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## **Employment**

### **Target Corporation. Lead Engineer (Threat Detection Operations). March 2017 - Present.**

- Lead developer for Target's 1,800+ sensor network security monitoring (NSM) deployment
  - Developed dozens of custom Bro/Zeek scripts and Suricata rules, including detection of attacker tactics and logging new network metadata from HTTP, SMTP, and TLS
  - Developed framework for stable, high-volume file extraction (~400 files/second)
- Created Strelka, an open-source file analysis system built on Python 3.6, YARA, and OMQ
  - Supports 60+ types of files, designed to scan hundreds of millions of files per day
- Contributed crucial design and engineering work on a 9-month project to upgrade and re-engineer NSM platform to use Docker containers
  - Developed methodology for balancing server resources via CPU pinning and isolation
- Designed and developed a secure, tool-agnostic packet capture (PCAP) retrieval system using gRPC that reduced PCAP retrieval time from minutes to seconds
- Developed continuous delivery systems for Suricata and YARA that reduced rule deployment time from days to minutes

### **Sqrrl (acquired by Amazon). Research and Development. May 2016 - March 2017.**

- Led research on attacker tactics that leverage DNS which fully defined a product release (Sqrrl v2.7) and increased customer-facing detection analytics by 50%
- Regularly created, tested, and validated new threat hunting hypotheses and techniques across endpoint, network, and file metadata
  - Significant focus on testing effectiveness of underutilized visualization techniques

### **CrowdStrike. Senior Consultant. June 2014 - April 2016.**

- Performed threat hunting and incident response for Fortune 500 customers
- Lead researcher and developer for CrowdStrike Services' NSM platform
  - Boosted productivity of investigation and analysis by building a custom Splunk application that unified event data from four network detection tools
  - Created RDP analyzer for Bro/Zeek (included in open-source project)
- Created and taught two threat hunting training courses (one publicly taught at Black Hat)

### **General Electric. Analyst (Detection Operations, CIRT). May 2013 – June 2014.**

- Developed methods of validating, enriching, and scaling tens of thousands of indicators of compromise (IOCs) across the enterprise

## Education

Eastern Michigan University. Bachelor of Science, Information Assurance. April 2013.

## Skills

- Programming/DevOps: Python, ZeroMQ/0MQ, gRPC, Go, Git, Docker, SaltStack, Drone
- Industry: Bro/Zeek, Suricata, YARA, Splunk, Elastic Beats, PassiveTotal, Shodan, Volatility

## Community Contributions

### Presentations

- "Beyond AV: Detection-Oriented File Analysis". BSides San Francisco, Mar. 2019.
- "[Threat Hunting for Command and Control](#)". Sqrri webinar, Nov. 2016.
- "[Failed Experiments](#)". Bro4Pros 2016, Mar. 2016.
- "[Beyond IDS: Practical Network Hunting](#)". BSides New York, Jan. 2016.
- "[Adversary Hunting and Incident Response: Network Edition](#)". Black Hat Europe 2015 Training, Nov. 2015.
- "[Hunting Through RDP Data](#)". BroCon 2015, Aug. 2015.
- "[Analyzing RDP Traffic with Bro](#)". Bro4Pros 2015, Feb. 2015.

### Open-Source Projects

- [Strelka](#) (Target, Lead)
- [Bro/Zeek](#) (ICSI, Contributor)
- [Laika BOSS](#) (Lockheed Martin, Contributor)

### Writing

- "[Stenographer + gRPC](#)". Medium, Jan. 2019.
- "[Building Distributed, Scalable Python Apps with pyzmq and multiprocessing](#)". Medium, Jun. 2018.
- "[Laika BOSS + Bro = LaikaBro \(?!\)](#)". Medium, Feb. 2017.
- "[THE HUNTER'S DEN: COMMAND AND CONTROL](#)". Sqrri blog, Feb. 2017.
- "[Hunting for PowerShell Using Heatmaps](#)". Medium, Jan. 2017.
- "[THE HUNTER'S DEN: INTERNAL RECONNAISSANCE \(PART 2\)](#)". Sqrri blog, Nov. 2016.
- "[THE HUNTER'S DEN: INTERNAL RECONNAISSANCE \(PART 1\)](#)". Sqrri blog, Nov. 2016.
- "[Maximizing Network Threat Intel with Bro](#)". CrowdStrike blog, Dec. 2014.