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Vaibhav Hemant Dixit

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Summary

A security professional in making and a graduate student with 3 years of software development experience, seeking a full-time position with a long-term commitment.

Education

Arizona State University, Tempe, AZ Master of Science, Computer Science

May 2018, GPA 3.5

Vellore Institute of Technology, Vellore, India Bachelor of Technology, Information Technology

May 2013, GPA 3.6

Technical Skills

Languages - C, Java, Python, Shell, JavaScript, D3, HTML, Yang

Other skills - SDN, Openflow, OpenStack, TCP/IP, WLAN, REST, ELK, Git, Wireshark, Objdump, Gdb, Linux, Android, Jenkins

Relevant courses - Principles of Programming Languages, Algorithms, Operating Systems, Software Security, Computer Networks, Embedded Operating System Internals, Mobile Computing, Data Mining.

Professional Experience

Center for Cybersecurity and Digital Forensics, ASU (Graduate Research Assistant)

Dec 2016 to present

Presented SDN based adaptive security mechanism on ScienceDMZ network - ODL, OpenStack, HoneyNet, SDN Firewall, ELK

- Behavioral analysis of the attacker by propagating the attack to a quarantined zone. **Devising** a countermeasure generation mechanism on Elastic Search Cluster using attack graph with CVSS scores for each node in the network.

Samsung Electronics, India (Senior Software Engineer)

Jul 2013 to Jun 2016

Developed and re-engineered Wi-Fi AP and P2P WLAN device drivers. Constructed 802.11 protocol based control plane networking features. Unit tested and included patches for Android supplicant.

- Implemented Open, WEP, WPA, WPA2 and 802.11w secured connection procedures at the driver and supplicant.
- Tirelessly improved the throughput and latency metrics and delivered the software for existing Samsung Android phones. Successfully submitted and reviewed critical kernel bug fixes under tight deadlines.

Recent Projects

- **SDN based flow policy conflict detection and resolution:** Single handedly designed a SDN Firewall application for **Openflow** rules conflict detection and dynamic violation resolution. Also, incorporated SDN network of **Honeypots** to redirect the malicious traffic to HoneyNet involving **Moving Target Defense**. Visualized the attack graph at the **Kibana** dashboard. Endless brainstorming and research produced a framework accepted at SDN-NFV conference.
- **Reflector:** An automated TCP/IP attack re-launch mechanism from victim to the attacker: Built a Python based network daemon to impersonate the victim IP addresses using **ARP spoofing and relaunch the attack** from victim to attacker. Used extensive libraries from Python Scapy packet for **Deep Packet Inspection** and modification.
- **Framework for exploit detection and patching in Capture the Flag competition:** Participated in a project based CTF game. Developed a Python vulnerability detection engine. Contributed to the defense framework to reverse engineer the binaries, patch the application/web vulnerabilities in real time. The team won the iCTF competition.
- **Embedded programming in Intel Quark based Galileo Board:** The project is part of the course "Embedded Operating System Internals". The project aims to provide an understanding of internals of Linux and RTOS kernel architecture by implementing device drivers. Investigated Linux kernel source code including memory management, kernel synchronization, device driver design and trace, debug support. Programmed **ioctl**s, **syscall** interface, **static and dynamic probes**, **MISC drivers**, etc.
- **Full-fledged compiler in C:** Developed a complete parser and compiler modules for lexical and semantic analysis.

Publications

- HONEYPROXY: **Design and Implementation of Next-Generation Honeynet via SDN**
S. Kyung, W. Han, N. Tiwari, **Vaibhav Hemant Dixit**, L. Srinivas, Z. Zhao, Adam Doupe', and Gail-Joon Ahn IEEE Conference on Communications and Network Security (**CNS**) – 2017
- Science DMZ: **Software Defined Networking based Secured Cloud Testbed**
A. Chowdhary, **Vaibhav Hemant Dixit**, N. Tiwari, S. Kyung, Dijiang Huang and Gail-Joon Ahn **NFV-SDN 2017**.

Miscellaneous activities

DIY projects on Raspberry-PI. Volunteer at ASU Arizona Mentor Society. Freelance content writer, avid biker and a runner.