somayaji (Carleton University, Canada)

Program Committee

(continued): Angelos Stavrou (George Mason University, USA)

Jonathan Trostle (Johns Hopkins University APL, USA)

Helen Wang (Microsoft Research, USA) XiaoFeng Wang (Indiana University, USA)

Brent Waters (University of Texas at Austin, USA)

HaiFeng Yu (NUS, Singapore)

Yuanyuan Zhou (University of California, San Diego, USA)

Mary Ellen Zurko (IBM, USA)

ACM CCS 2010 Additional Reviewers

Michel AbdallaStephanie DelauneDanesh IraniJae Hyun AhnTamara DenningSonia JahidTimur AlperovichMohan DhawanSuman JanaTycho AndersenEvan DriscollQuan Jia

Tycho Andersen Evan Driscoll Quan Jia

Man Ho Au Manuel Egele Maritza Johnson

Ali Bagherzandi Matthew Elder Srikanth Kandula

Marco Balduzzi William Enck Rezwana Karim

Lucas Ballard Miro Enev Jonathan Katz

Sruthi Bandhakavi Roya Ensafi Stefan Katzenbeisser
Moritz Y. Becker Junfeng Fan Vasileios P. Kemerlis
Amos Beimel Sebastian Faust Darrell Kienzle
Giampaolo Bella Nelly Fazio Hyun Jin Kim
Josh Benaloh Adrienne Felt Doug Knowles

Josh BenalohAdrienne FeltDoug KnowlesKaryn BensonKathi FislerJeongGil KoLennart BeringerPierre-Alain FouqueMarkulf Kohlweiss

Lennart Beringer Pierre-Alain Fouque Markulf Kohlweiss
Karthikeyan Bhargavan Jason Franklin Clemens Kolbitsch
Leyla Bilge Arik Friedman Karl Koscher

Erik-Oliver Blass Michael Gagnon Rama Kotla Bill Bolosky Steven Galbraith Hugo Krawczyk Steve Kremer Line Borgund Sanjam Garg William Gauvin **Kevin Bowers** Alptekin Küpcü Michael Brennan Serban Gavrila Adam J. Lee Torgeir Broen Roxana Geambasu Soo Bum Lee Michael Gerbush Corrado Leita Sergiu Bursuc

Amanda Burton Steven Gianvecchio Amit Levy
Kevin Butler Ian Goldberg Allison Lewko
Shakeel Butt Xun Gong Ninghui Li
Joseph Calandrino Vipul Goyal Zhou Li

Matteo Centenaro

Matthew Green

Haowen Chan

Melissa Chase

Avik Chaudhuri

Vipul Goyal

Matthew Green

Zhuowei Li

Junghee Lum

Xiaomin Liu

Chuanxiong Guo

Ben Livshits

Fuchun Guo

Shuo Chen

Yangyi Chen Brian Haberman Roel Maes
Celine Chevalier Helena Handschuh Anirban Majumder
Sherman S.M. Chow Bill Harris Joshua Mason

Jay Lorch

Andrey Chudnov Carmit Hazay Annabelle McIver
Stefan Ciobaca Nadia Heninger Steve McLaughlin
William Clarkson Ryan Henry Paolo Milani Comparetti

Jared CordascoCormac HerleyKazuhiro MinamiScott CoullOwen HofmannPrateek MittalGabriela Cretu-CiocarliePeter HoneymanPayman MohasselCharlie CurtsingerNicholas HopperSusan Molnar

Alexei Czeskis Sotiris Ioannidis Alex Moshchuk

Thomas Moyer Tom Ristenpart Tomasz Truderung Shishir Nagaraja Luis Rodero-Merino Max Tuengerthal Emma Turetsky Prasad Naldurg Franziska Roesner Arvind Narayanan Stan Rosenberg Mathieu Turuani Antonio Nicolosi Volker Roth Vinod Vaikuntanathan Guevara Noubir Yannis Rouselakis Ton van Deursen Gene Novark Indrajit Roy Marten van Dijk Adam O'Neill Sandra Rueda Jeffrey Vaughan Paulo Oliveira Damien Vergnaud Andy Rupp

Josh Olsen Amit Sahai Hayawardh Vijayakumar

Binh Vo **Machigar Ongtang** Mastooreh Salajegheh Javier Santoyo Jun Pang Andreas Vogt Vasilis Pappas Poorvi Vora Joshua Schiffman Bryan Parno Henning Schnoor Erez Waisbard Maura Paterson Srinath Setty Michael Walfish Marcus Peinado Stefaan Sevs **Rob Walters** Bo Peng Hovav Shacham Haining Wang **Tushar Sharma** Olivier Pereira Qiyan Wang abhi shelat Mike Perry Rui Wang Ryan Persaud Zhaohui Wang Elaine Shi Olgierd Pieczul Susanne Wetzel Dan Simon Norbert Pohlmann Michael Sirivianos Andrew White Michalis Polychronakis Sriram Srinivasan Daniel Wichs Donald E. Porter **Emil Stefanov** Ronny Windvik Martin Szydlowski Georgios Portokalidis Scott Wolchok Torkjel Søndrol Pairoj Rattadilok **Edmund Wong**

Maxim Raya Trond Arne Sørby Zhe Xia Mariana Raykova Patrick Tague Liu Yang

Tzachy Reinman Chunyu Tang Santiago Zanella Béguelin Jennifer Rexford Isamu Teranishi Stephan Zdancewic Leonid Reyzin Aditya Thakur Kehuan Zhang Tamara Rezk Patrick Traynor Lei Zhang Alfredo Rial Nikos Triandopoulos Xiaoyong Zhou

ACM CCS 2010 Sponsor & Supporters

Sponsor:



Supporters:













