Unleashing the Potential of Carrier-Grade Hybrid Cloud in the Sub-Saharan Africa 2025

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Executive Summary

Carrier-grade, hybrid cloud, are supporting many Sub-Saharan African providers with their ability to virtualize network functions, streamline back-end OSS/BSS systems, while also supporting business and consumer end users with distinct offers and capabilities. The hybrid cloud mentioned in this white paper is referred as an integrated cloud service that combines both private and public cloud models.

On-premises private cloud tends to be the starting point for the operators. This is due to a wide range of issues such as security and compliance, guaranteeing the performance of critical service functions, as well as the ability to scale and guarantee uptime. Private clouds ensure compliance with data residency laws keeping sensitive data in local data centers.

Extending private environments to edge services and public clouds, in turn, provide other advantages such as bringing in technology and tooling to better align the technology strategy to other sets of competing business requirements such as the need for speed, agility and business process automation. Telecom carriers continue to run a capital-intensive business, have competing demands to support new requirements – such as 5G, IoT, AI/ML with many legacy systems from cellular technology (e.g., 2G, 3G, 4G) to the PSTN. Each set of dependencies ranging from the operations support systems (OSS) to the customer facing business support system (BSS) for order fulfilment, billing, and customer relationship management (CRM).

Moving to the hybrid cloud by striking the balance between security and control with speed and agility is important for economic development across Africa. The telecom sector is driving digital transformation. They are fueled by a young, tech-savvy generation considered to be mobile first and cloud natives. Growth within this sector is largely driven by mobile data and the adoption of FinTech services. For 5G services, commercial launches are underway across South Africa, Nigeria, Zambia, Angola, Kenya, Zimbabwe, and many other markets. There are also over 200 million mobile wallets across Africa as major undersea cabling initiatives such as Equiano, 2Africa and AAE-2, interconnecting Africa with Europe, Asia and the Middle East.

- **Economic Growth:** Digitization is directly linked to GDP growth. It is important for connectivity and infrastructure developments to continue to drive economic development, bridge the digital divide, and better support underbanked populations.

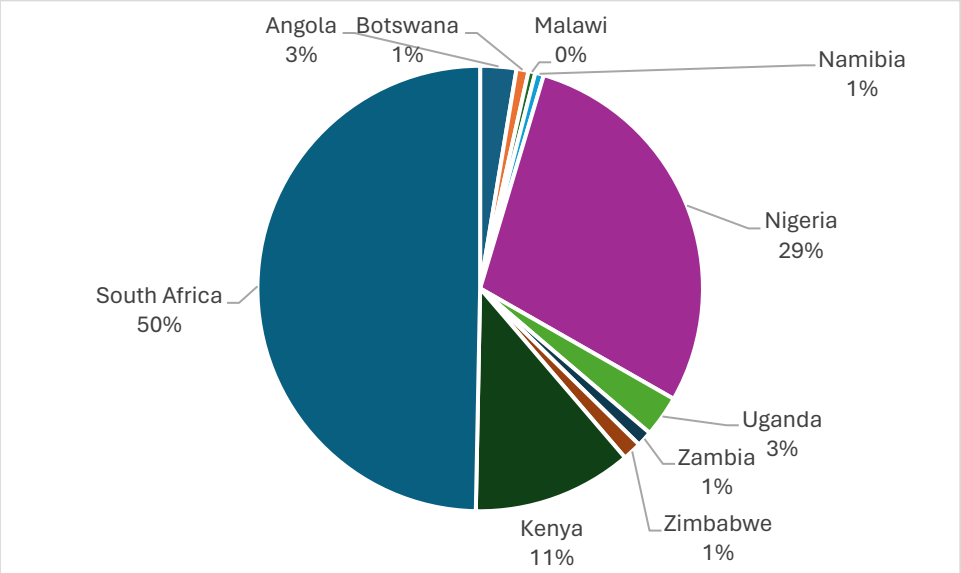
- **Importance of Hybrid Cloud:** To control costs and manage multiple legacy environments, telco grade hybrid cloud is the most flexible approach to support the operators in the region. This provides the ability for operators to be more responsive to market needs, accelerate monetization, without impacting network uptime and overall business continuity.

Market Assessment and Key Drivers

Telco Cloud represents the modernization of traditional telecom networks by embracing more open source, disaggregating hardware and software, decentralized IT and gradually moving towards cloud-native architectures. For telco, the perception of cloud is also changing. CSPs are no longer looking to move workloads to the cloud environment, as in a location, to replace on-premise solutions. Instead, a cloud strategy in the telco context starts with the operator typically running their own data center – either on site, in 28% of the cases, or from a designated off-site location in 48% of the cases – extending to the public cloud and edge environments.

The hybrid cloud in the Sub-Saharan Africa region had a market size of US$ 803 million in 2024, and it is expected to grow at a 5-year CAGR of 9.73% to 2029. These metrics combined with respondent feedback with analysis was used to determine market position.

Market Sizing: Hybrid Cloud in Sub-Saharan Africa Region



Source: GlobalData

Private Cloud Important for Control

By integrating these environments in this fashion, telecom operators can optimize workloads, reduce costs, and enable new services while maintaining control over critical assets. The latter is very important for telecom operators, as networks are regarded as critical national infrastructure. Maintaining control over core networks, data centers, signaling systems, and operational support systems, for example; is essential for protecting customer data, improving cyber resiliency, ensuring business continuity and demonstrating compliance to any number of local regulations.

Balancing Control with Agility

Carriers are equally looking to cloud environments to improve operational agility. Telco clouds are also seen as a core platform to modernize monolithic applications. This is to accelerate development time, improve operational efficiencies and progressively create environments where they can write and deploy their own software to improve business speed and agility. Application modernization usually has a few steps.

- **Virtual Network Functions:** VM-based telecom network functions are typically the first step for telecom providers to virtualize physical appliances, such as routers and firewalls. They are also seen by the industry as important capabilities for isolation and often considered the first step towards the cloudification of telecom infrastructure.

- **Cloud Native Functions:** Some telecom providers will continue the journey by repackaging application code, configurations, and dependencies into a single object, known as a container. While containers focus on the packaging of software, microservices can run across multiple containers. The benefits include dramatic improvements in software release cycles, ability to scale, and operational efficiencies. Cloud native design is important for connecting the architecture to business drivers.

- **Observability:** Telecom providers also need to focus on application performance, management as well as the inter-relationship between application clusters and the underling infrastructure. Observability is one capability to monitor app performance, governance, and security. Service mesh, for example, is deeply rooted into operations support systems (OSS). This provides real-time visibility and control over applications, clusters, infrastructure performance, and inter-relationships between the two.

- **Artificial Intelligence for IT operations (AIOps):** Today there are many different layers of technology making up an organization's IT infrastructure and an increasingly complex set of dependencies between them. Artificial Intelligence for IT operations (AIOps) applies advanced analytics – in the form of machine learning (ML) – to anticipate performance issues and fix them in an automated way before negative impacts are felt.

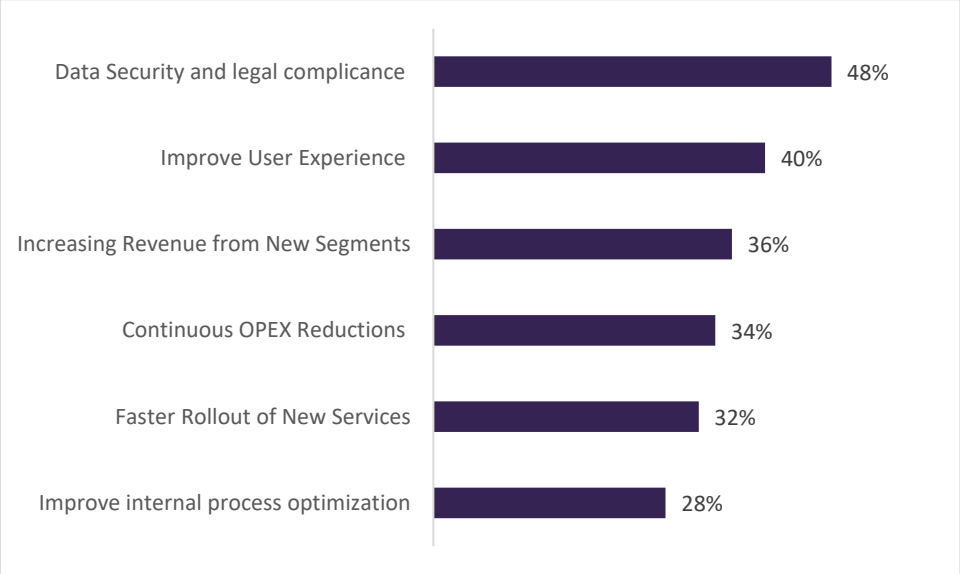
From Private to Hybrid Cloud

Telecom operators are some of the most regulated sectors and their infrastructures need to meet a multitude of requirements supporting everything from personal calls to emergency services, government operations, and critical industries like healthcare and finance. These networks need to achieve high availability (99.999%), high performance, throughput, and scalable operations. They equally need to be highly secure, handle sensitive data, and protect customer privacy.

While starting from the private cloud environment, hybrid clouds evolve the strategy and help to achieve the best of both worlds: the security, control, or critical infrastructure with the needed flexibility to evolve telecom services to market demands.

The survey found that there were many considerations when choosing cloud infrastructure such as the need to improve security and local compliance, improving user experience, targeting new business segments (enterprise, government, or consumer), reducing operating expenditure (OPEX), accelerating the roll-out of new services through to internal process optimization.

When choosing a cloud infrastructure solution, what are the most important considerations?



Source: GlobalData survey, n=25

Benchmarking Providers Based on Buyer Sentiment

GlobalData conducted a research in 13 African and Sub-Saharan countries interviewing 25 leading telecom operators to better understand the state of hybrid cloud deployments and current experiences with some of the leading vendors. The interviews were conducted between August and October 2025 and included senior IT leaders working in roles such as network and operations (28%), IT and software (32%), business and strategy (20%), security and risk management (8%), sales and enterprise solutions (12%). These roles represented four functional areas: IT procurement, software development, cloud, and data center operations. Some 76% of respondents owned and operated their own data centers, either on-premises, or at a separate dedicated site; with the remaining running their core infrastructure from a third-party colocation facility.

Methodology

In this study, telecom providers are asked to evaluate the capabilities of their hybrid cloud vendors by their technology leadership in hybrid cloud. These seven metrics included: (1) Strategic Partnership (2) Performance and Reliability, (3) Full Stack Infrastructure, (4) Platform and Control, (5) Professional Services, (6) Big Data and Warehouse, and (7) Artificial Intelligence. Each of these metrics were weighted on a 1 (being the lowest figure) and 5 (representing the highest figure) to understand communications service provider (CSP) satisfaction with the chosen provider.

This study also considers the market performance of the six key vendors in the region. This includes considerations such as market presence, channel distribution through to differentiation and industry specific expertise.

The study shows that the most used hybrid cloud technologies by telecom operators in the Sub-Saharan Africa region are offered by AWS, Google Cloud, Huawei, Microsoft, Oracle, and VMware. While other cloud providers such as Alibaba Cloud, IBM, Nutanix, etc. are equally used by telecom operators; the usage is relatively low and resulting in small samples and limited data.

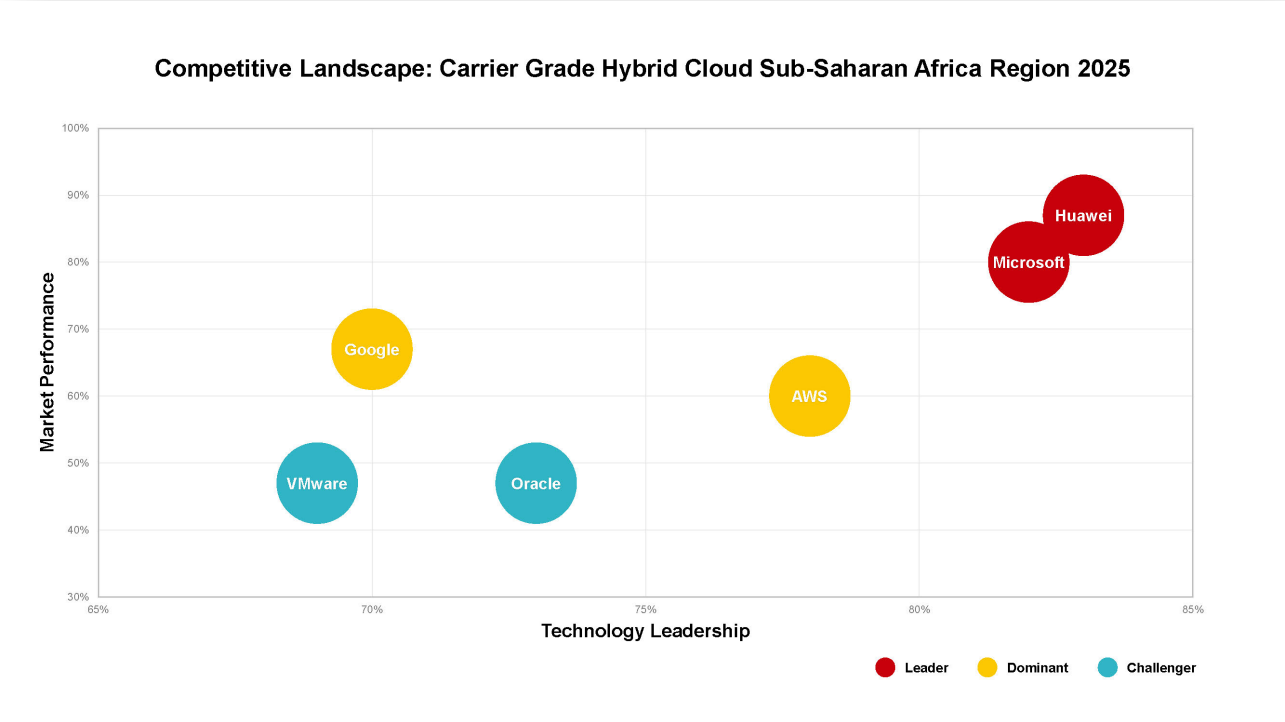
The assessment is therefore focused on these vendors since with limited samples for other vendors, it is not possible to provide an accurate assessment of those vendors.

