AHNAF SIDDIQI |

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An engineer keen in cloud, network security, high traffic systems, and system design with 6+ years of experience. I love building secure products with high availability. I am also interested to learn about Network Science

Tools

Experienced in: Python, C, Go, Docker, Git, Linux, Make, Nginx, PostgreSQL, MySQL, InfluxDB, Bash, X509 Certs, TCP/UDP, TLS, Gitlab, CI/CD, Flask, SQLAlchemy, HTTP(S), SNMP, MQTT, AWS, Kafka, ES, Kibana, Kubernetes

Familiar with: JS, HTML, CSS, GDB, Puppet, Redis, Grafana, CPP, MongoDB, DTLS, Ansible

Work Experience

Bytedance Pte. Ltd. ~ Site Reliability Engineer (Security) Nov'22 - Now

SRE in charge of 2 direct security products in a team of 25. I also manage/provision our internal Kubernetes cluster including standard sysadmin responsibilities

- Designed and implemented application metrics which captured errors which were eventually converted to P0 (alerts on symptomps), reducing the P0 stats by over 50%
- Metrics redesign helped to negotiate a clear SLA with our stakeholders with a enforced, data backed agreement of 99.9% which also established a Runbook
- Correlated cpu, memory information which was piped into metrics with host data to provided yearly estimates of resources using a simple linear regression model.
- Stabilized apache Kafka platform which consistenly produces 76 Million messages/sec. Identified critical bottlenecks and proposed redesign of the system architecture to handle congestion. The system recovered without any data loss.
- Provisioned Hashicorp/vault in a high availability cluster backed by Oracle KMS and a secondary vault to perform auto-unseal: https://developer.hashicorp.com/vault/docs/configuration/seal/ocikms
- Introduced blue-green/canary deployment concepts to infrastructure team with 0 downtime upgrade of applications.
- Reduced the runtime of Apache Flink job processing 20+Tb of data 10+ hours to 4.
- Managed, reviewed, provisioned host instances, provisinded kubernetes deployment, configured Ingress, scraped cluster metrics using prometheus agent, and collected logs using Loki.
- Configured Kibana Indexes which ingested msgs from high load Kafka broker.
- Conducted standard DevOps/Testing practices: Torture testing, regression testing, integration testing.
- Collaborated with R&D to introduce database migration tool to ensure a schema consistency
- Reduced Docker image file sizes by using Alpine Linux based images.
- Introduced go-mmproxy which attaches client address infront of the TCP packet header to preserve ip addresses in Layer 4 of the OSI model
- Automated several dry operations which installs, provisions, fix various adhoc tasks using python, go, and bash.
- Regularly particpated in global-oncall with colleagues in 4 different timezone, while managing internal customer requriements across two different cultures.

MicroSec Pte. Ltd. ~ {DevOps, Software,Operations} Engineer Nov'17 - Oct'22

I crafted the product API requirements for device enrollments from stakeholder requirements to application implementation, lifecycle and deployment, while managing technical customer operations. I also provisioned their DevOps pipeline.

Role - DevOps Engineer

- Led the deployment of 3 main products and designed the development workflow to increase dev iterations using Gitlab Runner.
- Deployed and managed a production delivery of 16K devices using Docker Swarm in AWS.
- Accelerated the development pipeline by mentoring the developers to practice good DevOps practices including writing Docker images and proper Unit Testing.
- Developed a local product deployment script using Bash for all developers to experience the full product deployment. The script is also used to demonstrate repeatable demos to internal stakeholders.

- Wrote lightweight Docker images using multi-stage build that uses alpine to significantly reduce image size.
- Developed companies Software Release Management strategies working within the Scrum methodology.
- Manage and update self-hosted Gitlab instance to be always up-to-date.
- Managed AWS IAM roles following least privlege principle for users and application system.
- Deployed and maintained several microservices in Docker Swarm.

Role - Software Engineer

- Responsible for requirement gathering, analysis and translation into well-defined work description for developers to design and implement.
- Developed MicroPKI: a performant multithreaded socket server, that implements a proprietary TLS 1.3 for embedded devices in IoT strictly uses ECC Keys, specifically Ed25519
- Proprietery certificates are fine-tuned for embedded devices, with its custom inhouse implementatino of CRL and OCSP responder
- Implemented MicroPKI Core in C compiled for embedded clients that uses a Python Wrapper for a Web Service.
- Maintained an Energy Monitoring product that uses Modbus to read localized data that is transferred near real-time via MQTT that is batched process and stored in InfluxDB.
- Led the design and implementation of RESTful microservices using python that supports in-house implementations of ACMEv2, EST, and SCEP following their respective RFCs: 8555, 7030, 8894.
- Introduced the automation of backend e2e testing with unit test at microservices level and integration test at a separate product level.
- Implement simulation testbeds that replicates a CANBUS protocol scenario using Docker.
- Identified a missing parser in Microsofts Library for SCEP protocol after parsing the ASN.1 certificate data structure.

Role - Operations Engineer

- Led Scrum Master duties for two teams of 10+ individuals.
- Evangelize the Scrum philosophy with the development team to promote code reviews and collaboration.
- Increased team delivery yield by a factor of 1.5, rotating or setting expectations after various 1-1 meetings.
- Negotiated product deliverable timeline per sprint between different internal stakeholders.
- Deployed products on customer premises cloud premises and off-line systems.
- Mentored and supervised interns to full time employees following companies guidelines.

iTrust Research Center for CyberSecurity ~ Research Assistant Nov'16 - Oct'17

Implemented a concurrent Common Industrial Protocol (CIP), a realtime network protocol at Secure Water Treatment (SWaT) testbed in SUTD, that was used in simulation, mutliple research projects, and as proxies for developing attack scenarios for competitions.

- Packet Sniffing and Reconstruction of high volume CIP packets for both TCP and UDP.
- Designed CRUD HTTPS API to handle application requests using using TDD and SOLID principles of OOP.
- Followed a design guideline to implement a CaptureTheFlag question that was used in university competition.

Publication: A. Siddiqi, N. O. Tippenhauer, D. Mashima, and B. Chen, "On practical threat scenario testing in an electric power ics testbed," in Proceedings of the cyber-physical system security workshop (cpss), co-located with asiaccs, 2018.

Education

Singapore University of Technology and Design Class of 2016

Bachelor of Engineering with Honors majoring in Information Systems Technology and Design.
Specialization: Security and Communications, Artificial Intelligence.

Professional Certifications

Certified DevSecOps Professional (CDP) - May 2022

- Issuer: Practical DevSecOps
- Badge Link