Hritwik Singhal

Site Reliability Engineer and Linux/Open-source enthusiast.

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Site Reliability Engineer with 3+ years of experience building & maintaining resilient, scalable infrastructure in production environments. I am a **dedicated** and self-driven **geek** with a passion for **Python, Linux** and **self-hosting** and a strong zeal for **open-source development**. I'd rather spend 4 hours writing a program to **automate** a task than spend 4 minutes doing it manually every day.

Profiles

- **Hritwik**
- **Hritwik**

Skills

Linux
SSH, Systemd, ZFS, LVM, Virtualization

Platforms
AWS, GPC, Azure, Proxmox, On-Prem

Networking
TCP/IP, DNS, DHCP, VLAN, VPN, Firewalls, Wireshark

IaC
Nix, Terraform, NixOS

Automation and Scripting Tools
Ansible, Bash, Python, Git, Jenkins

Orchestration
Kubernetes, Docker, Helm, ArgoCD, Argo Workflows

Monitoring
Grafana, Loki, Prometheus, ElasticSearch

Other
Distributed Systems, Optimizations, Databases, Load Balancing, GitOps, Microservices, Logging, Alerting, Hadoop

Soft Skills
Communication, Problem-Solving, Collaboration, Flexibility, Critical Thinking, Eager to learn

Hobbies

Homelab
self hosting, de-google

Reading
Astronomy, Psychology, Physics

Badminton

Gaming

Languages

Python

Bash

Java

C/C++

Experience

Health & Well-being Career break — March 2025 – Present

Welp! emergencies don't knock on your door; they throw the door off and announce, 'Time for a reset!' So, I've been rediscovering all the things I forgot I loved – like finally tackling that coding project I'd been putting off, leveling up my favorite game, and tinkering with my homelab. An unexpected system reboot for my well-being!

Tessell — Sept 2024 – Feb 2025
Platform Engineer — Bangalore, India

Led the architectural revamp of a monolithic **Python** backend codebase, transitioning it to a modular design to enhance **scalability, maintainability, and platform flexibility**; enabling faster feature releases and quicker response to market demands.

- Refactored the monolithic codebase to modular architecture, reducing code complexity by **40%**.
- Designed, architected, and implemented a fully automated deployment pipeline for new database VMs across AWS & Azure using Argo Workflows and custom backend, reducing VM deployment time by **~80%** from **2 days to 4 hours**.
- **Eliminated** developer dependency on our team for new DB, fostering a self-service model and freeing up our team's capacity.
- Added seamless support for new cloud platforms, including successful deployment to Oracle Cloud Infrastructure (OCI), reducing onboarding time by **25%.**
- Improved support for integration of new DB's, implemented checksum validation for data integrity, improving data accuracy and reducing error rates by **10%**.
- Automated cleanup of AWS/Azure zombie resources, saving **~5%** infra costs

Media.net — July 2022 to July 2024
Site Reliability Engineer — Bangalore, India

- Leveraged **Nix** and **Terraform** to efficiently scale an existing Hadoop cluster on GCP and On-prem datacenters, increasing node count from **20 to 70** and reducing deployment time by **90%**.
- Optimized Hadoop disk read and write latencies from **20ms** to **under 1ms** for **HDFS** and **YARN** applications by tuning operational **ZFS** parameters, thus mitigating more than **80%** frequent latency spikes during operational load.
- Led the company-wide deployment of Zeppelin & Hue for **300** devs using **Nix** & **SOPS**. Used Infrastructure as Code (IaC) methodologies for Optimized deployment speed, reliability and secret management. Reduced deployment time by **50%**.
- Implemented **Jenkins CI/CD** pipelines on self-managed slaves to automate the deployment processes of **Conda** virtual environments from custom configuration files within the Hadoop cluster, resulting in a **30% reduction** in deployment time.
- Implemented a streamlined resource pipeline for Hadoop teams, enhancing capacity planning through dynamic data analysis. Optimized cluster settings based on team-specific path size limits, generating granular data for reporting and aggregation, thus scaling the cluster by **more than 30%** in capacity.
- Proven on call proficiency in debugging live production issues during 24x7 **on-call rotations**. Ensured rapid resolution, minimizing downtimes and enhancing system resilience. Proficiently conducted and authored detailed **RCA** reports.
- Implemented Various NGINX optimizations, resulting in a reduction of application load times from **~3s to ~500ms**.

Media.net — January 2022 to July 2022
Site Reliability Engineer Intern — Mumbai, India

- Conducted in-depth analysis of Java garbage collection times by analyzing server GC logs from Hadoop cluster executing MapReduce applications. Utilized findings to fine-tune GC parameters, optimize heap size, resulting in a **10% improvement** in application performance and reduced memory consumption.

Projects

TerraNixLab — 2024 – Present

- Stateless, Immutable, Declarative deployment of my Proxmox-based Homelab. Used Terraform and Nix for providing automated provisioning of containers, VMs & DNS entries in Cloudflare & local firewall.
- Reduced gaming latency by **50%** from 120ms to 55ms, by carefully tuning & optimizing the network & OS; made **Remote gaming** enjoyable over a distance of 2000km
- Implemented network isolation automated routing through using **VLANs** for different services across segregated networks. Improved security and performance.
- Created a comprehensive **documentation** for all homelab components and operational procedures/workings to ensure maintainability.
- **Official maintainer** of Filebrowser package in Nixpkgs.

DiskDoctor — 2024

Developed a robust solution for comprehensive reporting, monitoring and alerting of disk health degradation across a 200-node **Proxmox** cluster, encompassing 800 disks including SSDs, HDDs, and NVMes. Integrated **Proxmox** and **Cloudera** API's for seamless management of disk infrastructure.

NebulaCrawler — 2023 – 2024

A Kubernetes-driven web scraping architecture for a bespoke search engine. Pods are used gor autonomous crawling, pushing scraped webpage data to Elasticsearch and URL data to Redis. Integrated Prometheus exporter SDK for monitoring and analysis of pertinent metrics, including scraped URLs and failures.

Education

LNM Institute of Information Technology, Jaipur — August 2018 to May 2022
B.Tech in Computer Science

Personal Pursuits

PADI Open Water Scuba Diver — Jan 2024

Qualified to a depth of 18m, can dive anywhere in the world using my own scuba gear. Turns out, the ocean is way more entertaining. Who needs Netflix when you have a pufferfish looking perpetually surprised!

Travelling Solo — 2022 – 2024

All it takes is a backpack and a questionable decision to start solo traveling. The result? A whole lot of unexpected discoveries and a perspective shift that's, let's just say, significant!

Trek to Summit of Mt. Kedarkantha — Jan 2021
12,500 ft at -10°C

Survived Mt. Kedarkantha! 6 days, -10°C. But hey, the view from the top was pretty spectacular...