Key Conclusion and Ranking

Based on GlobalData's research, by assessing the technology leadership and market performance metrics, Huawei was ranked top position for carrier-grade hybrid cloud vendor in this region.

Microsoft was positioned second and is equally considered a Leader. This is followed by AWS and Google as Dominant players. Subsequently, VMware and Oracle are considered Challengers.

This chart below illustrates the Technology Leadership and Market Performance of the vendors in one singular perspective.



Huawei: With a strong balance of technological and market performance Huawei outperformed competing vendors in this region.

For Market Performance, Huawei was rated highest for expanding market presence, positioning itself with extensive solution offerings and providing sturdy and in-depth telco expertise with their customers. With regards to Technology Leadership assessment, Huawei outperformed its competing vendors in the following criteria: Strategic Partnership, Platform & Control, Professional Services and Big Data & Warehouse. With this combination of service offerings, Huawei demonstrated overall coherent and comprehensive performance.

Microsoft: Microsoft has equally made positive strides on both metrics and is closely positioned behind Huawei. Specifically for the criteria Performance & Reliability, Full Stack Infrastructure and Artificial Intelligence in the Technology Leadership assessment, Microsoft was rated highest and shown strong momentum.

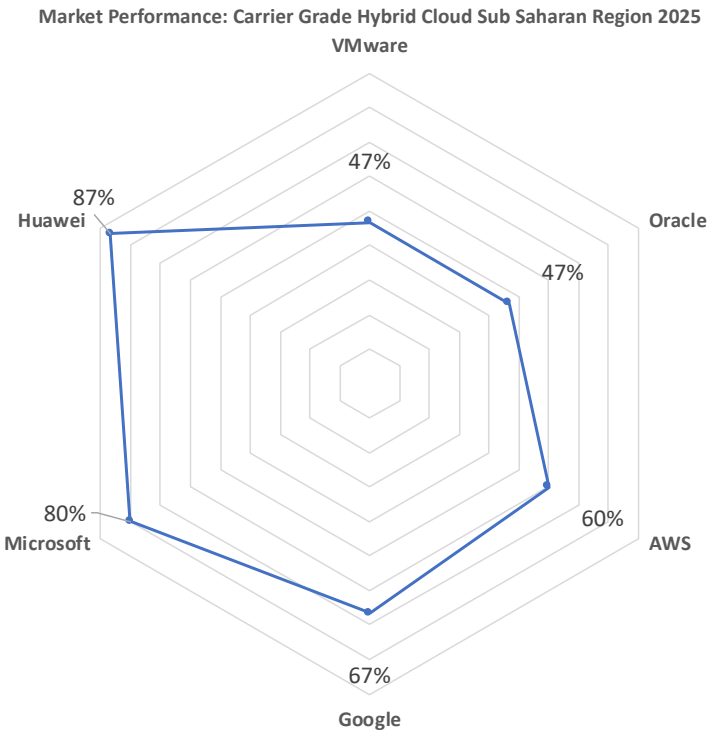
Google and AWS are also major players in the region and are positioned as Dominant players in this assessment, followed by VMware and Oracle as Challengers.

Note: 'Leaders' in this assessment have an average of both indicators [Market Performance and Technology Leadership] of above 80%; while 'Dominant' competitors score between 60% and 80%; and 'Challengers' score between 50% and 60%.

Market Performance Assessment

The study considers the vendors' presence in Sub-Saharan Africa.

From a Market Performance perspective, based on GlobalData's research, Huawei demonstrated stronger market push compared to the competing vendors. The three key metrics analyzed were Market Presence, Market Differentiation, and Telco Expertise. Microsoft was ranked second, subsequently followed by Google, AWS, VMware and Oracle.



Note: The chart indicates the overall score of each competitor based on the following criteria: Market Presence, Market Differentiation, and Telco Expertise.

#1 Market Presence

One of the factors in assessing performance is market share, channel distribution and reach, brand awareness and customer advocacy. This was important in the study to ascertain overall competitive advantage and growth opportunities.

Within this criterion, Huawei has been dominant in the largest markets in Sub-Saharan Africa including Nigeria, Kenya, and South Africa. The company has its roots in supporting the operators within its carrier infrastructure business before expanding its wallet share into its accounts with its telco cloud products opening up opportunities to sell to, sell through and sell with the CSPs to the different market segments including consumer, business and government sector.

The research showed some evidence of Huawei selling value-added services helping the carriers with the adjacent opportunities such as enabling financial institutions and mobile network operators (MNOs) to build their own super app ecosystems such as Safaricom, MTN Group and Opay, a Nigerian financial services provider.

#2 Market Differentiation

Another criterion we used to measure and assess performance is market differentiation. This considers customer perception, data center capabilities, delivery and sustainability of any competitive advantage.

For telecom operators, Huawei's initiatives are showing a move to drive cross-selling in mobile broadband, digital payment services as well as higher ARPUs. In terms of go to market, many of the competitors profiled (e.g., Microsoft Azure, Google Cloud, and AWS) have a stronger focus on public clouds and creating of new Availability Zones (AZs) across the market but show less evidence of deeper penetration specific in the Sub-Saharan Africa region. Besides Huawei, Microsoft has also established a presence in Nairobi, Lagos, Johannesburg, and Cape Town. Their services are largely horizontal. The telecom sector is one of many sectors that they serve, often leveraging partners to address the specific requirements for each industry vertical. In our assessment, Huawei is showing a stronger ability to address end to end needs through its own resources and partner ecosystems it is actively building, for telecom operators.

#3 Telco Expertise

In the GlobalData assessment, industry-specific expertise matters in ICT solution selling for telecom operators. It directly impacts the operators which tend to have legacy environments, strict compliance, security and service availability requirements in the region.

