

Stephen E. McLaughlin

Computer Science and Engineering ◊ Pennsylvania State University

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Education

The Pennsylvania State University
Ph.D. Candidate in Computer Science and Engineering
Advisor: Dr. Patrick McDaniel

The Pennsylvania State University
M.S. in Computer Science and Engineering
Advisor: Dr. Patrick McDaniel

The Pennsylvania State University
B.S. in Computer Science and Engineering
Minor in Mathematics

Experience

Research Assistant, Systems and Internet Infrastructure Security Lab
Penn State University, January 2009 - Present
Performed penetration testing of smart metering systems and published the results at CRITIS 2009 and ACSAC 2010.

Intern Programmer, Google
New York, NY, May 2008 - August 2008
Designed implemented and tested a highly scalable parallel minimum spanning tree algorithm.

Research Assistant, Systems and Internet Infrastructure Security Lab
Penn State University, March 2007 - April 2008
Designed, prototyped and evaluated novel storage security architectures and published the results at CCS 2008.

Intern Programmer, IBM Corp.
San Jose, CA, January 2006 - June 2006
Designed and implemented web-services for capacity planning and data center automation.

Publications

Journal Publications

Machigar Ongtang, Stephen McLaughlin, William Enck, and Patrick McDaniel. **Semantically Rich Application-Centric Security in Android**. *Security and Communication Networks*, To appear.

Kevin Butler, Steve McLaughlin, Thomas Moyer, and Patrick McDaniel. **OS Security Architectures Built on Smart Disks**. *IEEE Security and Privacy*, 2010.

Conference Publications

Stephen McLaughlin, Patrick McDaniel, and William Aiello, **Protecting Consumer Privacy from Electric Load Monitoring**. *18th ACM Conference on Computer and Communications Security (CCS)*, Chicago IL, USA. October 2011.

Stephen McLaughlin, Dmitry Podkuiko, Sergei Miadzvezhanka, Adam Delozier, and Patrick McDaniel, **Multi-vendor Penetration Testing in the Advanced Metering Infrastructure**. *26th Annual Computer Security Applications Conference (ACSAC 2010)*, Austin, TX, USA. December 2010.

Kevin Butler, Stephen McLaughlin, and Patrick McDaniel, **Kells: A Protection Framework for Portable Data**. *26th Annual Computer Security Applications Conference (ACSAC 2010)*, Austin, TX, USA. December 2010.

Kevin Butler, Stephen McLaughlin, and Patrick McDaniel, **Disk-Enabled Authenticated Encryption**. *26th IEEE Symposium on Massive Storage Systems and Technologies (MSST 2010)*, Lake Tahoe, Nevada. May, 2010. (Short paper)

(Best Paper) Machigar Ongtang, Stephen McLaughlin, William Enck, and Patrick McDaniel, **Semantically Rich Application-Centric Security in Android**. *Proceedings of the 25th Annual Computer Security Applications Conference (ACSAC 2009)* Honolulu, HI, USA. December 2009.

Albert Tannous, Jonathan Trostle, Mohamed Hassan, Stephen McLaughlin, and Trent Jaeger, **New Side Channel Attacks Targeting Passwords**. *Proceedings of the 24th Annual Computer Security Applications Conference (ACSAC 2008)*, Anaheim, CA, USA. December 2008.

Kevin Butler, Stephen McLaughlin, and Patrick McDaniel, **Rootkit Resistant Disks**. *15th ACM Conference on Computer and Communications Security (CCS 2008)*, Alexandria, VA, USA. November 2008.

Workshop Publications

Stephen McLaughlin. **On Dynamic Malware Payloads Aimed at Programmable Logic Controllers**. *6th USENIX Workshop on Hot Topics in Security*, San Francisco, CA. August, 2011.

Stephen McLaughlin, Dmitry Podkuiko, Adam Delozier, Sergei Miadzvezhanka, and Patrick McDaniel, **Embedded Firmware Diversity for Smart Electric Meters**. *Proceedings of the 5th USENIX Workshop on Hot Topics in Security (HotSec 2010)*, Washington, DC. August, 2010.

Patrick McDaniel, Kevin Butler, Stephen McLaughlin, Radu Sion, Erez Zadok, and Marianne Winslett, **Towards a Secure and Efficient System for End-to-End Provenance**. *2nd USENIX Workshop on the Theory and Practice of Provenance (TAPP 2010)*, San Jose, CA. February, 2010.

Stephen McLaughlin, Dmitry Podkuiko, and Patrick McDaniel, **Energy Theft in the Advanced Metering Infrastructure**. *4th International Workshop on Critical Information Infrastructure Security (CRITIS 2009)*. Bonn, Germany. September 2009.

Kevin Butler, William Enck, Harri Hursti, Stephen McLaughlin, Patrick Traynor, and Patrick McDaniel, **Systemic Issues in the Hart InterCivic and Premier Voting Systems: Reflections Following Project EVEREST**. *2008 USENIX/ACCURATE Electronic Voting Technology Workshop (EVT 2008)*, San Jose, CA, USA. July 2008.

Kevin Butler, Stephen McLaughlin, and, Patrick McDaniel, **Non-Volatile Memory and Disks: Avenues for Policy Architectures**. *1st Computer Security Architectures Workshop (CSAW 2007)*, November 2007. Fairfax, VA, USA.

