

Kyle Graham Schomp

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Research Interests

I am a computer scientist with a specialization in distributed systems, networking, and Internet measurement. My current focus is on anycast deployments with particular interest in mitigation of growing DDoS attacks against the Domain Name System (DNS) while maintaining 100% availability. Previously, I've focused on privacy and security issues in the DNS, transport protocols and congestion control in mobile networks, and transport layer security.

Education

Case Western Reserve University

Ph.D. in Computer Science

2010 – 2016

Cleveland, OH

- Dissertation: *Complexity and Security of the Domain Name System.*
- Advisor: Michael Rabinovich

Case Western Reserve University

M.S. in Computer Science

2008 – 2010

Cleveland, OH

- Thesis: *Dynamic TCP Proxies: Coping with Mobility and Disadvantaged Hosts in MANETs.*
- Advisor: Michael Rabinovich

Case Western Reserve University

B.S. in Computer Science

2002 – 2006

Cleveland, OH

Appointments

Performance Engineer, Senior II

Performance Engineer, Senior

Akamai Technologies, Inc.

July 2018 – Present

February 2016 – July 2018

Cambridge, MA

- Monitor and maintain Akamai's massively distributed DNS infrastructure that is critical to Akamai's core business
- Identify issues and design solutions supported by quantitative analysis to improve the performance, reliability, and safety of the system
- Pre-emptively discover scaling limitations and develop mitigations
- Re-assess existing systems to tune configuration and reduce complexity where not justified by evidence

Graduate Student Researcher

International Computer Science Institute

June 2015 – September 2015

Cleveland, OH

Research Assistant

Case Western Reserve University

August 2010 – May 2015

Cleveland, OH

Research Internship

Telefónica I+D

September 2014 – December 2014

Barcelona, Spain

Teaching Assistant

Case Western Reserve University

August 2010 – December 2012

Cleveland, OH

- Courses: Computer Networks, Analysis of Algorithms, and Data Structures

Programmer

Game Communications / TypeFrag

September 2006 – July 2009

Cleveland, OH

Publications

- Al-Dalky, R., M. Rabinovich, & **K. Schomp**. “A Look at the ECS Behavior of DNS Resolvers.” In *Proceedings of the Internet Measurement Conference (IMC)*. ACM, 2019.
- Al-Dalky, R. & **K. Schomp**. “Characterization of Collaborative Resolution in Recursive DNS Resolvers.” In *Passive and Active Measurement Conference (PAM)*, pp. 146-157. Springer International Publishing, 2018. *
- **Schomp, K.**, M. Rabinovich, & M. Allman. “Towards a Model of DNS Client Behavior.” In *Passive and Active Measurement Conference (PAM)*, pp. 263-275. Springer International Publishing, 2016.
- Varvello, M., **K. Schomp**, D. Naylor, J. Blackburn, A. Finamore, & K. Papagiannaki. “Is the Web HTTP/2 Yet?.” In *Passive and Active Measurement Conference (PAM)*, pp. 218-232. Springer International Publishing, 2016.
- Naylor, D., **K. Schomp**, M. Varvello, I. Leontiadis, J. Blackburn, D. Lopez, K. Papagiannaki, P. Rodriguez, & P. Steenkiste. “multi-context TLS (mcTLS): Enabling Secure In-Network Functionality in TLS.” In *Proceedings of the Conference of the ACM Special Interest Group on Data Communication (SIGCOMM)*, pp. 199-212. ACM, 2015.
- **Schomp, K.**, M. Allman, & M. Rabinovich. “DNS resolvers considered harmful.” In *Proceedings of the ACM Workshop on Hot Topics in Networks (HotNets)*, pp. 16-22. ACM, 2014. *
- **Schomp, K.**, T. Callahan, M. Rabinovich, & M. Allman. “Assessing DNS vulnerability to record injection.” In *Passive and Active Measurement Conference (PAM)*, pp. 214-223. Springer International Publishing, 2014. *
- **Schomp, K.**, T. Callahan, M. Rabinovich, & M. Allman. “On measuring the client-side DNS infrastructure.” In *Proceedings of the Internet Measurement Conference (IMC)*, pp. 77-90. ACM, 2013. *

*gave conference talk

Other Presentations

- “A Look at the ECS Behavior of DNS Resolvers.” IRTF Measurement and Analysis for Protocols. November 2019. <https://www.youtube.com/watch?v=FnScP8r9JLg#t=37m58s>.
- “Recursive Resolver Delegation Selection.”
 - Nordic Domain Days. November 2019.
 - DNS-OARC 30. May 2019. <https://youtu.be/vRfuUFPadvA?t=1205>.
- “Using Anycast to Learn about Routing.” Akamai Inside Research. March 2019.
- “mcTLS: Enabling Secure In-Network Functionality in TLS.” Cisco FAST Seminar. September 2015.

- “DNS Record Injection Attacks in Home Routers.” North American Network Operators Group 61. June 2014. <https://www.youtube.com/watch?v=KgdVcHhMOWw>.

Patents

- Naylor, D., **K. Schomp**, M. Varvello, I. Leontiadis, J. Blackburn, D. Lopez, K. Papagiannaki, P. Rodriguez, & P. Steenkiste. 2018. “Method, a system and computer program products for securely enabling in-network functionality over encrypted data sessions.” US Patent No. 20180198761A1.

Student Mentoring

- Rami Al-Dalky, Intern, Akamai Technologies, Summer 2017/2018
Ph.D. candidate, Case Western Reserve University

Awards & Honors

- Worcester Polytechnic Institute STEM Faculty Launch Program (September 2015)
- U.S. Department of Education GAANN Fellowship (August 2010 – July 2013)
- Internet Measurement Conference Travel Grant (October 2013)
- President’s Scholarship of Case Western Reserve University (August 2002 – May 2006)

Professional Activities

- Graduate student judge for Case Western Reserve University Research ShowCASE, 2013 and 2014.
- Peer reviewer for:
 - IEEE/ACM Transactions on Networking
 - ACM Transactions on the Web
 - IET Information Security
 - Journal of Communications and Networks
 - IEEE Transactions on Services Computing
 - IEEE Transactions on Dependable and Secure Computing