In assessing telco-grade hybrid cloud in the Sub-Saharan Africa region, Huawei's standouts are within its ability to serve the needs of telecom operators with deeper sector specific expertise.

- **Huawei:** Huawei's hybrid cloud offer is supported by a much broader carrier business delivering an extensive range of cloud as well as network infrastructure, software capabilities including service delivery platforms, professional services and AI-driven innovations for operators specifically. There is also a strong emphasis on mobile evolution where there are over 500 million subscribers across the Sub-Saharan Africa region.

- **Microsoft Azure:** It is among the firsts to launch a hyperscale cloud capability in South Africa and is expanding across other markets such as Kenya, Nigeria and Angola. It is highly regarded for its cloud, AI, and digital sovereignty capabilities, broadly within the enterprise segment. The study also noted partnerships with local operators such as Mawingu Networks, Liquid, and CSquared, driving cloud and connectivity across Kenya. Major cloud customers include the MTN Group.

- **AWS:** Entering the region in 2020 (Cape Town, South Africa), the company has been extending its infrastructure (e.g., local zones) into Nigeria and Kenya. Major cloud customers include Liquid Cloud, Sentech, Safaricom and Africa's Talking. It is also incorporating AI/ML, Customer Experience Management, and Edge Computing solutions into its local go-to-market.

- **Google Cloud:** As one of the late movers into the Sub-Saharan Africa region with its first data center location opening in March 2025 (Johannesburg, South Africa), Google Cloud focuses on enabling cloud adoption, AI innovation, and connectivity. MTN's Groups Advanced Data Analytics Management Platform (ADAM) is deployed from Google Cloud. Google Cloud's Africa Connect initiative includes major subsea cables investments (Equiano and Umoja) driving connectivity across the region and beyond.

- **Others:** The study also accounted for providers such as the Oracle Cloud Infrastructure (OCI) which supports OSS/BSS environments, customer experience management, AI/ML and edge compute. VMware has also been evaluated, noting a steady loss of momentum. Others, such as Nutanix, Alibaba Cloud, and IBM, were considered, but not featured due to a low customer response rate in the GlobalData survey.

Technology Leadership Assessment

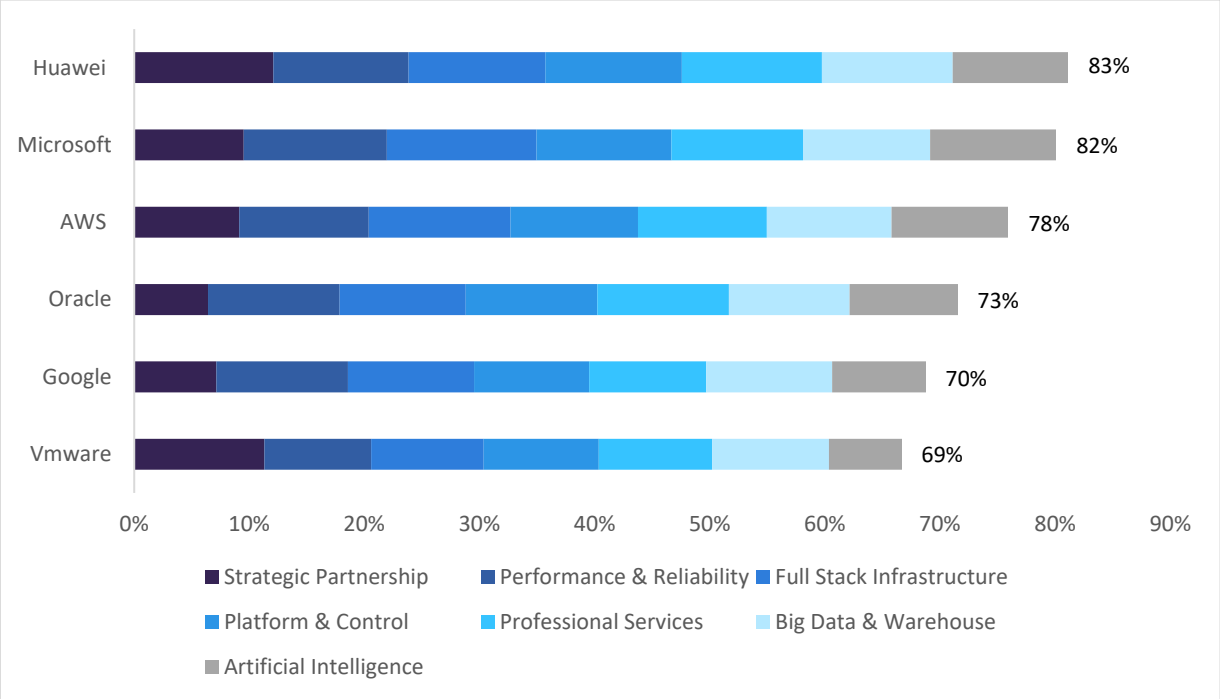
Against the backdrop of market performance, GlobalData has ranked Huawei with an overall number one aggregate score across seven major categories: (1) Strategic Partnership (2) Performance and Reliability, (3) Full Stack Infrastructure, (4) Platform and Control, (5) Professional Services, (6) Big Data and Warehouse, and (7) Artificial Intelligence.

These criteria provide the components or elements of what it takes to deliver the full lifecycle of services. Rather than an assessment of individual products, the study considered the required framework that considers market context with the business goals of the operators within Sub-Saharan Africa to drive economic development, innovation, and adaptability.

We considered the balances in supporting the transition from legacy systems to next-gen services, such as delivering automation and business agility without compromising performance, resiliency, security, and compliance. Strategies often require a balanced approach from private to public cloud, centralized ICT with decentralized edge compute environments. Other factors considered were the level of business process automation, partner ecosystems and roadmaps.

Against the seven criteria below in this report, GlobalData has ranked Huawei number one in the top leadership position for the Sub-Saharan Africa region for Hybrid Cloud. Within each of the categories, the sections to follow will provide market definitions and the justifications of scores for the various vendors.

Technology Benchmarking: Sub-Saharan Africa



#1 Strategic Partnership:

Based on the survey responses, telecom operators using Huawei's solution see the vendor as their most strategic hybrid cloud partner. 54% of these respondents rated Huawei as the primary cloud vendor while 92% rated Huawei as one of their top 3 vendors. Microsoft Azure was the runner up with 40% of respondents rating the company as the primary provider.

As hybrid cloud drives the core business for telecom operators, they are forming more strategic relationships with their vendors that will work collaboratively to innovate and develop the roadmap.

These relationships go beyond transactional interactions, involving co-innovation, shared resources, joint planning (often at an account or business unit level) support mutual growth strategies.

