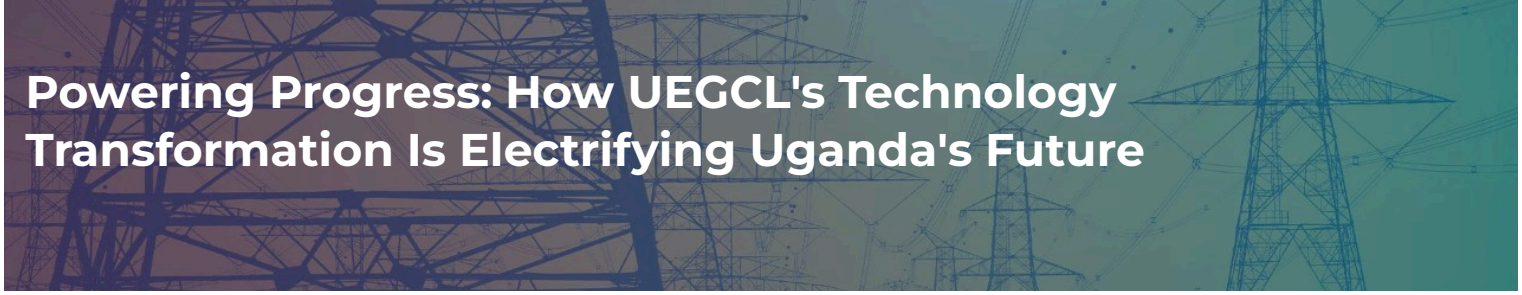

Powering Progress: How UEGCL's Technology Transformation Is Electrifying Uganda's Future

About Uganda Electricity Generation Company Limited:

Industry: Energy
Geo: EMEA, Uganda
Website: https://www.uegcl.com
Applications

- ERP
- Computerised Maintenance Management System (CMMS)
- Disaster Recovery
- Databases

Products:

- AHV Virtualization
- Nutanix Cloud Infrastructure (NCI)
- Nutanix Unified Storage (NUS)
- Prism

Ready to get Hands-On?

Take a Test Drive

Harnessing the power of innovation underpins the Uganda Electricity Generation Company Limited’s roadmap to technology reinvention supporting enhanced efficiency and sustainability

Facing the challenge of enhancing operational efficiency and sustainability in electricity generation, the Uganda Electricity Generation Company Limited (UEGCL) embarked on a strategic technological transformation. The state-owned entity responsible for fuelling Uganda's socioeconomic development through reliable and affordable electricity recognised the need for a robust IT infrastructure to optimise operations and maintenance of its hydropower stations along the Nile River.
Following the unbundling of the previously vertically integrated Uganda Electricity Board in 2001 as part of public enterprise reforms, UEGCL was incorporated and positioned at the beginning of the electricity sector’s value chain as the primary state-owned generator of electricity to Ugandans. The model urges each pillar to operate as a corporate business entity, with a vision of being self-sustaining. UEGCL currently operates major hydropower stations along the Nile River, leveraging this significant natural resource to produce energy. With a commitment to safety and operational excellence, the company aspires to become Africa's leading electricity generation utility.

Key Benefits

Streamlined Operational Efficiency and Sustainability

Improved maintenance and asset management processes, reduced physical and environmental footprints, boosted operational efficiency, and the optimised use of natural resources.

Rapid Deployment and Scalability

The private cloud enables swift, scalable service and application deployment, supporting the energy utility's need to adapt to new demands and enhance responsiveness and operational flexibility.

Cost-Effective Infrastructure Management

Intuitive management interface delivers streamlined IT oversight and substantial cost reductions in infrastructure costs, underscoring a highly efficient and effective operational model.

Challenge

In late 2018, UEGCL was advancing its development of several large hydropower projects, including the near completion of the Isimba Hydropower Plant, adhering to the Engineering, Procurement, Construction, and Commissioning (EPCC) model, where a contractor is responsible for the entire construction process and hands over a fully functional facility. The company recognised gaps in this approach, especially in maintenance and sustainability post-construction.

Focusing on the Isimba Plant, with its 183 megawatts capacity, marked the beginning of UEGCL's journey towards IT autonomy. The company sought technologies aligned with the ISO 55000 asset management standard to bolster maintenance operations and streamline processes. However, given the limitations placed on government entities using the cloud, the cloud was out, so UEGCL explored alternatives and discovered Nutanix.

