

Usman Khan

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WORK EXPERI- ENCE

Nextbridge Senior DevOps Engineer: May 2023 - Present

- Designed a custom **VPC** with public and private subnets having Internet and NAT gateways. Production applications were deployed in private subnets behind an **ALB** while **SSM** was used to access terminal of specific instances. This reduced DDoS attacks on our application by 90%.
- Deployed frontend via **CDN** with S3 origin, while **API Gateway** redirects backend requests to NLB, efficiently routing to specific backend ports on an EC2 instance hosted in a private subnet. This increased security and reduced the latency of our global users by 45%.
- Leveraged **GitHub Actions** for CI across Vue, Laravel, Java, and React apps. Stored artifacts in S3 buckets and orchestrated deployments through **AWS CodeDeploy** (CD). This saved developers time and increased productivity by 35%.
- Utilized **Ansible** initially for deploying security patches across all EC2 instances. Transitioned to SSM Ansible for enhanced control over deployment history, maintaining an audit log of applied playbooks. This transition resulted in 80% decrease in the time required to manually apply patches.
- Configured multiple MySQL **RDS** instances, with production RDS in multi-AZ for fault tolerance. Enabled **CloudWatch** audit logs and used AWS **ElastiCache** to cache data, reducing website downtime due to RDS failure by 90% and boosting data fetching speed by 60%.
- Implemented vulnerability management with **Tenable Nessus** and **Lynis**, achieving **PCI-DSS 3.2.1** via **Auto-cloud** audits. This secured devices, applications, OSES, and cloud services, ensuring compliance and mitigating risks.
- Deployed applications on **Spot Instances** behind an **Autoscaling** group and ALB for continuous availability and scalability. This strategic move resulted in annual cost savings of \$120,000 and eliminated downtime entirely, ensuring uninterrupted service for users while optimizing infrastructure expenditure for the company.
- Deployed **VPC peering** to secure communication channels between our MongoDB account and production/staging VPCs, resulting in a 50% reduction in latency and a 20% decrease in network-related incidents. It furthermore reduced data-transfer cost by upto 70%.
- Leveraged **AWS Organizations** to segregate production and staging environments, reducing incidents related to misconfigurations by 25%. Implemented SCPs to control user's permissions on OU level to enforce strict access controls and ensure compliance with organizational policies and security standards.
- Established AWS **CloudWatch** for RDS monitoring and alerting, leading to a 15% decrease in downtime and a 40% reduction in mean time to resolution for database issues.
- Deployed AWS **Config** for compliance monitoring, achieving a 20% improvement in compliance scores and a 40% reduction in auditing time. Implemented AWS **GuardDuty** for continuous threat detection, reducing successful security breaches by 30% and minimizing the impact of potential threats.
- Utilized AWS **Route 53** for failover routing, ensuring high availability across regions. Managed public DNS zones and added records for efficient domain management.

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PLC Group Lead DevOps Engineer/Linux Developer: June 2019 - May 2023

- Created custom minimal Debian Linux image running on Raspberry Pi and using **Salt** in a master-minion configuration with **Jinja** templates, created the system by which the base image was updated and configured ready for production. This reduced the time to deploy 100 units from 100 hours (linear) to 20 minutes (constant).
- Remotely upgraded 500 sites running with legacy systems using **Docker** and saved \$300,000+ and 2500+ personnel hours.
- Used **VmStat**, **Htop**, **iotop**, **iotstat**, and **Monit** to monitor and save CPU and RAM usage of different processes to optimize IoT devices and identify the possible issues which might occur in the future. This reduced site visits to 50%.
- Deployed and managed an application used to collect MQTT data from IoT devices using an auto-scaling **Kubernetes** cluster. This reduced CPU usage from a constant 100% to 10% on each node.
- Used declarative and scripted (**Groovy**) to create CI/CD pipelines in **Jenkins** and Gitlab to automate testing. This reduced initial testing time from two hours to two minutes per IoT device.
- Integrated **Prometheus** with **Grafana** to develop customer-specific dashboards for monitoring health parameters (CPU Usage, RAM Usage, Disk Usage) of IoT devices and the collected data. Additionally, created a **Python** script to dynamically manage dashboards for respective hardware attached to IoT devices via API, simplifying data visualization for customers.
- Deployed and managed Gitlab, Jenkins, ERPNext, OpenProject, Gitolite, OpenVPN Server, and the corporate mail server on **Digital Ocean** droplets. Introduced OpenVPN Server with PKI that resulted in granting permission to only those users that had authentication keys.
- Led a high-performing team of **five** DevOps engineers, leveraging **Scrum** and dividing large tasks into manageable sprints. This enabled efficient project execution, improved developer productivity, and accelerated delivery of our new releases.

Quality Assurance and RnD Engineer: July 2018 - June 2019

- Created and implemented technology roadmap by integrating our software with our custom Linux OS and testing different Single Board Computers (SBCs) like Raspberry Pi, Pine Board etc. Created tools in **Bash** and **Python** to benchmark and stress test the SBCs under extreme conditions.
- Created multiple test-case scenarios for our product and then implemented those scenarios in **Selenium** to automate testing of the web frontend.
- Created **Python** and **MySQL** application to monitor and control generators via an IoT device. Used **PHP** and **JavaScript** to present the data collected by the **Python** application.
- Developed and maintained operational manuals in **Latex**.

EDUCATION

MSc Electrical Engineering

Faculty of Engineering, National University of Computer and Emerging Sciences
Summa Cum Laude - Valedictorian - Gold Medallist

Bsc Electrical Engineering

Faculty of Engineering, National University of Computer and Emerging Sciences