Partnerships enable shared R&D, allowing faster feature rollout and customization for local needs. They often provide scope for training and certification.

In the context of African telecom providers (e.g., Vodacom, NetOne, Uganda Telecom) and fintechs (e.g., JUMO), they enable the integration of cloud with fixed and mobile networking technologies, AI, Edge, IoT, and payment solutions (e.g., T-Kash, OneMoney, Ug-Sente).

Telecom providers are more likely to engage cloud providers who understand their industry, business and pain points. Increasingly, cloud services will also need to be configured by strategic partners to support local laws around data sovereignty and compliance.

#2 Performance and Reliability

Based on the survey responses, telecom operators using Microsoft Azure gave this vendor the highest rating for performance and reliability at 4.4 out 5. Huawei came in second with a rating of 4.1. It is noted that operators using both Microsoft Azure and Huawei are mostly operating a private cloud or hybrid, whereas other vendors such as AWS and Google Cloud have a higher percentage of operators using their public cloud services. Operators have greater control over performance and reliability with their workloads hosted in a secure, private environment.

Performance and reliability are especially critical for carrier-grade cloud services due to the stringent demands of telecommunications and mission-critical applications. These services, often used by telecom operators, enterprises, and service providers, must meet high standards for quality, availability, and scalability.

- **Speed and Efficiency**: High performance ensures fast processing, low latency, and quick response times, which are essential for applications like real-time analytics, gaming, or e-commerce. Carrier-grade services often support latency-sensitive applications, VoIP, video streaming, or edge computing. High performance ensures minimal delays, enabling seamless user experiences and efficient network operations.

- **Scalability**: Cloud systems must handle varying workloads efficiently, scaling resources up or down to meet demand without degradation. Telecom networks handle vast amounts of data and network traffic. Carrier-grade clouds must dynamically scale to accommodate traffic spikes (e.g., during major events or peak usage) while maintaining consistent performance.

- **Uptime and Availability**: Carrier-grade services typically demand "five nines" availability (99.999% uptime), as even brief outages can disrupt millions of users, critical services, or emergency communications. These services require robust failover mechanisms and redundant systems to prevent service disruptions from hardware failures, network issues, or cyberattacks.

- **Data Integrity and Recovery**: Reliable systems protect data from loss or corruption and enable quick recovery from failures, ensuring business continuity. Telecom clouds often handle sensitive data (e.g., call records, user data). Reliability ensures data is protected, backed up, and recoverable to maintain trust and comply with regulations

Performance and reliability are also important for supporting the carrier brand, establishing trust, and for delivering a strong and consistent user experience. There is also some correlation between user experience and brand reputation, advocacy, and improving net promoter scores (NPS).

#3 Full Stack Infrastructure

Based on the survey responses, Microsoft Azure was rated an average 4.6 out of 5 for this category, while Huawei came in second place with a rating of 4.2.

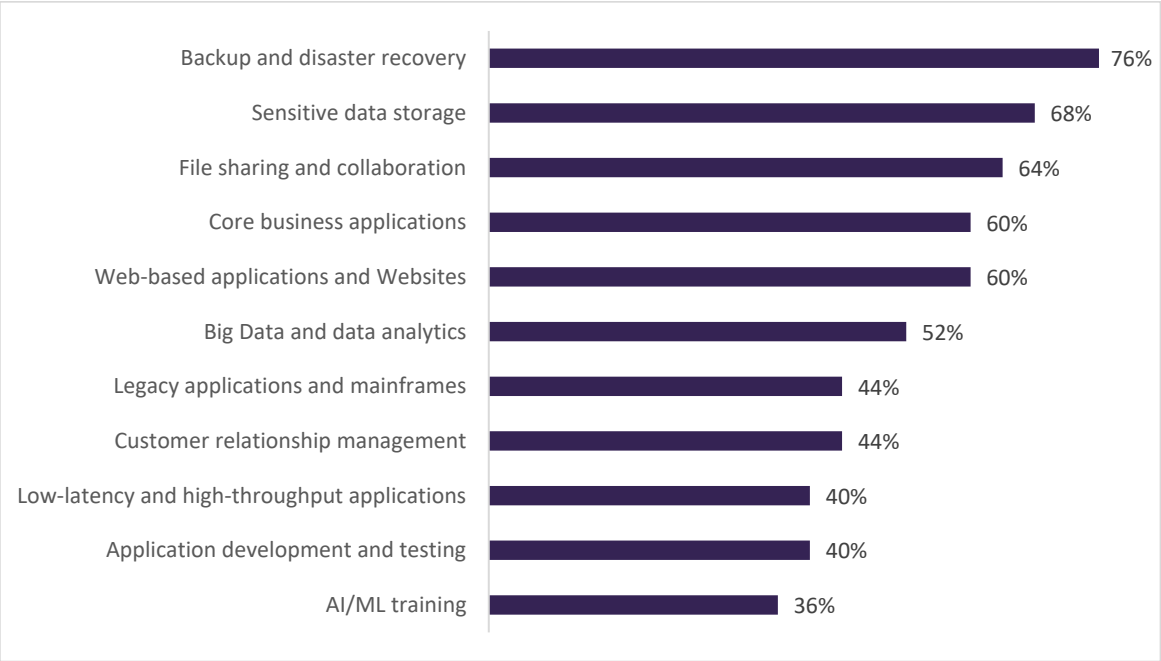
Microsoft not only delivers services through its public cloud regions, it also supports private and distributed cloud through products such as Azure Stack, Azure Stack Edge, and Azure IoT Edge. The company is also meeting cloud sovereignty requirements through Sovereign Public Cloud (only in Europe), Sovereign Private Cloud (Microsoft-validated hybrid or disconnected cloud at client's location) and National Partner Clouds (independently owned and operated by a local partner).

Similarly, Huawei Cloud Stack gives customers a high degree of flexibility for where they want to host their workloads, including on-premise data centers. It equally offers flexible dedicated cloud configurations to ensure data, operation, and technology sovereignty. The company also allows customers to access the same services and have the same experience across public and private cloud environments.

Full-stack infrastructure refers to the entire integrated technology stack needed to build, test, and deploy an application, including hardware, software, networking, and middleware. It tends to encompass all layers of a computing environment, from the physical hardware (servers, storage, networking) to the virtualization, operating systems, databases, middleware, and the application's front-end and back-end code. This is also supported by additional tools such as observability and monitoring using telemetry data (logs, metrics, traces) from every layer to give teams a holistic view of application and infrastructure performance.

This is important for the CSPs given the volume and variety of data assets that are being supported from a cloud environment. This includes business continuity and disaster recovery, core business applications, legacy environments through to application testing and development.

What are the workloads in the private cloud?



