Casey T. Deccio

3368 TMCB ● Provo, UT 84602
casey@byu.edu ● 801-422-5319
https://casey.byu.edu/

Education

Ph.D. Computer Science, University of California Davis   *Sep 2010*
    Dissertation: *Quantifying and Improving DNS Availability*
M.S. Computer Science, Brigham Young University   *Dec 2004*
B.S. Computer Science, Brigham Young University   *Aug 2002*

Work Experience

Brigham Young University (Provo, UT)

Associate Professor of Computer Science   *Sep 2023 – present*
- Teach computer science courses to undergraduate and graduate students.
- Lead research and mentor students in the area of Internet measurement and anti-abuse.

Assistant Professor of Computer Science   *Oct 2016 – Sep 2023*
- Teach computer science courses to undergraduate and graduate students.
- Lead research and mentor students in the area of Internet measurement and anti-abuse.

Deccio Consulting Offices, LLC (Provo, UT)

Technical Consultant   *Jun 2021 – present*
- Consult on matters of Internet security and stability pertaining to the DNS.

VeriSign, Inc. (Reston, VA)

Senior Research Scientist   *Jan 2014 – Oct 2016*
- Contributed to Internet best practices and standards for stable and secure DNS ecosystem.
- Performed Internet measurement research with focus on new protocols, such as IPv6 and DNSSEC.

Sandia National Laboratories (Livermore, CA)

Principal Research & Development Cyber Security Staff   *Jan 2013 – Jan 2014*
- Led research and development projects related to scalable virtual computing.
- Performed research and development on operational DNSSEC and IPv6 deployment.

Senior Member of Technical Staff   *Oct 2009 – Jan 2013*
- Developed software for DNS maintenance, education, monitoring, troubleshooting.
- Led production DNSSEC deployment.

Member of Technical Staff   *Oct 2004 – Oct 2009*
- Performed network engineering and developed and deployed network management software.
- Deployed, maintained, and troubleshot network services, including DNS, DHCP, HTTP proxy.

Internet Corporation for Assigned Names and Numbers (remote, from Livermore, CA)

Research fellow   *May 2013 – Dec 2013*
- Contributed to research, reports, and advisories related to security and stability of the DNS.

Publications

Conference Publications

- Alden Hilton, **Casey Deccio**, and Jacob Davis. Fourteen Years in the Life: A Root Server's Perspective on DNS Resolver Security. In *The 32nd USENIX Security Symposium (USENIX Security '23)*. August 2023.
- **Casey Deccio**. W-Bad: Interception, Inspection, and Interference with Web Proxy Auto-Discovery (WPAD). In *7th Network Traffic Measurement and Analysis Conference, TMA 2023*. June 2023.
- Protick Bhowmick, Ishtiaq Ashiq, **Casey Deccio**, and Taejoong Chung. TTL Violation of DNS Resolvers in the Wild. In *Passive and Active Measurement (PAM 2023)*. March 2023.
- Nathaniel Bennett, Rebekah Sowards, and **Casey Deccio**. SPFail: Discovering, Measuring and Remediating Vulnerabilities in Email Sender Validation. In *IMC '22: Proceedings of the 22nd ACM Internet Measurement Conference (ACM IMC 2022)*. October 2022.
- Ramin Yazdani, Alden Hilton, Jeroen van der Ham, Roland van Rijswijk-Deij, **Casey Deccio**, Anna Sperotto, Mattijs Jonker. Mirrors in the Sky: On the Potential of Clouds in DNS Reflection-based

