



The Measurable Security Lab (MSL)

Cybersecurity Systems and Data
Analysis Research

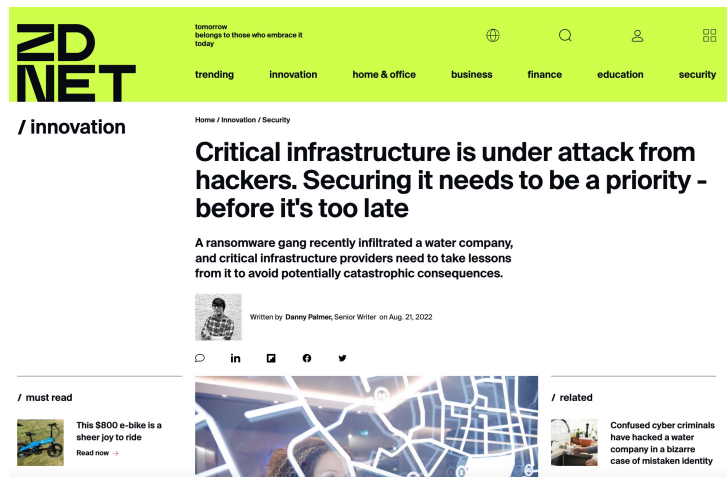
Eric Osterweil

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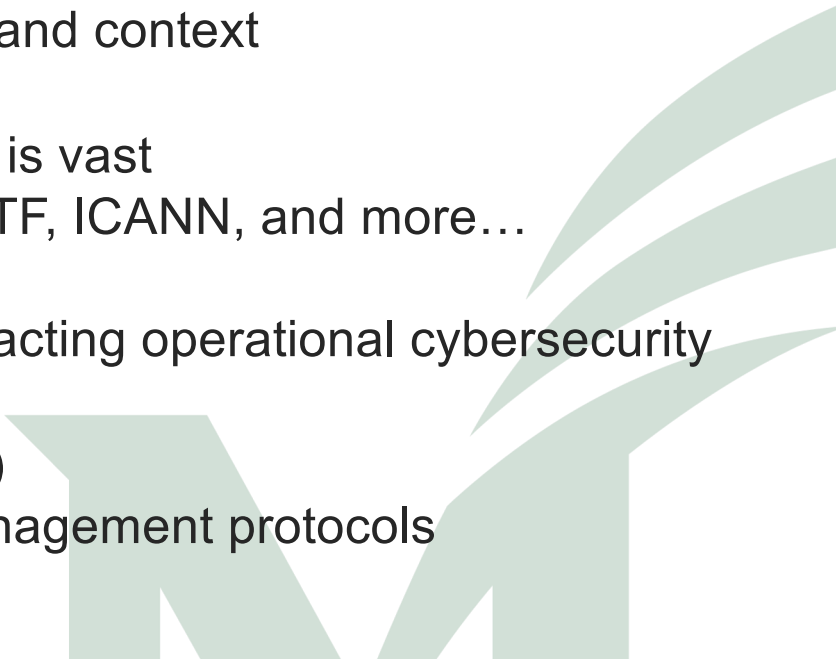
Cybersecurity Systems and Data Analysis Research

- ❑ Research focus derived from **real world** cybersecurity threats/solutions/operations
- ❑ Cybersecurity is a fascinating space, but can be a challenge to know *what are the “real problems”*





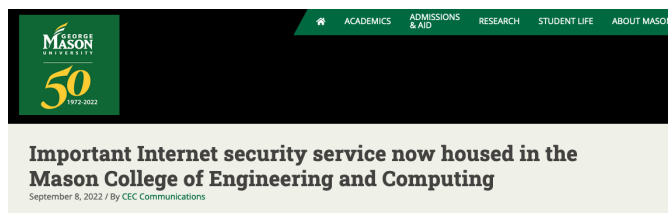
Basic Research with Real-World Impact

- ❑ It can be a challenge to find *real* problems that lead to deep/exciting research
 - ❑ Industry is full of challenges, problems, and context
 - ❑ MSL's collaborative/community network is vast
 - ❑ DigiCert, Verisign, ICANN, ISOC, IETF, ICANN, and more...
 - ❑ We focus on basic research results impacting operational cybersecurity infrastructure
 - ❑ Distributed Denial of Service (DDoS)
 - ❑ Internet-scale cryptographic key management protocols
 - ❑ Inter-domain routing security
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Recent Results

- Just published results from 15 year study of how cryptographic keys are managed in the first core Internet protocol to be enhanced with crypto: DNSSEC
 - Using our unique data corpus of over 36 **billion** real-world measurements
 - Osterweil, Eric, Pouyan Fotouhi Tehrani, Thomas C. Schmidt, and Matthias Wählisch. "From the Beginning: Key Transitions in the First 15 Years of DNSSEC." *IEEE Transactions on Network and Service Management* (2022).
- Just completing the transition of a research/operational community resource/dataset from an industry partner (ISOC) to our lab at Mason

<https://www.gmu.edu/news/2022-09/important-internet-security-service-now-housed-mason-college-engineering-and-computing>



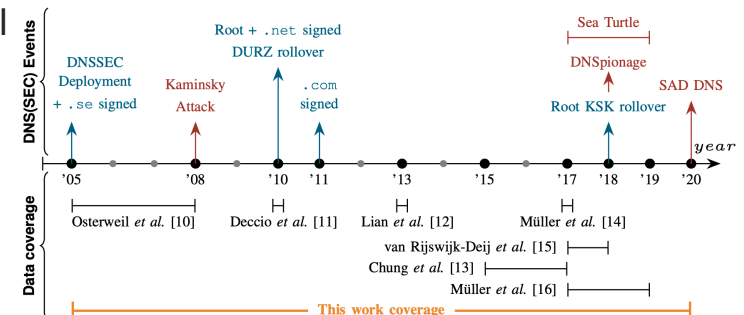
In This Story

Eric Osterweil

September 6, 2022

This fall, George Mason University will become the new home of one of the Internet's venerable monitoring and measurement services: the Domain Name System Security Extensions (DNSSEC) Deployment Maps. This service plays a prominent role in chronicling the evolution of a critical part of Internet security and has been under the stewardship of the Internet Society (ISOC) since 2014. The maps were originally developed by Shinkuro, Inc. with sponsorship by the Department of Homeland Security (DHS). The transition to Mason is being facilitated with sponsorship from the Internet Society, The Internet Corporation for Assigned Names and Numbers (ICANN), and Verisign, Inc.

Eric Osterweil, Assistant Professor in the Mason Department of Computer Science in the College of





An exciting time for cybersecurity research

Doing basic science in MSL is exciting, and opens opportunities

- ☐ Exciting collaborations
- ☐ Working with industry and communities
- ☐ Real-world impact from research
- ☐ Students get known to industry for ***your work***



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Hit me up!