

# Khwelisile Lukhuleni

## Senior Cloud Engineer

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Platform/Cloud Engineer with experience architecting, implementing and managing enterprise-scale cloud infrastructure for Insurance/Banking/Retail organizations. Expertise in building secure, resilient platforms on AWS/Azure using Kubernetes, Terraform, Cloudformation and GitOps driven CI/CD pipelines (Jenkins, Gitlab CI, ArgoCD, Helm). Lead observability and monitoring initiatives using Prometheus/Grafana ensuring high system reliability. Adept at building developer-centric ecosystems, including internal platforms and APIs (REST, GraphQL) using .NET, Node.js, and Javascript, while enforcing zero-trust security practices (AWS IAM) and optimizing cloud costs via FinOps strategies. Passionate about bridging DevOps and SRE principles to empower engineering teams and deliver scalable, customer-focused solutions.

## Experience

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**2024-08 - Current**

### Senior Cloud Engineer

*ShopriteX, South Africa*

- Orchestrated end-to-end Kubernetes ecosystem management on AWS EKS, deploying and scaling containerized applications using Helm charts and GitOps-driven workflows (ArgoCD), ensuring automated rollbacks and consistent deployments across dev/qa/prod environments.
- Streamlined CI/CD processes using Azure DevOps Build & Release Pipelines to support delivery of containerized applications and serverless workloads.
- Built observability frameworks using Prometheus, Grafana, and Elastic Stack to monitor application health, troubleshoot issues, and ensure system reliability.
- Developed automated scripts and tooling in Python and Bash to support platform operations and improve developer productivity.
- Collaborated cross-functionally with development, security, and infrastructure teams to uphold platform security, compliance, and performance.
- Designed and maintained reusable Terraform modules to provision and manage cloud infrastructure across multiple environments and teams, enforcing consistency, compliance, and cost-effective scaling.
- Orchestrated container-based data pipelines using Airflow to dynamically schedule and run workloads across Kubernetes clusters, improving automation and reducing manual intervention in data workflows.
- Collaborated with data engineers to streamline Airflow-to-Kubernetes job migrations, reducing dependency on legacy systems and improving workflow portability across clouds.

- Implemented internal platform tooling and scripts in Python, Bash, and PowerShell to abstract Kubernetes complexity, automate operational tasks, and enable developers with self-service infrastructure capabilities.
- Optimized cloud costs by refining Kubernetes resource requests/limits, scaling HPA policies, and leveraging AWS Cost Management tools to align spending with workload demands.
- Architected workflow orchestration with Apache Airflow to automate ETL pipelines, batch processing jobs, and infrastructure maintenance tasks, ensuring fault tolerance via KubernetesPodOperator.
- Built self-service developer platforms by automating Kubernetes namespace provisioning, Helm chart templating, and ArgoCD sync workflows, enabling engineering teams to deploy services independently.
- Integrated Airflow DAGs with Kubernetes workloads, enabling programmatic execution of data processing pipelines that launched and monitored containers in EKS.
- Collaborated with application teams to design cloud-native solutions, advising on containerization best practices, service integration, and zero-downtime rollout patterns.
- Integrated Kubernetes workloads with Azure AD using OIDC, enabling secure, federated authentication for internal applications and services

2023-07 - 2024-07

## Systems Engineer

*Capitec Bank Limited, South Africa*

- Created GitLab pipelines to deploy backend services into kubernetes environment.
- Designed and implemented modular and reusable Terraform scripts to define infrastructure configurations.
- Provisioning of diverse AWS resources, including EC2 instances, VPCs, subnets, security groups, S3 buckets using Terraform configurations.
- Integrated Terraform scripts into continuous integration/continuous deployment (CI/CD) pipelines to automate deployment and updating of infrastructure.
- Managed Terraform state files and implemented versioning strategies to track changes and rollbacks effectively.
- Implemented and managed containerized applications using Rancher, streamlining deployment processes and ensuring scalability.
- Designed and implemented CI/CD pipelines in GitLab CI/CD for backend services and API's, automating build, test, and deployment processes.
- Implemented CI/CD for infrastructure changes, ensuring consistent and repeatable deployments across environments.
- Utilized AWS ECR for Container Registry and Package Registry for efficient management of Docker images, packages, and dependencies.
- Integrated monitoring tools with Rancher to monitor containerized applications' health and performance.
- Implemented Kafka producers and consumers to enable event-driven communication for various banking transactions, including payments, transfers, and account updates.
- Established Kafka topics as reliable message queues, guaranteeing the order and delivery of critical transactional messages.