Denial-of-Service Attacks. In *The 25th International Symposium on Research in Attacks, Intrusions and Defenses (RAID 2022)*. October 2022.
- **Casey Deccio**, Tarun Yadav, Nathaniel Bennett, Alden Hilton, Michael Howe, Tanner Norton, Jacob Rohde, Eunice Tan, and Bradley Taylor. Measuring Email Sender Validation in the Wild. In *The 17th International Conference on emerging Networking EXperiments and Technologies (CoNEXT 2021)*. November 2021.
- Jacob Davis and **Casey Deccio**. Advertising DNS Protocol Use to Mitigate DDoS Attacks. In *The 29th IEEE International Conference on Network Protocols* (ICNP 2021), November 2021.
- Jacob Davis and **Casey Deccio**. A Peek Into the DNS Cookie Jar: An Analysis of DNS Cookie Use. In *Passive and Active Measurement Conference 2021* (PAM 2021), March 2021.
- **Casey Deccio**, Alden Hilton, Michael Briggs, Trevin Avery, and Robert Richardson. Behind Closed Doors: A Network Tale of Spoofing, Intrusion, and False DNS Security. In *IMC '20: Proceedings of the Internet Measurement Conference* (ACM IMC 2020), October 2020.
- **Casey Deccio** and Jacob Davis. DNS Privacy in Practice and Preparation. In *The 15th International Conference on emerging Networking EXperiments and Technologies (ACM CoNEXT 2019)*, December 2019.
- Jonathan Demke and **Casey Deccio**. On DNSSEC Negative Responses, Lies, and Zone Size Detection. In *Passive and Active Measurement Conference 2019* (PAM 2019), March 2019.
- **Casey Deccio**. DNS Diagnostics through the Eye of the Beholder. In *International Conference on Computing, Networking and Communications (ICNC 2019)*, February 2019.
- **Casey Deccio**, Derek Argueta, and Jonathan Demke. A Quantitative Study of the Deployment of DNS Rate Limiting. In *International Conference on Computing, Networking and Communications (ICNC 2019)*, February 2019.
- **Casey Deccio**, Jeff Sedayao, Krishna Kant, and Prasant Mohapatra. Quantifying and Improving DNSSEC Availability. In *The 20th International Conference on Computer Communications and Networks (ICCCN 2011)*, July 2011.
- **Casey Deccio**, Jeff Sedayao, Krishna Kant, and Prasant Mohapatra. Measuring Availability in the Domain Name System. In *The 29th IEEE Conference on Computer Communications (IEEE INFOCOM 2010)*, March 2010.
- **Casey Deccio**, Chao-Chih Chen, Jeff Sedayao, Krishna Kant, and Prasant Mohapatra. Quality of Name Resolution in the Domain Name System. In *The 17th IEEE International Conference on Network Protocols (IEEE ICNP 2009)*, October 2009.
- **Casey Deccio**, Joseph Ekstrom, Charles Knutson, D. Ryan Partridge, and Kevin Tew. A Study of the Suitability of IrOBEX for High-Speed Exchange of Large Data Objects. In *IEEE 2003 Global Communications Conference (GLOBECOM 2003)*, December 2003.

Journal Articles
- Alden Hilton, Joel Hirschmann, and **Casey Deccio**. Beware of IPs in Sheep's Clothing: Measurement and Disclosure of IP Spoofing Vulnerabilities. *IEEE/ACM Transactions on Networking*. February 2022.
- **Casey Deccio**. Maintenance, Mishaps and Mending in Deployments of the Domain Name System Security Extensions (DNSSEC). *International Journal of Critical Infrastructure Protection.* July 2012.
- **Casey Deccio**, Jeff Sedayao, Krishna Kant, and Prasant Mohapatra. Quantifying DNS Namespace Influence. In *Computer Networks.* February 2012.

Books and Book Chapters
- Krishna Kant and **Casey Deccio**. Security and Robustness in the Internet Infrastructure. In *Handbook on Securing Cyber-Physical Critical Infrastructure.* Morgan Kaufman (2012), Waltham, MA. pp. 705-733.
- *Quantifying and Improving DNS Availability.* PhD Dissertation. University of California Davis, 2010.

