2011 IEEE Symposium on Security and Privacy

SP 2011

Table of Contents

Message from General Chair	
xiii	
Additional Reviewers	
Session 1: Security of Authentication and Protection Mechanisms	
Phonotactic Reconstruction of Encrypted VoIP Conversations: Hookt on Fon-iks	3
The Failure of Noise-Based Non-continuous Audio Captchas	19
Using Fingerprint Authentication to Reduce System Security: An Empirical Study	32
Session 2: Hardware Security	
Silencing Hardware Backdoors	49
Adam Waksman and Simha Sethumadhavan	
Defeating UCI: Building Stealthy and Malicious Hardware	64
Cynthia Sturton, Matthew Hicks, David Wagner, and Samuel T. King	
Session 3: Systematization of Knowledge I	
Formalizing Anonymous Blacklisting Systems	81
Mobile Security Catching Up? Revealing the Nuts and Bolts of the Security of Mobile Devices	96
Michael Becher, Felix C. Freiling, Johannes Hoffmann, Thorsten Holz, Sebastian Uellenbeck, and Christopher Wolf	

Session 4: Browsing Security and Privacy	
Verified Security for Browser Extensions	115
Arjun Guha, Matthew Fredrikson, Benjamin Livshits, and Nikhil Swamy	
RePriv: Re-imagining Content Personalization and In-browser Privacy	131
I Still Know What You Visited Last Summer: Leaking Browsing History via User	
Interaction and Side Channel Attacks	147
Zachary Weinberg, Eric Y. Chen, Pavithra Ramesh Jayaraman, and Collin Jackson	
Session 5: Secure Information Flow and Information Policies	
Verification of Information Flow and Access Control Policies with Dependent Types	165
Aleksandar Nanevski, Anindya Banerjee, and Deepak Garg	
Inference of Expressive Declassification Policies	180
Jeffrey A. Vaughan and Stephen Chong	
The Complexity of Intransitive Noninterference	196
Sebastian Eggert, Ron van der Meyden, Henning Schnoor, and Thomas Wilke	
SCION: Scalability, Control, and Isolation on Next-Generation Networks	212
Xin Zhang, Hsu-Chun Hsiao, Geoffrey Hasker, Haowen Chan, Adrian Perrig, and David G. Andersen	
Session 6: Privacy and Social Networks	
"You Might Also Like:" Privacy Risks of Collaborative Filtering	231
Joseph A. Calandrino, Ann Kilzer, Arvind Narayanan, Edward W. Felten, and Vitaly Shmatikov	
Quantifying Location Privacy	247
Reza Shokri, George Theodorakopoulos, Jean-Yves Le Boudec, and Jean-Pierre Hubaux	
Preventing Sybil Attacks by Privilege Attenuation: A Design Principle for Social	
Network Systems	263
Philip W.L. Fong	
Session 7: Virtualization and Trusted Computing	
PRISM: Program Replication and Integration for Seamless MILS	281
Chris Owen, Duncan Grove, Tristan Newby, Alex Murray, Chris North, and Michael Pope	
Virtuoso: Narrowing the Semantic Gap in Virtual Machine Introspection	297
Brendan Dolan-Gavitt, Tim Leek, Michael Zhivich, Jonathon Giffin, and Wenke Lee	
HomeAlone: Co-residency Detection in the Cloud via Side-Channel Analysis	313
Yingian Zhang, Ari Juels, Alina Oprea, and Michael K. Reiter	

TxBox: Building Secure, Efficient Sandboxes with System Transactions	329
Suman Jana, Donald E. Porter, and Vitaly Shmatikov	
Session 8: Program Security Analysis	
Differential Slicing: Identifying Causal Execution Differences for Security	
Applications	347
Noah M. Johnson, Juan Caballero, Kevin Zhijie Chen, Stephen McCamant,	
Pongsin Poosankam, Daniel Reynaud, and Dawn Song	
Automated Analysis of Security-Critical JavaScript APIs	363
Ankur Taly, Úlfar Erlingsson, John C. Mitchell, Mark S. Miller, and Jasvir Nagra	
Memoir: Practical State Continuity for Protected Modules	379
Bryan Parno, Jacob R. Lorch, John R. Douceur, James Mickens, and Jonathan M. McCune	
Session 9: Systematization of Knowledge II	
A Formalization of the Security Features of Physical Functions	397
Frederik Armknecht, Roel Maes, Ahmad-Reza Sadeghi, François-Xavier Standaert, and Christian Wachsmann	
Timing- and Termination-Sensitive Secure Information Flow: Exploring a New	
Approach	413
Vineeth Kashyap, Ben Wiedermann, and Ben Hardekopf	
Session 10: Underground Economy/Malware	
Click Trajectories: End-to-End Analysis of the Spam Value Chain	431
Kirill Levchenko, Andreas Pitsillidis, Neha Chachra, Brandon Enright,	
Márk Félegyházi, Chris Grier, Tristan Halvorson, Chris Kanich, Christian Kreibich,	
He Liu, Damon McCoy, Nicholas Weaver, Vern Paxson, Geoffrey M. Voelker, and Stefan Savage	
Design and Evaluation of a Real-Time URL Spam Filtering Service	447
Kurt Thomas, Chris Grier, Justin Ma, Vern Paxson, and Dawn Song	
Session 11: Vulnerability Analysis	
How to Shop for Free Online—Security Analysis of Cashier-as-a-Service Based Web Stores	165
Rui Wang, Shuo Chen, XiaoFeng Wang, and Shaz Qadeer	403
Cryptography in the Web: The Case of Cryptographic Design Flaws in ASP.NET	481
Thai Duong and Juliano Rizzo Cooks Corner - Driveing Access Record Cooks Attacks on AES to Proctice	400
Cache Games—Bringing Access-Based Cache Attacks on AES to Practice	490
OpenConflict: Preventing Real Time Map Hacks in Online Games	506
Elie Rursztein Mike Hamburg Jocelyn Lagarenne and Dan Roneh	

Session 12: Anonymity and Voting

Extending Nymble-like Systems	523
Ryan Henry and Ian Goldberg	
Verifiability, Privacy, and Coercion-Resistance: New Insights from a Case Study	538
Author Index	554