

David Safford

Education:

PhD Computer Science, Texas A&M University, December 1990

MS Computer Science, California State, Chico, January 1984

BS Aerospace Engineering, Rice University, May 1975

Experience:

2019 to Current: Retired.

Invited Expert in Trusted Computing Group, leading efforts on Canonical Event Log standard for Trusted Computing, and its implementation for Linux.

2015 to 2019: Senior Principal Engineer, General Electric Global Research Center, Niskayuna, NY.

Led security research for embedded control systems, including for GE products. Focused on hardware roots of trust, secure and measured boot, and integrity attestation for Linux based embedded controllers. Co-author on proposal that won \$9M DARPA "GAPS" research project for use of FPGA to implement hardware based mandatory access control between embedded controllers.

1996 to 2015: Research Staff Member, IBM T.J. Watson Research Center, Yorktown Heights, NY.

Researcher in security topics, including security analysis tools, security engineering, Linux security, wireless security, ethical hacking, security hardware and coprocessors, and cryptography. Member of IBM team which developed a finalist in NIST's Advanced Encryption Standard competition. Lead development of IBM's Linux software for the Trusted Computing Group's Trusted Platform Module, including kernel modules for file verification and integrity based mandatory access control for improved client security. Lead research for the addition of integrity attestation to the NSA's High Assurance Platform (HAP) project.

1990 to 1996: Director of Computing, Texas A&M University, College Station, TX

Responsible for campus networking and supercomputing for the campus with fifty thousand faculty staff and students, and twenty thousand networked computers. In 1992, led research and development of the first university oriented firewall, intrusion detection, and security auditing systems, which could scale to class A networks at T3 speeds. Taught graduate classes in optimization and security.

1984 to 1990: Research Associate and PhD candidate, Texas A&M University, College Station, TX. Led a team of sixteen graduate students in a Navy research project in distributed fault tolerance for autonomous underwater vehicle embedded control systems.

1975 to 1984: A-7 Weapons System Test Pilot, US Navy, Naval Weapons Center, China Lake, CA. Led flight validation test programs for numerous weapons systems, including all A-7 software, AGM-123a "Skipper" missile, HARM missile, FLIR, and Night Vision systems. Qualified as Diving Officer on USS Robert E Lee Polaris Missile Submarine.

Selected Publications/Presentations:

"Hardware Rooted Trust for Additive Manufacturing", D. Safford and M. Wiseman, IEEE Access 2019, 7, 79211-79215.

"A Canonical Event Log Structure for IMA", D. Safford, and M. Wiseman, Linux Security Summit, Vancouver, Canada, 2018.

"Design and Implementation of a Security Architecture for Critical Infrastructure Industrial Control Systems in the Era of Nation State Cyber Warfare", D. Safford, Linux Security Summit, Toronto, Canada, 2016.

"Extending the Linux Integrity Subsystem for TCB Protection", D. Safford, Linux Security Summit, Chicago, IL, USA, 2014

"Security Research: Hardware Foundations", D. Safford, Invited Talk, Computer Architecture Day, Princeton University, April 2, 2009, <https://www.princeton.edu/~carch/carchday2009/safford.pdf>

"I/O for Virtual Machine Monitors: Security and Performance Issues", P. Karger and D. Safford, IEEE Security and Privacy, September 2008.

"Trusted Computing and Open Source", D. Safford, M. Zohar, Elsevier Information Security Technical Report, Volume 10 Issue 2, pp 74-82 2005.

"Open Source Support for Trusted Computing", D. Safford, GovSec 2005.

"Open Source Support for Trusted Computing", RSA Conference, San Francisco, February 2005.

"Trusted Linux Client", ACSAC, Tucson, AZ, December 2004.

"Autonomic 802.11 Wireless LAN Security Auditing", Joel Branch, Nick Petroni, Leendert van Doorn, David Safford, IEEE Security and Privacy, May 2004.

"Taking Control of TCPA", David Safford, Jeff Kravitz, Leendert van Doorn, Linux Journal, August 2003.

"Trusted Computing Panel", 12th USENIX Security Conference, Washington, DC. August 2003.

"MARS", David Safford, RSA Data Security Conference, San Francisco, CA 1997.

"Texas A&M University Anarchistic Key Authorization", David Safford, Douglas Schales, David Hess, Sixth USENIX Security Conference, San Jose, CA, July 1996.

"Secure RPC Authentication (SRA) for TELNET and FTP", David Safford, Douglas Schales, David Hess, 4th USENIX Security Conference, Santa Clara, CA, Oct 1993.

"The TAMU Security Package: An Ongoing Response to Internet Intruders in an Academic Environment", David Safford, Douglas Schales, David Hess, 4th USENIX Security Conference, Santa Clara, CA, Oct 1993.