

# Kyle Graham Schomp

COMPUTER SCIENTIST

Cleveland, OH

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Computer scientist performing Internet measurement research at Cisco ThousandEyes. My areas of interest are distributed systems, networking, and Internet measurement. My current focus is on anycast routing and mitigation of DDoS attacks, specifically against the DNS. Previously, I studied privacy and security issues in the DNS, transport protocols and congestion control in mobile networks, and encryption in the presence of middleboxes.

## Experience

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### Senior Manager, Research

CISCO THOUSANDEYES

April 2023 – present

Cleveland, OH

### Senior Researcher

CISCO THOUSANDEYES

May 2022 – April 2023

Cleveland, OH

### Performance Engineer, Manager

AKAMAI TECHNOLOGIES

May 2020 – May 2022

New York, NY

- Manage team of experienced performance engineers
- Principally responsible for performance and resiliency of Akamai's DNS infrastructure

### Performance Engineer, Senior II

AKAMAI TECHNOLOGIES

July 2018 – May 2020

London, GB

### Performance Engineer, Senior

AKAMAI TECHNOLOGIES

February 2016 – July 2018

Cambridge, MA

- Monitor and maintain Akamai's massively distributed DNS infrastructure that is critical to Akamai's core businesses
- 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
- Ensure safe and reliable operation of the system by establishing rigorous procedures and best practices

### Graduate Student Researcher

INTERNATIONAL COMPUTER SCIENCE INSTITUTE

June 2015 – September 2015

Cleveland, OH

### Research Internship

TELEFÓNICA I+D

September 2014 – December 2014

Barcelona, ES

### Teaching Assistant

CASE WESTERN RESERVE UNIVERSITY

August 2010 – December 2012

Cleveland, OH

### Software Engineer

GAME COMMUNICATIONS / TYPEFRAG

September 2006 – July 2009

Cleveland, OH

## Patents

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- **K. Schomp** & R. Al-Dalky. 2020. "Mapping Internet routing with anycast and utilizing such maps for deploying and operating anycast points of presence (PoPs)." US Patent No. US20200412686A1.
- 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.

## Publications

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- Mao, J., M. Rabinovich, & **K. Schomp**. “Assessing Support for DNS-over-TCP in the Wild.” In *Passive and Active Measurement Conference (PAM)*. 2022.
- **Schomp, K.** & R. Al-Dalky. “Partitioning the Internet using Anycast Catchments.” In *ACM SIGCOMM Computer Communication Review (CCR)*. 2020.
- **Schomp, K.**, O. Bhardwaj, E. Kurdoglu, M. Muhaimen, & R. K. Sitaraman. “Akamai DNS: Providing Authoritative Answers to the World’s Queries.” In *Proceedings of the Conference of the ACM Special Interest Group on Data Communication (SIGCOMM)*. 2020. \*
- Al-Dalky, R., M. Rabinovich, & **K. Schomp**. “A Look at the ECS Behavior of DNS Resolvers.” In *Proceedings of the Internet Measurement Conference (IMC)*. 2019.
- Al-Dalky, R. & **K. Schomp**. “Characterization of Collaborative Resolution in Recursive DNS Resolvers.” In *Passive and Active Measurement Conference (PAM)*. 2018. \*
- **Schomp, K.**, M. Rabinovich, & M. Allman. “Towards a Model of DNS Client Behavior.” In *Passive and Active Measurement Conference (PAM)*. 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)*. 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)*. 2015.
- **Schomp, K.**, M. Allman, & M. Rabinovich. “DNS resolvers considered harmful.” In *Proceedings of the ACM Workshop on Hot Topics in Networks (HotNets)*. 2014. \*
- **Schomp, K.**, T. Callahan, M. Rabinovich, & M. Allman. “Assessing DNS vulnerability to record injection.” In *Passive and Active Measurement Conference (PAM)*. 2014. \*
- **Schomp, K.**, T. Callahan, M. Rabinovich, & M. Allman. “On measuring the client-side DNS infrastructure.” In *Proceedings of the Internet Measurement Conference (IMC)*. 2013. \*

\*gave conference talk

## Technical Presentations

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- “A Look at the ECS Behavior of DNS Resolvers.”
  - DNS-OARC 33. September 2020.
  - 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>.

## Education

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### Case Western Reserve University

PH.D. IN COMPUTER SCIENCE

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

Cleveland, OH

2010 – 2016

### Case Western Reserve University

M.S. IN COMPUTER SCIENCE

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

Cleveland, OH

2008 – 2010

### Case Western Reserve University

B.S. IN COMPUTER SCIENCE

Cleveland, OH

2002 – 2006

## Professional Activities

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- Committee member for:
  - IMC Program Committee 2022 2023
  - PAM Program Committee 2022 2023 2024
  - The Web Conference Program Committee 2023
  - ACM SIGCOMM Artifact Evaluation Committee 2023
  - ACM SIGCOMM TAURIN Program Committee 2021
  - ACM CoNEXT Artifact Evaluation Committee 2020
- 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
  - ACM SIGCOMM Computer Communication Review