Source: GlobalData survey, n=25

These environments empower telecom operators to reduce costs, improve agility, enhance customer experiences, and embrace new technologies while keeping data secure and keeping aligned to local compliance requirements.

Core and Edge Distribution

Increasingly telecom operators are no longer hosting all of these resources from within a single cloud environment but will often host ICT from distributed locations including edge nodes. This is important for low latency applications such as AR/VR, IoT, industrial automation, or AI/ML workloads keeping core applications and data close to the users. Distributed infrastructure spreads compute resources across multiple edge locations, reducing the risk of single-point failures and improving bandwidth optimization and network reliability.

These solutions are also important for ensuring regulatory compliance. Processing sensitive data at the edge reduces the need to transmit it to centralized clouds. This lowers the potential attack surface and also helps to meet local compliance laws where certain types of sensitive data is processed and stored on-site. In addition, edge offers an additional perimeter where potential security attacks can be detected and prevented.

The benefits of edge computing include higher performance and cost savings that can be achieved when developing, hosting, and powering applications closer to points of consumption. They also

include being able to make faster decisions about data collected from Internet-connected sensors on factory floors, transportation networks, retail outlets, and many other locations. Edge computing infrastructure comes in different forms and includes dedicated edge servers, hyperconverged infrastructure (HCI) appliances, micro data centers, edge and Internet of Things (IoT) gateways, content delivery networks (CDNs), and devices with built-in compute and data processing capabilities.

Advantages of Distributed Edge for Carriers	
Performance and Latency	Edge computing reduces the number of 'network hops' that data or application content must travel in order to be processed or delivered to consumers. The faster turnaround times associated with local data processing help to ensure lower latency and higher levels of application performance.
Real-Time Data Processing	Supporting the ability to process data locally, closer to where it is generated and/or collected; edge computing ensures that data can be harnessed and acted upon in real time. Real-time data processing makes it possible to offer a wide range of new applications and digital services.
Cost Savings	Local data processing minimizes the amount of data that needs to be sent to cloud data centers for storage and processing. Edge computing ensures that only useful, post-processed information is sent to the cloud, therefore lowering the consumption of network bandwidth and reducing costly cloud storage bills.
Distributed Workloads	Allows telecom operators also to operate in a decentralized and distributed IT footprint across multiple sites. This can provide several advantages over centralized IT architectures. This increases availability of services, reduce the possibilities of downtime and lowers total cost of ownership.

#4 Platform and Control

Based on the survey responses, telecom operators rated Huawei highest in terms of platform and control – 4.2 out of 5. Microsoft came in second at 4.1.

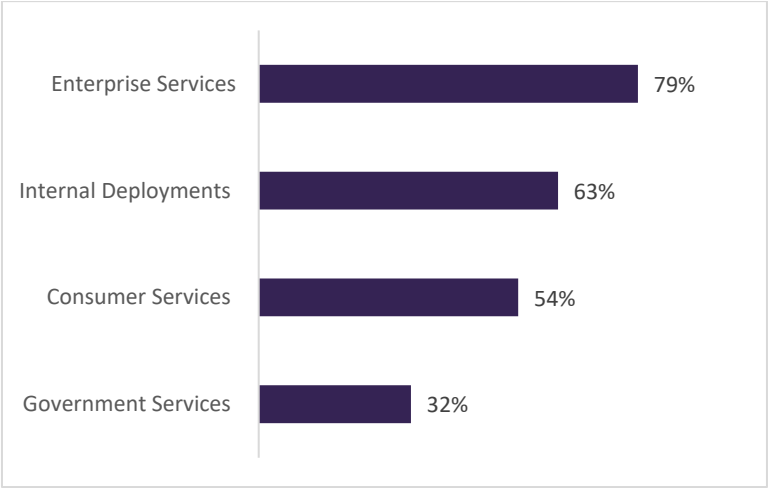
Huawei's ManageOne offers unified management across physical machines, virtualized instances, private cloud, public cloud. It offers a Service Center for self-service features, service catalogue, and tenant permission; Operation Center for resource management, topology management, and operations automation; and a Command Center for CXO dashboards, service ticket management and reporting.

Microsoft offers various tools depending on the specific Azure product including an administrator portal, PowerShell, Azure Stack Hub (for developers to build apps in an on-premise environment), and Azure Arc (for governance and management of services across multi-cloud and on-premises environments).

Cloud platforms continue to evolve rapidly, driven by the need for scalability, security, and integration with core network components (e.g., 2G-/3G/4G/5G) and fixed voice services such as PSTN (circuit switched) and VoIP, support systems such as OSS/BSS) with many of the emerging technologies like AI and edge computing.

The survey shows that CSPs are also deploying cloud for different use cases with majority of respondents using the capability primarily for enterprise services (e.g., IaaS, PaaS, and SaaS) services. This is followed by their internal network, IT and operations. Some 54% of CSPs in the region are using cloud as a cost-effective means to support consumer services (e.g., video on demand, gaming, content, storage) with the remaining 32% supporting government.

With your existing cloud offer, how would you characterize the current use cases?



Source: GlobalData survey, n=25

These management consoles are important to build, deploy, and manage applications and infrastructure for the hybrid and multi-cloud environments for all possible scenarios. The need to spin up and scale resources (e.g., network, compute, and storage) independently without any underlying dependencies on physical hardware.

Cloud management platforms are important for continuously monitoring the health, performance, and utilization of cloud resources (compute, storage, network) and services (e.g., VNFs, applications). This includes real-time metrics like CPU usage, latency, bandwidth, latency and throughput rates are also important for the continuing monitoring and proactive troubleshooting of performance.

It should also include levers to ensure governance. This is important due to the vast amounts of sensitive data they handle, the complexity of their operations, and the highly regulated nature of the sector. There are approximately 40 countries that have enacted additional measures on data protection such as customer identities, location, call records, and billing information. Cloud management systems enforce compliance through automated encryption, access controls, and audit trails.

#5 Professional Services

In the survey, telecom operators were asked to rate their cloud providers based on three areas of professional services: (1) planning and design; (2) implementation; and (3) support services. Huawei was rated highest across all areas of professional services with an overall rating of 4.3 while Microsoft and Oracle tied in second place with an overall rating of 4. Huawei has greater in-house professional services capabilities while its peers tend to work with partners to deliver these services. Huawei's services encompass three areas:

(1) Build – consulting, planning and deployment;
(2) Scale – development support integration enablement, and migration
(3) Manage – O&M, operations, and training

Given the complexity in setting up a carrier-grade cloud capability, professional services provided by vendors are important for complexities such as the need to balance the requirements of security and compliance with business agility, speed to deploy new services and scale. Carriers tend to also have high requirements for performance, reliability, and uptime of critical systems.

