Daniel Van Allen

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Objective

Software engineer with ten years of experience in building backend infrastructure and delivering networking solutions at the edge seeks a full-time position.

Skills

Languages: Python, Protobuf, Golang, C++, Bash, Javascript, SQL

Operating systems: RedHat, CentOS, Ubuntu, Debian, Arch Linux, Gentoo, Cisco IOS XR

Networking: DHCP, DNS, HTTP, BGP, IRR, RPKI

Devops: Git, GitHub Actions, Docker, Podman, AWS: EC2, ECS, ECR, ALB

Frontend: Django, Ruby on Rails, Bootstrap, NextJS, TailwindCSS

Google: Blaze, Borg, Spanner, Bigtable, GCE, GCS, GDCE, GCI

Experience

Infrastructure Software Engineer, Google, Distributed Cloud Edge (GDCE) 2021-2023

- Bare Metal Lead - designed solutions and mentored junior engineers on BIOS, BMC, PXE.
- Added incremental config change capability to a Golang service which applies Kubernetes system and network config (CRD) changes to GDCE bare metal servers. Includes modifications to sysctl, Linux kernel, CPU isolation, huge pages, and others.
- Developed solution for connecting to BMC units on physical servers via ipmitool running on attached Cisco IOS XR top-of-rack devices.
- Added language selection for logged-out users for the open-source project PeeringDB.com (Django).
- Added support for binding to a specific network interface in ipmitool (C) to support running with VRF isolation.

Network Engineer, Google, Edge Solutions 2020-2021

- Improved the security of the Internet by processing and displaying BGP RPKI and IRR validation details for all of the millions of IP prefixes advertised to Google by all of its BGP peers on the internet. See Awards section for coverage by ACM and Wired.
- Migrated Google's BGP peering dashboard backend C++ code from a long-running set of highly-coupled jobs to a single ETL job which delivers updates four times faster.
- Redesigned the Protobuf format for BGP peering data to move computation from the frontend to the backend.

- Deployed more than 1 Tbps of network ingest capacity at edge locations to ingest self-driving car telemetry into Google Cloud for Waymo.
- Migrated Waymo from manually-configured BGP peering to Google Cloud Interconnect, including Cisco IOS XR config generation and Private Service Connect endpoint config.

Linux Systems Development Engineer, Google, Edge Operations 2018-2020

- Optimized BGP routing to partner ISP networks for YouTube video serving via Google Global Cache.
- Added prefixes advertised to Google's SDN to the peering.google.com BGP dashboard for all ISPs with peering.
- Analyzed performance using pprof flame graphs to reduce RAM and CPU usage in C++ code.
- Diagnosed HDD, RAID, NIC, BMC, RAM, CPU, PSU, etc. issues on commodity servers and switches.

Systems Analyst, Palantir Technologies, Business Development Operations 2015-2018

- Developed a lightweight laptop form-factor of the Palantir Foundry stack for use in the field.
- Created a Pulp RPM repository to deliver RedHat Linux packages to disconnected networks.
- Developed a custom Pulp frontend in Bootstrap Javascript, backed by Jigsaw Download (jigdo) to support efficient DVD/Blu-ray exports.
- Added support to an internal Node.js app for exporting multiple EC2 virtual machines to produce offline demos of Palantir products.
- Created and contributed to internal Ruby on Rails tools for asset tracking.

Systems Analyst Intern, Palantir Technologies, Mission Operations 2014

- Created custom Linux images with Palantir platforms for training and demonstrations.
- Developed a push-button hardware testing solution with PXE boot and Phoronix.

Customer Advocacy Lab Operations Co-op, Cisco Systems 2012-2013

- Connected routers, switches, and physical/virtual servers to simulate customer networks.
- CCNA Certified.

Education

B.S. Computer Science, *Cum Laude*, University of Texas at Dallas 2014

- President, Linux Users Group at UT Dallas.

Awards and Recognition

- Google Tech Impact Award, BGP Routing Security, 2022
  - "Fixing the internet", dl.acm.org/doi/abs/10.1145/3469287
  - "A Broken Piece of Internet Backbone Might Finally Get Fixed", wired.com/story/bgp-routing-manrs-google-fix
- Awarded eight spot bonuses and twenty peer bonuses for exceptional work at Google.