Paul Halvorsen

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Citizen of the United States

Summary

I'm a Software Engineer with over 14 years development and 18 years professional experience, with exposure to Rust, C, Python, PHP, Go, JavaScript, Java, and C++ languages; various SQL DBs; tokio, JQuery, and Pytest frameworks; Docker and GitLab CI/CD; and Rest API, NATS, JSON, XML, and nginx technologies.

Work Experience

Binary Defense

Sr Software Engineer: April 2022 - Present

– Rust development including: tokio (test), reqwest, anyhow, serde, windows, cargo, cmake, and WIX
– Python development using pyenv, pipenv, cython, docker, GitLab pipelines, and static compilation
– Develop security alarms for Windows, Linux (Debian and RedHat), and MacOS: Event driven by Windows Events, file and directory updates, and network connections
– Written RFC and ADR to drive design and decision making on project direction
– Design and build encrypted SQLite DB (configuration and cache), network containment, and secure key exchange and authentication
– Design and build HTTP and NATS Rest API for receiving configuration (JSON) and sending data to backend servers and Microsoft Azure
– Aid in distributed deployment to dozens of customers with hundreds of endpoints

Kyrus Tech

Sr Software Engineer: Nov 2020 - April 2022

– Perform test driven development: C, Python/Pytest, Docker, GitLab CI/CD, Ghidra
– Build covert communications and file transfers proxy: HTTPS, Apache Thrift, Rest API
– Design compact router fingerprinting and vulnerability analysis: Android, TCP/IP, StreamCypher
– Modify C code to suppress system logging in various Linux Kernel versions

Parsons

Cyber Security Software Engineer: Apr 2018 - Nov 2020

– Develop covert Windows application: C, C++, Python
  – Build modular solution for plugin architecture and distributed deployment
  – Design custom API for minimal communications on limited bandwidth
  – Encrypt storage and comms using AES shared key to maintain confidentiality and integrity
– Build back-end service for file storage and search: Java, Tomcat, NiagaraFiles (NiFi), nginx, Hadoop, MySQL, LDAP, RBAC
  – Create API for uploading files via web interface or CLI
  – Generate metadata for searching

NSA

Security Software Engineer: Nov 2011 - Apr 2018

– RedTeam DevOps development of browser enumeration, manipulation, and exploitation: PHP, JavaScript, JQuery, CSS, Python, MySQL, Java, Apache, Tomcat, Linux, Windows, Chrome, Firefox, Safari, IE, Edge
   – Design Rest and JSON API to transfer data between targets, server, and UI
   – Distribute covert JavaScript to targets across US government networks for enumeration and exploitation
   – Design front-end to provide a dynamic UI with real time target data, graphs, and charts
   – Design MySQL database to hold and quickly query enumeration and exploitation data
– Advise and develop vulnerability mitigation strategies for various military and government customers
– Train and provide SOPs to NSA RedTeam operators for various tools

Systems Engineer: Sept 2009 - Nov 2011

– Deploy, maintain, and monitor 30+ systems with 130+ Red Hat Enterprise Linux (RHEL) servers: LDAP, DNS, Apache, NiFi, Hadoop, Apache, Puppet, DHCP, PXE
– Develop and deploy monitoring, reporting, and issue correcting scripts: Python
– Organize, train, and participate in team performing 24x7 call-in rotation
– Responsible for 5+ domestic and foreign system deployments

Salisbury University

Software Developer: Nov 2006 - May 2008

– Funded through the Wallops Flight Facility (NASA)
– Provide simplified UI and scenario builder for the Satellite Tool Kit (STK): Managed C++
– Design risk assessment scenarios for launch vehicles and UAVs over the DELMARVA peninsula
– Collaborate with Geographic Information Science (GIS) for mapping

Lab Administrator: Sept 2007 - May 2009

– Support Math and CS departments at SU
– Maintain the Linux labs on campus: dual boot OpenSUSE, WindowsXP, and OpenSUSE server
– Perform backups, updates, user management (LDAP), disk quotas, and remote access

Education

– **University of Maryland Baltimore Campus**: Masters in Computer Science; 2013. Thesis: "Stateless Detection of Malicious Traffic: Emphasis on User Privacy"
– **Salisbury University**: Bachelors in Computer Science, Minor in Math; 2009. Magna Cum-Laude
– **Security+** (Expired): ID: COMP001021281239; Exp Date: 04/04/2024
– **Royal Military College (RMC Canada)**: Training in OpenBSD development and administration

Miscellaneous

– **RedBlue Conference**: Presented combination web enumeration/exploitation tool
– **National Conference for Undergrad Research (NCUR)**: Presented development of STK scenario building and manipulation
– **SANS Courses**: Staying up-to-date on security research
– **Homelab**: Proxmox running test VMs, email, cloud storage, gitea, DNS, multimedia, genealogy, and static web pages
– **Web Admin for PTA**: Setup and maintain WordPress pages, calendar, and blog