

PHIL GENERA

Infrastructure & Site Reliability Engineer

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SUMMARY

Infrastructure engineer with nineteen years at Google. An expert at the layer where capacity, traffic management, and failure domains meet. Fifteen years as an individual contributor and tech lead across diverse projects such as Electronic Health Record AI enrichment, planet-scale network load balancing, and Google Search with My Location. An additional four years managing small infrastructure teams while still writing and shipping systems code, internally and externally. Built global load balancing for the L7 proxy carrying most storage bits in Google Cloud. Currently responsible for the reliability and safety of footprint operations across Google's internal continuous-delivery infrastructure. Carried the pager for Google Search, YouTube, and Google Cloud Storage; now training an oncall team in the Incident Command System.

TECHNICAL

Java, Python, C++, SQL, and a long tail of DSLs; recent agentic work in Kotlin and Go with Claude Code and Antigravity. Global and regional software load balancing, networking, and Bluetooth reverse engineering.

EXPERIENCE

Google

Aug 2007 – Present

Software Engineering Manager · Continuous Delivery Infrastructure

Feb 2024 – Present

- Manage the team of ten responsible for footprint operations (turn up, turn down, resize, move) across Google's CD infrastructure, which actuates the majority of the datacenter footprint, and is on the critical path for Cloud region and zone expansion, AI capacity delivery, and efficiency.
- Led the team through a 79% reduction in failures of those footprint operations. Negotiated, defined, and drove improvements to customer-centric SLIs, SLOs, and SLAs. Own the team's capacity supervision for footprint changes, which halts rollouts if overload is predicted.
- Persuading partner and customer teams to move capacity changes from operator-driven execution to automated, continuous actuation; the team sits at the interface between automated capacity planning and actuation.
- Built agentic workflows: conversational bug filing, autonomous root-cause analysis, fixes, and code reviews.
- Manage the US-East oncall team: onboarding new members, balancing workload with the global team, and training the team on the Incident Command System annually; also a Boston Marathon ICS volunteer.

Site Reliability Engineering Manager · Google for Clinicians

Jun 2022 – Feb 2024

- Took over management of the team of five while continuing SRE work. The scope covered HIPAA and related compliance, infrastructure cost, project planning, customer relationships, and software engineering productivity.

Senior Site Reliability Engineer · Google for Clinicians

May 2021 – Jun 2022

- SRE lead for Google's EHR search and longitudinal health-record product, Google for Clinicians, serving one of the largest hospital systems in the United States. Delivering streaming record updates, normalization, enrichment, and analysis from bedside to serving in minutes.
- In addition to ETL indexing and search, the import pipeline added AI enrichments to physician notes and test results. Designed, built, and shipped load balancing and traffic management for the enrichment pipeline, delivering significantly higher reliability, lower operator toil, and resiliency against bad input.

Senior Software Engineer · Google Cloud Networking

Aug 2017 – May 2021

- Built the first global load balancing for Google's internal L7 proxy (CloudPath, sitting between Google Cloud and Google production), a large and high-reliability component of the Google Cloud Platform.
- This load balancing project, with others, enabled traffic growth from Gbps to Tbps, with higher customer reliability and lower infrastructure cost.
- Landed features across the proxy and software-defined networking data and control planes (Orion, NSDI 2021).
- Made small contributions to Envoy Proxy's control-plane efficiency.

Senior Site Reliability Engineer · Social SRE

May 2014 – Aug 2017

- Moved to Cambridge, MA, as a tech lead for Social SRE, which ran the Gmail contacts database along with other graph indexing and storage services.

- When the team split into storage and graph halves, led the graph side: storage for all implicit and explicit social graph data, the Zanzibar authorization system (USENIX ATC 2019), and a service that ranks contacts by graph distance for suggestions across Google products.

Senior Site Reliability Engineer · YouTube & Storage Infrastructure

Nov 2012 – May 2014

- Ran the West Coast SRE team operating YouTube's video transcoding pipeline and upload server, which went on to become the Google Cloud Storage frontend.
- As tech lead, owned the upload server's SRE response to the 2013 Snowden disclosures, and contributed to the broader GCS response.
- Led the Production Readiness Review and SRE onboarding of YouTube Live Streaming infrastructure, which is shared between YouTube, GFiber, and YouTube TV.

Software Engineer · Mobile Search

Aug 2007 – Nov 2012

- Invented *Search with My Location*, the blue dot on the mobile search home page, and co-authored the resulting patent with the product manager for the feature.
- Worked on google.com/m universal and local search; designed and led the local search property.
- Tech lead for mobile search infrastructure work, including launching ads on new mobile properties.
- 24x7 oncall: emergency capacity turnups, DoS response, and the Production Readiness Review. Trained the SRE team founded to take over mobile services.

Software Engineer · Cisco Systems

Jul 2005 – Aug 2007

- Built monitoring, diagnostics, and modular plugin tooling in Java for enterprise Linux telephony server clusters.

PATENTS & PUBLICATIONS

- U.S. Patent 9,081,860, "Integration of Device Location into Search," with J. Siegel (filed 2008, issued 2015).
- "Self-Organizing Publish/Subscribe on the Network Edge," *Technical Disclosure Commons, Defensive Publications Series*, Art. 5601 (2022).

PERSONAL PROJECTS

weavian · Wear OS phone key for Rivian R1 vehicles

2026

- Wear OS app that functions as a Rivian phone key over Bluetooth LE: passive entry and drive enable by proximity, plus lock, frunk, liftgate, window, charge port, and climate commands.
- Reverse engineered and documented the vehicle's phone-key protocol: the pairing handshake, the authenticated ranging heartbeat that passive entry actually keys on rather than OS-level bonding, AES-GCM command framing, and the status stream that drives live lock, closure, charge, and range display.
- Security-first design that works offline: the watch has no internet access and its private key never leaves it; a companion phone app performs the one-time cloud enrollment over the Wear OS Data Layer.

Embedded systems and network services

ongoing

- mpubsub implements the brokerless pub/sub from the defensive publication, adding typing and encryption.
- wallbox-ble attaches EV chargers to Home Assistant via Bluetooth proxies.
- IPv4 and IPv6 NTP servers in the public pool, served from AMPRNet (44/8). Hundreds of RPS of time served.
- sundial-ntp is a solar-disciplined NTP refclock.
- Consoles, monitoring, and alerting for everything at home, from woodstoves to furnaces to solar arrays.

EDUCATION

Rensselaer Polytechnic Institute

2001 – 2005

B.S., Computer Science & Psychology

ADDITIONAL

- Amateur Radio Operator at a Boston Marathon medical tent, handling medical resupply and sweep bus traffic within the Incident Command System. 2016 – Present
- Amateur radio (W1JV), atomic clocks, frequency measurement, and antique test equipment.
- Powerlifting, running, and endurance motorcycling. Home automation and heating with wood. Eagle Scout.