Professional services are critical for telecoms in setting up cloud services due to the complexity, scale, and mission-critical nature of telco operations. There are usually several components to these offers:

- Consulting and Planning: Expert guidance on architecture design, risk assessment, and strategy for Telco Cloud adoption. These capabilities will often consider long-term roadmap and planning, alignment of technology to business strategy through to architectural reviews.

- Cloud Migration and Implementation: These workstreams will consider the end-to-end workstreams from moving telecom workloads (e.g., VNFs and cloud-native CNFs) which are often dual-stack implementations (VM and container) requiring other upgrades, or specialization in OpenStack, Kubernetes with telecom-specific protocols or business processes. These areas will also consider tooling for the pre-integration and pre-verification of migrated workloads.

  O&M Management: Other streams are important for the ongoing management of cloud environments such as fault management, configuration and change management, security and compliance, resource management, through to the automation of workloads to the orchestration of resources (e.g., VNFs/CNFs).

CSPs face challenges in deploying and managing advanced technologies. As a result, they look to their vendors for support and technical expertise. These are essential services for the ability to help carriers streamline operations, reduce costs, and improve ROI in a capital-intensive industry.

#6 Big Data and Warehouse

In the study, telecom operators were asked to consider their cloud vendors' big data and warehouse products based on three criteria: performance, cost effectiveness, and analytics capabilities. Huawei was rated the highest with an overall score of 4, while Microsoft Azure came in second with an overall score of 3.9.

Huawei's big data processing and analysis platform is based on open-source ecosystems such as Hadoop, Spark, Flink, and HBase. The company also provides fully managed cloud data warehouse for high-performance analytics on structured data, which is Based on Massively Parallel Processing (MPP) architecture, optimized for complex SQL queries and BI workloads. Huawei's solutions can be deployed on-premises or in the cloud.

Microsoft also offers robust cloud-based big data and data warehouse products. Azure HDInsight is a managed, cloud-native big data analytics service that provides optimized clusters for popular open-source frameworks like Apache Spark, Hadoop, Kafka, and Hive. It also offers Azure Synapse Analytics which is a cloud-based service that integrates enterprise data warehousing and big data analytics into a single, unified environment.

Telecom operators are among the top data-intensive industries in the market ranking alongside healthcare, banking and financial services. There are multiple data sources which are generated in unstructured, structured and semi-structured formats and typically in multiple locations.

The challenge for many operators is building a unified big data platform to address data silo issues. This is to gain valuable insights from their data, support decision-making, and for a single source of truth. Having a data strategy is a cornerstone for telecom operators, enabling them to handle vast amounts of data from networks, back-end systems (e.g., OSS/BSS) customers (e.g., CRM), and devices (e.g., location, usage) to drive efficiency, revenue, and innovation.

Some of the major use cases include:

- **Churn Prediction:** Many African markets have a high pre-paid customer base, for example; and are also very exposed to churn to price competition. Many operators are creating a data strategy to improve customer retention. The includes, for example; integrating call detail reports with CRM tools to better understand the customer profile, build a full repository of analytics to trigger personalized outbound campaigns to increase ARPU and data retention.
- **Predictive Maintenance:** Analyzing network equipment sensor data to anticipate and prevent outages. These alerts can also trigger maintenance requests. Telecom operators are also using this data for network optimization (e.g., dynamic traffic management) to increase performance. These alerts can equally help the telecom operators to reduce unplanned downtime and improve Quality of Service (QoS).

- **Real-Time Fraud Detection:** Advanced algorithms monitor call detail records and network activity patterns to immediately detect and block fraudulent activities, like SIM card fraud. This helps telecom operators to minimize revenue loss from fraud.

Customer Loyalty	Predictive Maintenance	Security
▪ Customer Churn analytics ▪ Sentiment Analysis ▪ Targeted Marketing ▪ Plan Optimization	▪ Optimize Call Routing ▪ Capacity Optimization ▪ Failure Prediction ▪ Anomaly Detection ▪ GIS location	▪ Customer Data protection ▪ Payment processing ▪ Fraud Detection ▪ Compliance

#7 Artificial Intelligence

Based on the survey responses, telecom operators rated Microsoft Azure highest for the AI category at 4.4 out of 5, while Huawei and AWS are tied at 4.1. Microsoft has been a key player in driving AI development which is supported by its Copilot as an AI assistant and its partnership with OpenAI. It offers a range of capabilities including Azure AI Foundry for AI application development and as an agent factory. Its Azure AI Studio is a central, unified platform for building, customizing, and deploying Gen-AI applications. There are also pre-built products such as Azure AI Search, Azure AI Document Intelligence, Azure AI Vision, and Azure AI Speech. Collectively, Microsoft has a stronger messaging within the enterprise segment about its AI capabilities.

AWS lagged its peers in developing LLMs initially, but it has since formed partnerships with major LLM providers (e.g., Anthropic) and developed its own models (e.g., Amazon Nova). It offers Bedrock for enterprises to work across different AI models, Amazon Q for AI-powered assistant, Bedrock AgentCore to build AI agents at scale. Huawei has also been developing AI capabilities for some time including its own Pangu Models but it is also model-agnostic and will support various third-party models such as Llama, DALL-E, BLOOM, and more. The company has also developed AI capabilities for specific use cases, for example, CodeArts for software development, ModelArts for AI development and AI model training, and DataArts for data management and governance in support of AI development. These AI solutions can be deployed on-premises within Huawei Cloud Stack, not just through the public cloud.

While telecom providers have been deploying AI in their operators for years, many of the new emerging technologies such as Generative AI (Gen-AI) and Agentic AI are showing great potential in business benefits for deploying internally through to selling direct to enterprise and consumers.

The survey shows 70% of carriers expect a unified cloud experience integrating public and private cloud infrastructure to support AI. This is important because AI workloads, especially for internal use cases, require processing across both on-premise private clouds (for sensitive data or low-latency

needs) and public clouds (for scalable compute resources). A shared architecture ensures consistent APIs, orchestration, and management tools across both environments.