Technical Reports

Kevin Butler, Stephen McLaughlin, and Patrick McDaniel, Autonomously Secure Disks. Technical Report NAS-TR-0072-2007, Network and Security Research Center, Department of Computer Science and Engineering, Pennsylvania State University, University Park PA, USA, September, 2007

Stephen McLaughlin, Kevin Butler, William Enck, and Patrick McDaniel, genbd: a Generic Block Driver. Technical Report NAS-TR-0082-2007, Network and Security Research Center, Department of Computer Science and Engineering, Pennsylvania State University, University Park PA, USA, November, 2007

Miscellaneous

Energy Theft in the Advanced Metering Infrastructure. *19th USENIX Security Symposium*, Washington, DC, USA. August 2010. Poster Presentation.

Embedded Firmware Diversity for Smart Electric Meters. *19th USENIX Security Symposium*, Washington, DC, USA. August 2010. Poster Presentation.

Patrick McDaniel and Stephen McLaughlin, **Security and Privacy Challenges in the Smart Grid**. *IEEE Security & Privacy Magazine*, 7(3):75–77, May/June, 2009.

Stephen McLaughlin and Patrick McDaniel, Utility Grid Automation Risk Management. *Clean Technology*, Houston, TX, USA, May, 2009. Poster Presentation.

Patrick McDaniel, Kevin Butler, William Enck, Harri Hursti, Stephen McLaughlin, Patrick Traynor, Matt Blaze, Adam Aviv, Pavol Cerny, Sandy Clark, Eric Cronin, Gaurav Shah, Micah Sherr, Giovanni Vigna, Richard Kemmerer, David Balzarotti, Greg Banks, Marco Cova, Viktoria Felmetzger, William Robertson, Fredrik Valeur, Joseph Lorenzo Hall, and Laura Quilter, EVEREST: Evaluation and Validation of Election-Related Equipment, Standards and Testing. December 2007

Presentations

Multi-vendor Penetration Testing in the Advanced Metering Infrastructure: Challenges for Regulation. *Carnegie Mellon Electricity Industry Center*. Pittsburgh, PA. August 31, 2011.

On Dynamic Malware Payloads Aimed at Programmable Logic Controllers. *The 6th USENIX Workshop on Hot Topics in Security (HotSec)*, San Francisco, CA. August 9, 2011.

Why We Need Standards for Breaking the Smart Grid. *The 2011 Technology Management and Policy Graduate Consortium*, Penn State University, University Park, PA. June 27, 2011.

Identifying (and Addressing) Security and Privacy Issues in Smart Electric Meters, Los Alamos National Laboratory, Los Alamos, NM. February 15, 2011.

Multi-vendor Penetration Testing in the Advanced Metering Infrastructure. *The 26th Annual Computer Security Applications Conference*, Austin, TX. December 8, 2010.

Multi-vendor Penetration Testing in the Advanced Metering Infrastructure: Future Challenges. *DI-MACS Workshop on Algorithmic Decision Theory for the Smart Grid*, Piscataway, NJ. October 26, 2010.

Embedded Firmware Diversity for Smart Electric Meters. *Proceedings of the 5th USENIX Workshop on Hot Topics in Security (HotSec 2010)*, Washington, DC. August, 2010.

Energy Theft in the Advanced Metering Infrastructure. *4th International Workshop on Critical Information Infrastructure Security (CRITIS 2009)*. Bonn, Germany. September 2009.

Awards and Scholarships

- Recipient ACM CCS Student Travel Grant, 2011
- Recipient Student Scholarship to the TCIPG Summer School on Cyber Security for Smart Energy Systems, 2011
- Recipient ACSAC Student Conferenceship, 2010
- Recipient DIMACS Workshop on Algorithmic Decision Theory for the Smart Grid Travel Grant, 2010
- Recipient HotSec Student Travel Grant, 2010
- Recipient USENIX Security Symposium Travel Grant, 2008 and 2009
- Recipient Harry G. Miller Fellowship, Spring 2008
- Recipient R. P. Drenning Memorial Scholarship, 2007-08
- Recipient John F. Kray Sr. Scholarship, 2006-07
- Deans List, Fall 2004 - Fall 2007

Affiliations

- Member Association for Computing Machinery
- Member Institute of Electrical and Electronics Engineers
- Member USENIX The Advanced Computing Systems Association
- Member Tau Beta Pi the Engineering Honor Society

External Service

Reviewer: International Conference on Availability, Reliability and Security (ARES), 2008; International Conference on Distributed Computing Systems (ICDCS), 2008; USENIX Security, 2008; IEEE TSE; Data and Applications Security (DBSec) 2008. 16th Annual Network and Distributed System Security Symposium (NDSS) 2009; ACM Symposium on Access Control Models and Technologies (SACMAT) 2009; USENIX Security, 2009; ACM Conference on Computer and Communications Security (CCS) 2009; ACM Cloud Computing Security Workshop (CCSW) 2009; Fifth International Conference on Information Systems Security (ICISS 2009); 17th ACM Conference on Computer and Communications Security (CCS 2010); 5th USENIX Workshop on Hot Topics in Security (HotSec 2010); 26th Annual Computer Security Applications Conference (ACSAC 2010); Proceedings of the IEEE; The 17th Annual International Conference on Mobile Computing and Networking (MOBICOM 2011); IEEE Transactions on Knowledge and Data Engineering (TKDE); The 18th Annual Network and Distributed System Security Symposium (NDSS).