- Designed and implemented Glue jobs for efficient data extraction, transformation, and loading from diverse data sources to Amazon S3 and other target destinations.
- Utilized Python scripting to develop custom data processing scripts, extending the capabilities of AWS Glue for specific business requirements.
- Worked with software development and testing team members to design and develop robust solutions to meet client requirements for functionality, scalability, and performance.
- Participated in the architecture, design and implementation of back-end services using .Net, JS and AWS services
- Developed and supported infrastructure and Cloud capabilities for micro services-based architectures.

2022-05 - 2023-06

## Intermediate Software Engineer

*Old Mutual*

- Developed automated CI/CD pipelines in Jenkins & AWS Codepipeline for both web applications and backend services.
- Implemented a blue-green deployment strategy using AWS CodePipeline.
- Implemented containerization technologies such as Docker and Kubernetes for improved scalability and increased efficiency.
- Provisioned EC2 instances and networking components such as loadbalancers/firewalls/routing
- Established high standards for code quality assurance through unit tests and the integration of tools such as SonarQube and Nexus to continuous integration processes.
- Created Bash scripts to automate & improve the generating of web artifacts for CI/CD processes.
- Successfully deployed a highly available application stack on AWS utilizing AWS Fargate, Application and Network Loadbalancers EC2 autoscaling groups.
- Experience using Infrastructure as code (IaC) tools like Terraform/Cloudformation script to provision AWS cloud resources.
- Managed deployments in Kubernetes; used docker images to create containers that are hosted as pods in kubernetes environment.
- Executed comprehensive troubleshooting techniques for complex production issues related to systems configurations or deployments.
- Building APIs and Web Applications on AWS platform and deploy them to different environments.
- Migrating Web Applications and backend services from AWS to Amazon Managed Services (AMS).
- Migrate on-premise databases to AWS RDS service.
- Implemented monitoring, logging and alerting using tools like Grafana, Kibana.
- Write operational documentation
- Research, design and implement new infrastructure and CI/CD processes for web application built on frameworks like React/Vue/Angular and backend services written in C#/Node/Kotlin.
- Provided guidance and mentored to team members

2020-08 - 2022-05

## Analyst Programmer

*Old Mutual*

- Building APIs and Web Applications on AWS platform and deploy them to different environments via Jenkins
- Analyze user requirements
- Write operational documentation
- Research, design and write new software programs for Business applications
- Provided sizing and scoping for development work
- Worked closely with clients to establish specifications and system designs.
- Wrote highly maintainable, SOLID code for backend services.

2019-02 - 2020-07

## GAP Trainee: Analyst Programmer

*Old Mutual*

- Assisted in the development of Old Mutual's Broker Web and Quotes Web application as well as built the API services
- Unpacking business requirements
- Offer architectural design input
- Sit in design sessions and offer input
- Integrate existing systems and get platforms to work together

2018-06 - 2018-07

## Software Engineer Intern

*Symbiotics*

- Built an AngularJs application that stores and maintains a list of customers with a number of projects each customer has with the use of Amazon Web Services.

## Skills

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Docker, Kubernetes

Jenkins, GitLab CI, AWS Codepipeline, Azure DevOps, Github Actions

Terraform, Cloudformation

ArgoCD, Helm

Prometheus, Grafana

Cloud Networking

Bash, Powershell, Python

AWS, Azure

Angular, Vue.js, Redux, React

Node.js, .Net, C#, Javascript, Typescript

AGILE & Scrum

## Education

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- 2022-11 - 2023-11**      *AWS Certified Cloud Practitioner*
- AWS Certification
- 2020-07 - 2020-07**      *Certificate in Agile Project Management Foundation*
- APMG International
- 20191 - 20191**              *Certificate in AWS Intermediate Solutions Architecture*
- Zensar Technologies – Pune, Maharashtra
- 2015-02 - 20181**          *BSc Information Technology*
- North-West University