Indradhanush Gupta

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Summary

Programmer with **9 years** of experience designing **scalable distributed systems and APIs** and managing **infrastructure**. I enjoy **anticipating failure modes** before they can happen. Proficient with **Go**, **Python**, **Bash**, **Terraform**, **Kubernetes** and **AWS**. Familiar with **Erlang** and **C**. I like to share my learnings in the form of blog posts and talks at conferences.

Work Experience

Mar 2021 - Aug 2023

Software Engineer, IC2 – *Sourcegraph*, Remote
A Code Search and Intelligence Platform

- Designed, implemented and maintained **idempotent** services, **Gitserver** - a horizontally scalable distributed service to store upto **5 million** repositories and **Repo Updater** - a service to manage syncing of these repositories on Sourcegraph with **Go**, **GraphQL**, **Postgres**, **Redis** and **React**, deployed on **GCP**, **AWS** and self hosted environments with **Kubernetes**.
- **Technical lead** of Git deduplication effort, a **multi-month** project to efficiently store repositories and their forks to save disk space in the order of **TBs** for key customers. Performed technical deep dives to identify technical approach, wrote documents describing the **how and why**, planned the project with well scoped project phases and milestones and iterated on the plan ensuring **backwards compatibility**, keeping all stake holders updated regularly.
- Identified persistent storage saving measures and reduced cost by **$60k** per year (**approx 5% of annual infra costs**) without compromising search experience on **sourcegraph.com**.
- Redesigned repository cloning pipeline to remove bottlenecks as a result of goroutine leaks and streamline queue management to scale up services to handle **30k** requests per second at peak loads.
- Debugged critical issues related to repository syncing, permissions and performance using **Jaeger** for application tracing and **pprof** for profiling programs in production to identify and decongest application bottlenecks.
- Identified slowest SQL queries from CloudSQL dashboard in production and refactored to **speed up queries** to run in **milliseconds** instead of **dozens of seconds** by updating business logic or modifying the DB schema as and where needed.
- Key member of red team to focus on **high value enterprise customers** with blocking issues, identified and implemented technical solutions to **unblock sales deals**.

Oct 2019 - Feb 2021

Software Engineer – *Kubermatic*, Remote
A Kubernetes management and automation platform

- **Led** the automation of a complicated multi-part installation of a cluster of **Kubernetes** clusters in a shared VPC for worker nodes and a private VPC for controller nodes on **AWS** with **Terraform** and **Bash** scripts. **Reduced cluster setup time** from above 2 hours to under 45 minutes and improved **developer productivity**.
- Automated cluster down scaling during non peak hours and **saved at least $60k per month**.
- Designed and implemented a **secure and concurrent TCP** tunnel over **GRPC** in **Go** to function as a reverse proxy for provisioning **Kubernetes** on edge nodes behind corporate proxies.
- Diagnosed and resolved **production incidents** related to Kubernetes nodes and workloads. Initiated a culture of writing **outage postmortems** to preserve learnings and share across the engineering team.

Oct 2017 – Sep 2019

Software Engineer – *Kinvolk*, Remote
A software consultancy specialising on Kubernetes and low level Linux technologies, acquired by **Microsoft**

- Implemented Kubernetes operators, cli tools in **Go** for configuring and installing **Kubernetes** clusters and researched and implemented **iPXE** installation of **Flatcar Linux** on bare metal nodes on **Packet**.
- **Presented talks** at ChefConf US 2018 and DevConf India 2018, wrote blog posts and recorded how-to demos for clients.

Aug 2014 - May 2017

Software Engineer – *Instamojo*, Bangalore, India
4th Engineering hire at an online payments startup. Owned end to end product development and delivery, rearchitected business critical external services to meet increasing scale that grew **20x** in **Python**, **Go**, **Postgres**, **Redis**, **Terraform** and **AWS**. **Promoted** to **Senior Software Engineer** after **18 months** in the role.

Education

2022   Write a compiler course by David Beazley. Implemented a parser and interpreter in Python.

2017   Attended **Recurse Center**, a self-directed programmer's retreat, to become a better programmer. Implemented Raft the **distributed consensus protocol** in **Erlang** and a UNIX Shell in **C**.

2014   **Bachelor of Technology, Information Technology**, West Bengal University of Technology, India. **CGPA 8.2/10**

Highlights

Public Speaker   Life of a Container at Kubernetes Forum, Delhi 2020
Story of a kubectl command at Open Source Summit, Europe 2018 and DevConf India 2018.

Top posts on Hacker News   **Writing a Unix Shell** Part I and Part II.