Other
- **Casey Deccio**. "What's in a Name (collision)?" Modeling and Quantifying Collision Potential. Workshop and Prize on Root Causes and Mitigation of Name Collisions (WPNC). March 10, 2014. http://namecollisions.net/downloads/wpnc2014_paper_deccio.pdf
- **Casey Deccio**. SSAC Advisory on Search List Processing (with ICANN SSAC). SAC064. February 13, 2014. https://www.icann.org/en/groups/ssac/documents/sac-064-en.pdf

- **Casey Deccio**. SSAC Advisory on DNSSEC Key Rollover in the Root Zone (with ICANN SSAC). SAC063. November 7, 2013. https://www.icann.org/en/groups/ssac/documents/sac-063-en.pdf
- **Casey Deccio**, Jeff Sedayao, Krishna Kant, and Prasant Mohapatra. A Case for Comprehensive DNSSEC Monitoring and Analysis Tools. Securing and Trusting Internet Names, SATIN 2011. April 4, 2011. http://conferences.npl.co.uk/satin/papers/satin2011-Deccio.pdf

Grants
- Comcast Innovation Fund 2021. "Assessing the Accessibility and Vulnerability of DNS Resolvers".
- Comcast Innovation Fund 2020. "A Study of the Pervasiveness and Quality of DNS Cookie Deployment".
- Comcast Innovation Fund 2019. "DNS Resolvers - A Study in Proximity and Unintended Exposure".

Awards
- Discovery Award. College of Physical and Mathematical Sciences, Brigham Young University, 2023.
- Discovery Award. Computer Science Department, Brigham Young University, 2022.
- Star Program – Above and Beyond Award. Verisign, 2015.
- Employee Recognition Award – Individual Technical Excellence. Sandia National Laboratories, 2012.

Talks
- Identity, Impersonation, and Intrusion – and Other Internet Measurement Adventures. Department of Computer Science, Virginia Tech. Dec 1, 2023.
- Behind Closed Doors: A Network Tale of Spoofing, Intrusion, and False DNS Security. College of Computing, Georgia Tech. Dec 1, 2022.
- Fourteen Years in the Life: A Root Server's Perspective on DNS Resolver Security. OARC 39. Oct 22, 2022.
- Behind Closed Doors: A Network Tale of Spoofing, Intrusion, and False DNS Security. Khoury College of Computer Sciences, Northeastern University. Sep 22, 2022.
- Advertising DNS Protocol Use to Mitigate DDoS Attacks. OARC 36. Nov 29, 2021.
- Behind Closed Doors: A Network Tale of Spoofing, Intrusion, and False DNS Security. OARC 35. May 7, 2021.
- A Peek Into the DNS Cookie Jar: An Analysis of DNS Cookie Use. OARC 35. May 6, 2021.
- DNS Privacy in Practice – Measuring Deployment of DoT, DoH, and TFO. NANOG 78. Feb 10, 2020.
- DNS Privacy in Practice and Preparation. KISMET 2019. Dec 9, 2019.
- Visualization of DNS Dependencies and More. KISMET 2019. Dec 9, 2019.
- On DNSSEC Negative Responses, Lies, and Zone Size Detection. OARC 31. Nov 1, 2019.
- Measuring the Time Between DNS Recursive to Authoritative Servers. AIMS 2019. Apr. 27, 2019.
- DNS Robustness Amid Misconfiguration, Attack, and Abuse. PAM PhD School (invited). Mar 27, 2019.
- DNS Robustness Amid Misconfiguration, Attack, and Abuse. NIC Labs (invited). Mar 25, 2019.
- A Study of DNS Rate Limiting Deployment. OARC 27. Sep 29, 2017.
- Arming the Defenseless: An Incentive-based Approach to DNS Reflection Prevention. AIMS 2017. Mar. 1, 2017.
- Hands-on DNSSEC with DNSViz. NANOG 69, Feb. 8, 2017.
- Arming the Defenseless: An Incentive-based Approach to DNS Reflection Prevention. DINR 2016. Nov. 17, 2016.
- Pre-Deployment DNS Testing: Or How to Avoid a Train Wreck. OARC 25. Oct. 15, 2016.
- Multi-vantage point DNS Diagnostics and Measurement. USTelecom Webinar. Jun. 30, 2016.
- Hands-on DNSSEC with DNSViz. RIPE 72, May 23, 2016.
- Multi-vantage point DNS Diagnostics and Measurement. OARC 24, Apr 1, 2016.
- A Looking Glass for DNS Measurement. AIMS 2016, Feb 12, 2016.
- Hands-on DNSSEC with DNSViz. NANOG 66, Feb 9, 2016.
- Hands-on DNSSEC with DNSViz. RIPE 70, May 11, 2015.
- A Multi-perspective View of DNS Availability and Resilience. AIMS 2015, April 2, 2015.
- DNSViz – Powerful DNS Analysis. NANOG 63, Feb 3, 2015.

