Case Study: Safaricom Core Network Cloud Migration

# 1. Introduction

Safaricom PLC, Kenya's leading telecommunications provider, embarked on a strategic initiative to migrate its legacy core network infrastructure to a modern hybrid cloud architecture. The project aimed to enhance system scalability, reduce operational costs, improve service uptime, and align with global digital transformation trends in the telecom sector.

# 2. Background

Safaricom’s legacy systems including the Home Location Register (HLR), Short Message Service Center (SMSC), and Billing & Charging Systems were hosted on-premises using legacy Ericsson and Huawei platforms. These systems faced scalability challenges, high maintenance costs, and posed risks to business continuity during peak loads.

# 3. Project Objectives

- Migrate mission-critical telecom services to a hybrid/multi-cloud setup.  
- Ensure zero-downtime during the transition.  
- Mitigate risks related to data loss, latency, and SLA breaches.  
- Achieve compliance with Kenyan regulatory standards including CAK and Data Protection Act.  
- Enable workforce adaptation through structured change management and training.

# 4. Implementation Strategy

The migration was executed in stages, starting with the HLR, followed by the SMSC, and concluding with the billing system. A Blue-Green deployment model was adopted, and services were replicated in both OpenStack private cloud and Microsoft Azure. VMware HCX facilitated live migrations, while Apache Kafka enabled real-time data synchronization.

# 5. Risk Mitigation and SLAs

Key risks such as latency spikes, data corruption, and SLA violations were addressed through:  
- Deployment of edge nodes in Nairobi and Eldoret.  
- Real-time data replication using Kafka Change Data Capture (CDC).  
- SLA monitoring using Prometheus and visualization via Grafana.  
A comprehensive RAID log and fallback plan were maintained.

# 6. Regulatory Compliance and CAK Coordination

Safaricom ensured full alignment with the Communications Authority of Kenya (CAK) and the Kenya Data Protection Act 2019. Data was localized in Nairobi-based datacenters, encrypted with AES-256, and audit trails were preserved for 180 days. Pre- and post-migration reports were submitted to CAK, including a Data Protection Impact Assessment (DPIA).

# 7. Change Management and Training

A structured change management plan was implemented through the Safaricom Digital Academy. This included a 3-week training bootcamp, SOP documentation, and video tutorials. Over 100 technical staff were certified in OpenStack and Azure fundamentals. Post-migration, operational efficiency improved and support ticket escalations reduced by 85%.

# 8. Results and Outcomes

- 42% reduction in hardware usage  
- Improved system uptime to 99.98%  
- Enhanced operational efficiency and scalability  
- Successful CAK and GDPR-aligned compliance  
- Workforce upskilled and adoption smoothened

# 9. Conclusion

The Safaricom Telco Cloud Migration project stands as a benchmark for successful large-scale infrastructure modernization in the East African region. It demonstrates the critical role of cloud, compliance, and people-centered change management in enabling digital transformation.