Josh Kunz

Infrastructure and Systems Engineer

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Work

Senior Software Engineer Google, C++ Toolchain Team 2019-present

- Brought up new ARM cross-build toolchains in the Bazel build system for C++ and Go. Built a QEMU-based emulated test environment to allow for cross-architecture testing of client team software.
- Worked across a variety of toolchain components including: glibc, LLVM (Clang driver, LLD), and the Go and Python runtimes.
- Subject matter expert for emulator ↔ Linux interaction. Implemented `CLONE_VM` support in QEMU to decrease flakiness in client team tests. Wrote a data analysis pipeline to measure flake rates of guest code.
- Participated in a company-wide code review mentorship program. Reviewed Go code across 100s of projects.

Site Reliability Engineer Google, Network Control Plane Team 2017-2019

- Operated Google's software network control plane, a five-nines availability service. Participated in 5m-response oncall rotation, and release roles.
- Led a project to develop a new automated configuration push service for the control pane software controller in Go. Executed a migration from the legacy system to the new system without downtime. Defined meaningful service level indicators (SLIs) and objectives (SLOs) based on client team needs. Developed monitoring and alerting for the push service.
- Consulted with software teams on reliability requirements for the introduction of major new software features.

Research Assistant Flux Research Group 2014-2017

- Focus on automated network management with software defined networking (SDN), with an emphasis on edge deployments, Cloud networking, and security.

Education

Masters of Computer Science University of Utah 2017
Bachelors of Computer Science University of Utah 2017
Award: Outstanding Undergraduate Student Researcher College of Engineering, University of Utah 2015

Publications

CapNet: Security and Least Authority in a Capability-Enabled Cloud SoCC 2017
OpenEdge: A Dynamic and Secure Open Service Edge Network IEEE NOMS 2016
KnowNet: Towards a Knowledge Plane for Enterprise Network Management IEEE NOMS 2016

Skills

Professional Experience With: Go, Modern C++, Modern C, Typed Python, Bash, SQL, Version Control (git/Mercurial), Bazel, Docker, Linux, LLVM-based Toolchains, Crossbuilding, Software Emulation, Monitoring and Alerting, Software Defined Networking (SDN).

Some Experience With: Functional Programming (Haskell, OCaml, Scheme, etc.), R, Rust, TypeScript, Java, React, Distributed Systems.