- Detecting and Quantifying Abusive IPv6 SMTP. Internet2 2014 Technical Exchange, Oct. 30, 2014.
- DNSViz - Powerful and Extensible DNS Analysis. DNS-OARC Fall 2014 Workshop, Oct. 13, 2014.
- Detecting and Quantifying Abusive IPv6 SMTP. NANOG 62. Oct 6, 2014.
- Portable DNS Analysis. DNS-OARC Spring 2014 Workshop. May 10, 2014.
- DNSViz - Monitoring, Analysis, and Visualization. DNS-OARC Fall 2013 Workshop, Oct. 5, 2013.
- Qualitative DNS Measurement Perspectives. NANOG 59, DNS Track, Jun. 5, 2013.
- Solutions and Challenges in Securing the Domain Name System. University of Nevada, Dept. of Computer Science & Engineering, Apr. 19, 2013.
- Profiling Internet Spammers Using Passive Dual-stack Observation. AIMS-5, Feb. 7, 2013.
- Qualitative DNS Measurement Perspectives. TIP 2013, Jan. 19, 2013.
- Qualitative DNS Measurement Perspectives. ISC/CAIDA Data Collaboration Workshop, Oct. 22, 2012.
- Turning Down the Lights: Darknet Deployment Lessons Learned. DUST 2012, May 14, 2012.
- Deploying IPv6 in the Enterprise. ARIN XXIX, Apr. 23, 2012.
- Assessing and Improving the Quality of DNSSEC Deployment. AIMS-4, Feb. 9, 2012.
- Facilitating Global DNSSEC Deployment. NANOG 54, DNS Track, Feb. 7, 2012.
- From 0 to 6 in...: IPv6 deployment experiences at Sandia National Laboratories. Winter 2012 ESCC/Internet2 Joint Techs, Jan 23, 2012.
- Maintenance, Mishap, and Mending in DNSSEC Deployment. DNS EASY 2011, Oct. 18, 2011.
- Modeling DNS Security: Misconfiguration, Availability, and Visualization. CERIAS Security Seminar, Purdue University, Mar. 2, 2011.
- Quantifying the Impact of DNSSEC Misconfiguration. NANOG 51, Feb. 1, 2011.
- DNSViz: A DNS Visualization Tool. 2010 DNS-OARC Workshop, Oct. 14, 2010.
- Quantifying the Impact of DNSSEC Misconfiguration. 2010 DNS-OARC Workshop, Oct. 14, 2010.
- Modeling DNS Security: Misconfiguration, Availability, and Visualization. BYU Computer Science Dept. Colloquium, Sep. 9, 2010.
- Troubleshooting DNSSEC Visually. Summer 2010 ESCC/Internet2 Joint Techs, Jul. 14, 2010.
- DNSSEC Visualization. NANOG 49, Jun. 15, 2010.
- Visual DNSSEC Troubleshooting with DNSViz. RIPE 60, May 6, 2010.