



Internet characterization through measurements

Steve Rich (srich@cisco.com)

Robert Broberg (rbroberg@cisco.com)

October 31, 2015

The Internet is going dark....

- Soon to be ubiquitous encryption
- Malware detection and privacy
 - We want privacy
 - We don't want theft or malicious behaviour
- Entropy
 - What does that mean for data transfer?
- Is there true entropy with current encryption?
 - Weak prng?
 - Can we determine ciphers?
 - Traffic analysis
 - Nx40G?

Cisco's Advanced Security Research Group(ASRG)

- Security Research targeting issues 5, 10, 15 years out.....and 1, 3, 5
- Establishing programs in U.S, Europe and Asia
- Target Research institutes for multiplicative impact factor (pooling/collaboration)
- Engage universities/institutes/governments for joint research with impact
 - Cisco assigned liaison
 - Quarterly reviews to help guide academic research to relevant issues
 - Up to ~\$250k target funding for ~1 to ~3 year program
 - Internships to allow for collaboration with real data
 - Strong publications and dissemination of research results are metrics for success

Areas of interest

- Advanced Cryptography
- Platform & Software Integrity
- Analytics and Privacy
- Threat Mitigation
- Integrated Circuit / Hardware Integrity; Design & Fabrication

Grants - Funded Since April, 2015

University	Lead PI	Title	Focus Area	ASRG RM
Wake Forest	Errin Fulp	Evolutionary Cyber Defense for Resilient Computer Infrastructures	Threat Mitigation	Roger
Univ of PA	Nadia Heninger	Security Protocol Analysis Cluster Engineering	Analytics	Robert
Univ of Waterloo	Mark Aagaard	Fundamental Technologies for Ultralightweight Hardware Security Modules	Integrity	Roger
Indiana Univ	Jean Camp	The Trust Challenge of BGP	Integrity	Steve
Univ of Delaware	Chase Cotton	Threat Detection using Distributed Machine Learning and Shared Indicators of Compromise	Integrity	Robert
UC Berkeley	David Wagner	Secure Computing for Cloud and Enterprise: Machine Learning, Analytics, and Authentication	Analytics	Steve
INRIA	Mathieu Cunche	Privacy Preserving Mechanisms for Radio Based Location Analytics	Privacy	Steve
Virginia Tech	Patrick Schaumont	Remote Device Integrity by Physical Proofs	Integrity	Chris

Current solicitations for ASRG programs:

- Integrity:
 - <http://research.cisco.com/research-programs.html#rfp-2015092>
- Threat Mitigation:
 - <http://research.cisco.com/research-programs.html#rfp-2015093>
- Anonymity and Privacy:
 - <http://research.cisco.com/research-programs.html#rfp-2015094>
- Threat Defense and Distributed Computation and Trusted Computing
 - <http://research.cisco.com/research-programs.html#rfp-2013081>
- Integrated Circuit / Hardware Integrity; Design & Fabrication
 - <http://research.cisco.com/research-programs.html#rfp-2015095>

Thank you.