"Nutanix allowed us to establish a private cloud, control it fully, and deliver services on its platform. It integrated virtualization, computing, and storage into a single solution, reducing our hardware footprint and data centre cooling requirements. This efficiency translated into fewer maintenance needs and operational cost savings," says Albert Murungi, Head of ICT at Uganda Electricity Generation Company Limited.

However, while the procurement process ran smoothly, the selection was made during the COVID-19 pandemic in 2021, a period fraught with logistical challenges. Despite concerns about hardware delivery delays, UEGCL received the Nutanix equipment (during the pandemic) with support from Nutanix and their local partner in Uganda- International Business Solutions Ltd (IBSL) and implemented the project within six months, including hardware delivery times.

Solution

Today, UEGCL maintains a highly available IT infrastructure with two clusters: one in its primary data centre and the other at a disaster recovery site, both comprising four nodes each and enabling seamless data replication.

At the core of this infrastructure is the Computerised Maintenance Management System (CMMS), a mission-critical tool for managing maintenance work orders and various asset management activities within its power plants. Powered by IBM Maximo's enterprise asset management engine, the CMMS is vital for collating the data needed for tracking maintenance history, assessing component reliability, and ensuring efficient and consistent maintenance practices. It also supports the meticulous planning and scheduling necessary to minimise operational disruptions during maintenance activities.

The company has also sought to optimise and extend the use of its Nutanix infrastructure, avoid underutilisation, and prevent redundant capacity. It has since expanded the Nutanix infrastructure to host a variety of critical systems and services. Its ERP system, various database solutions, and other server computing infrastructures are among these.

"This expansion has allowed us to scale our operations significantly and has facilitated the progressive decommissioning of legacy hardware in our data centres," adds Murungi.

Benefits

Nutanix has substantially benefited UEGCL by transforming its IT and operational landscape. Murungi highlights the 'single pane of glass' management interface as a standout feature, allowing a single individual comprehensive oversight of UEGCL's infrastructure through one unified interface, streamlining resource management.

The acceleration of deployment speed is another significant advantage. "With Nutanix, we've established a private cloud environment within the organisation, enabling rapid deployment of services and applications across any of our facilities, provided the users have the appropriate access and follow internal procedures. This means that new applications can be deployed in under 30 minutes," states Murungi.

However, efficiency extends beyond IT service management, enhancing processes across the entire organisation and resulting in significant infrastructure cost savings of 70% to 80%.

"Nutanix has revolutionised our IT infrastructure by simplifying management, speeding up deployment, improving operational efficiencies, and significantly reducing costs. Its intuitive design and intelligent features make it an invaluable tool for technical and non-technical users,

underscoring its role in enhancing our IT environment," says Murungi.

Technology integration is pivotal for UEGCL, underpinning the operational principles of reliability and availability in energy generation. These principles ensure consistent power supply and address the unique challenges of hydroelectric power utilities, which need to ensure the uninterrupted flow of river water and its sustainable use so there is little to no impact on communities upstream and downstream from plants. IT systems are instrumental in this context, enabling swift issue resolution to maintain plant reliability and availability.

According to Murungi, the correct technology investments are also a stepping stone towards achieving sustainability goals. "Sustainability in energy generation is a global imperative. At UEGCL, we recognise that technology is a key driver in sustainability, as it enables us to enhance operational efficiency, optimise the use of natural resources, and make data-driven decisions through analytics, artificial intelligence (AI), and machine learning. Aligning our technology with sustainability goals reinforces our dedication to environmental stewardship, illustrating how innovative technologies are vital in achieving the sustainability objectives in the energy sector," says Murungi.

The technology decisions made by UEGCL have revolutionised the utility's approach to innovation and operational efficiency by simplifying IT infrastructure management and enabling a focus on strategic business initiatives. Removing traditional IT constraints allows the IT team to collaborate more closely with business units on automating and enhancing processes. As a result, innovation is alive and well at UEGCL, which supports a culture of continuous improvement and responsiveness to business needs.

Next Steps

"UEGCL is dedicated to the continual advancement of our Nutanix investment. To embrace the continually evolving tech environment, these investments must position us to embrace emerging innovations like big data, analytics, AI, and machine learning so we can stay at the frontline of the fourth industrial revolution," says Murungi.

Looking ahead, integrating the Internet of Things (IoT) into its systems will allow for a more sustainable and efficient operation of its power stations, signalling a shift from traditional IT roles to becoming intrinsic business partners within UEGCL. This supports its model, which requires it to run like a business, like any other corporate entity with a business mindset, leveraging technology to sustain its competitive edge.

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