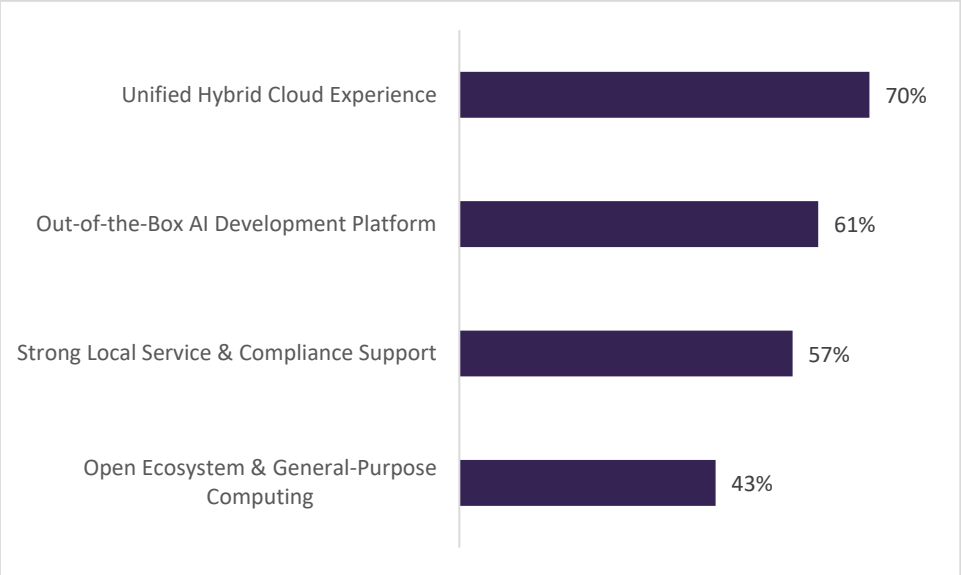
The survey also shows that 61% of the telecom providers require these environments to provide pre-built tools, and frameworks for AI applications. This is important for enabling telecoms to launch services faster. An out-of-the-box platform lowers the barrier to entry, enabling broader teams to leverage AI, including citizen developers.

Another 57% also sees these architectures as being important for the ability to support compliance. Within the region, there are certain types of data that cannot be processed in the cloud. On-premises private clouds allow telecoms to store and process data locally, ensuring compliance with regional regulations. They also provide full control over data residency, preventing unauthorized cross-border data transfers that public clouds may risk.

As telecom operators tend to have complex and multi-vendor environments across multiple technology stacks, 43% of respondents see the need for an open ecosystem and general-purpose computing based on industry-standard hardware and open-source software are critical for telecoms deploying AI within cloud environments.

Some of the lesser important use cases captured in the study include the ability to integrate and optimize AI across all layers of a telecom cloud infrastructure, from hardware to software, platforms, applications, operations and maintenance. Some 39% of respondents are looking to embed AI into every layer of the telco cloud to deploy innovative services and future proof the network. Approximately 30% saw private cloud as important for telecom-specific workloads.

What are the most important capabilities of a private/hybrid cloud solution that can effectively support your company's AI strategy development?



Source: GlobalData survey, n=25

Outlook for Carrier Hybrid Cloud in Africa

The Sub-Saharan Africa telecoms market is navigating a complex landscape characterized by declining traditional revenues, rising mobile data consumption, and significant investments in infrastructure. As operators adapt to these trends, the focus is increasingly on providing innovative services that meet the evolving needs of consumers.

The hybrid cloud market in Sub-Saharan Africa is best placed to support new and legacy services and adoption will be shaped by some of the following factors:

- **Rapid Expansion of Mobile and Data Services**: Mobile subscriber penetration is set to rise, driven by Africa's younger population. Operators are focusing on increasing data spending to drive revenue growth. Monthly mobile data usage will triple in most markets over the next 5 years from 2024 to 2029. This will be led by South Africa with mobile data usage is projected to increase from 6.5 GB in 2024 to 18.2 GB in 2029. Data consumption is surging due to video streaming, gaming, and fintech deployed from telco cloud services. Hybrid cloud can support the delivery with a flexible, and cost-efficient infrastructure. The shutdown of 2G and 3G networks in several markets will allow the spectrum to be reframed for 4G/5G services, creating more opportunities for telecom operators. These environments can help reduce technical debt and allow telecom operators to introduce fixed wireless access (FWA), network slicing, and other real-time data applications while maintaining security, compliance, and low-latency performance.
- **Fixed Broadband and Fiber Infrastructure Growth**: Fixed broadband penetration is expanding annually. Markets like South Africa, will see this technology representing over 75% of all connections in 2029. This growth will be supported by increasing broadband expansion programs by government, and telecom operators and ISPs. Fiber subscriptions will also be supported by major investments in undersea cables (e.g., 2Africa, Equiano) and government initiatives like Kenya's National Optical Fiber Backbone. Hybrid cloud facilitates faster rollout of fiber networks through cloud-based tools and AI automation (e.g., predictive maintenance and dynamic routing). These can also help operators to reduce the cost of ownership.
- **Integration of Fintech and Digital Services**: Fintech services are flourishing in the region improving financial inclusion and driving new revenue streams for operators. While nearly all of the operators surveyed offer Fintech services, there is also a diversification for new revenue streams such as content streaming, gaming, and B2B services. There are also telco-fintech integrations offering payments, insurance, and micro-lending across the African continent leveraging customer data, mobile networks and market coverage to serve new customer segments.
- **AI and Emerging Technologies**: Telecom operators are integrating Gen-AI for operational efficiency (e.g., network optimization, customer support) and as a service for sectors like agriculture and smart cities. AI could contribute accelerate regional development. IoT and non-terrestrial networks (e.g., LEO satellites) are emerging for broader coverage and reduce the digital divide. In January 2025 Eutelsat OneWeb, for example, extended coverage across Nigeria.

Recommendations

- **Platforming on Hybrid Cloud:** Telecom operators should consider a hybrid cloud strategy to address the competing needs in their sector. This is in the interest of balancing the many requirements around the need to support legacy systems (e.g., OSS/BSS, fixed voice, 2G/3G operations) with the need to consider next-gen services such as AI, edge compute, value-added services with 4G and 5G services. Given the competing business and technical challenges involved with digital transformation, hybrid cloud is the preferred approach by most operators. This is balancing the need for carrier-grade security and reliability, with business agility. It is also important for supporting emerging use cases such as AI and edge compute.

- **Services Monetization:** Monetization in the region will need to align with telecom networks in ways that reflect the continent's unique context. This includes high mobile penetration and underbanked population. The sector is also making significant investments in bridging the urban and rural divides. Telecom operators will also need to broaden the channel ecosystems through APIs offering more IoT and digital services. Broad partner bases are important for speed to market, accelerated innovation, lowering risk, and CAPEX requirements. On the ground, it is also important for addressing fragmentation such as local market or vertical specific use cases. Telecom operators will need to also appeal to all core segments including consumer, business and government sectors. AI-enabled workflow automation and edge compute are some foundational technologies to consider.

About GlobalData

GlobalData is a leading provider of data, analytics, and insights on the world's largest industries. In an increasingly fast-moving, complex, and uncertain world, it has never been harder for organizations and decision makers to predict and navigate the future. This is why GlobalData's mission is to help our clients to decode the future and profit from faster, more informed decisions. As a leading information services company, thousands of clients rely on GlobalData for trusted, timely, and actionable intelligence. Our solutions are designed to provide a daily edge to professionals within corporations, financial institutions, professional services, and government agencies.

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