Building a backbone network for growth and innovation: Airtel Africa
In a multi-year engagement, Nokia is working with Airtel to build and operate a critical IP backbone network that supports innovative services for Airtel customers in 17 African countries.
Executive Summary

Airtel Africa, a subsidiary of India’s leading global telecommunications company Bharti Airtel Limited, operates in 17 countries across Africa (Burkina Faso, Chad, Democratic Republic of the Congo and Republic of the Congo, Gabon, Ghana, Kenya, Malawi, Madagascar, Niger, Nigeria, Rwanda, Seychelles, Sierra Leone, Tanzania, Uganda and Zambia). Airtel’s vision is to provide affordable and innovative mobile services to all of their customers. Airtel offers 2G and 3G wireless services, mobile commerce and banking services and serves over 76 million subscribers in Africa. Airtel has established market leadership in all markets they operate within. They are the market leader in 10 African countries and are among the top three service providers in the remaining nations where they operate.

The Challenge

When Airtel bought Kuwait-based Zain Group’s telecom assets in 15 countries in Africa in June 2010, they inherited mobile networks that were not interconnected — or connected to some extent with a rigid combination of point-to-point links to convey international data traffic.

Airtel Africa’s strategy was to meet the constantly growing demand for new mobile broadband services at the individual country level — a demand is driven by rising smartphone ownership in Africa. To satisfy their customers, Airtel leverages their presence in 17 countries as an opportunity to provide increased and enhanced international services including service to enterprise customers.

In working to successfully implement their business strategy, two main challenges arose — one technical, one operational. Technically, Airtel needed to overcome the limitations of their existing mobile backhaul and interconnection network. They needed to improve reliability, flexibility and scalability to introduce differentiating new customer services and capture a new customer base.

Operationally, Airtel had a history of outsourcing operations of their multiple mobile networks to multiple vendors on a country-by-country basis. They needed to determine the most efficient way to operate their multinational network. The choice for an appropriate operations model was absolutely critical to ensure their network runs smoothly, delivers its full capacity and achieves the flexibility, reliability and cost effectiveness that are critical to their business success. For that matter Airtel was lacking scale and international experience in a new technology domain.
Why Nokia?

Following a longstanding successful partnership between Nokia and Airtel in India, Airtel Africa turned to Nokia to transform their legacy Synchronous Digital Hierarchy (SDH) network and build, manage and operate a new international carrier-class IP/Multiprotocol Label Switching (MPLS) network across all of the 17 African countries where they are present.

Airtel made a technology choice based on the quality and performance of Nokia’s leading IP solution, which delivered a highly scalable, converged and reliable end-to-end solution proven by its deployment with more than 120 operators globally.

With operations as a focus, Airtel understood that a lack of coordination and global visibility when it comes to an international IP network was more than likely to put quality of service at serious risk.

Airtel made the bold move to move away from their traditional country-by-country subcontracted operations model and decided instead to find a single reliable partner to seamlessly operate and manage the end-to-end multinational network. Airtel chose Nokia’s Managed Services it’s blueprint and global delivery capabilities team as the right partner to achieve their operational goals.

The Solution

The objective of this carrier-class IP/MPLS network was to aggregate traffic toward the interconnection points (40 owned points of presence (PoPs)), to migrate the existing traffic to the new Africa IP/MPLS network and manage and operate the end-to-end network as a single, global, seamless network across all of the covered African countries.

To meet these requirements, Nokia proposed a complete and packaged Build-Operate-Manage (BOM) solution for a backbone network.

This comprehensive turnkey solution consists of three phases:

- **Build**: design, planning, engineering, installation, integration, optimization, validation, test and turn-up
- **Migrate**: migration planning, design and management
- **Operate and Manage**: service desk, monitoring, fault and resolution management, field maintenance, repair, network and service provisioning, change management, network and service performance, capacity analysis and disaster recovery
The Nokia end-to-end managed solution for Airtel Africa included:

- A common Nokia 5620 Service Aware Manager (SAM) platform to monitor the entire network using advanced correlation techniques and to provision in the most efficient way Layer 2 and Layer 3 services
- Advanced network leveraging Nokia 7750 Service Routers (SRs), 7210 Service Access Switches (SAS) and 7705 Service Aggregation Routers (SARs) positioned in the Airtel-owned PoPs
- Overall project management for the rollout activities and specific processes adapted to IP backbone networks to meet challenging timelines and complexity requirements
- Comprehensive deployment services including installation, commissioning and acceptance
- Implementation of a dedicated temporary local Network Operations Center (NOC) in Kenya to start execution of operations and management within 1 month from Managed Services contract signature
- A 6-month transition to the target operations model fully aligned to the Nokia field-tested Managed Services Delivery Blueprint
- Delivery of operations and management services through the Nokia Global Delivery Center in India for the assurance services and in Romania for the fulfillment services

Front-end activities are ensured by a local Nokia team in Kenya located in close proximity to the Airtel Africa headquarters; a unique Nokia global partner handles first-line maintenance tasks across all the countries.

Key Benefits realized by Customer

The Nokia Managed Services solution for backbone networks has enabled Airtel to focus on the development of new service offerings and the quality of experience they deliver to their customers in a highly competitive environment.

Specific benefits realized include:

- Accelerated time-to-market for new revenue-generating services especially toward business customers interested in seizing emerging business opportunities across the African continent
- Delivery of superior network performance, network availability and quality of service, which strongly contribute to the reputation of Airtel Africa service offerings
- Simplification of a complex structure of point-to-point, non-scalable networks and provision of the right level of robustness, flexibility and reactivity in operations to align the network to customers’ evolving demands
- Constant adaptation of the network, taking into account network and services evolution to sustain a high level of network performance and reliability
- Faster service recovery through improved network reliability, capacity convergence and interoperable mechanisms together with field-tested operations processes and tools and experienced technical teams in the management of IP networks
- Substantial reduction in network operating costs
The Added Value

A project of this magnitude inevitably faces considerable challenges on several fronts: integration, configuration, deployment and set-up, change of model of operations for the in-country Airtel teams and many others.

Flexibility, trust and the ability to deploy or use the right expertise at precisely the right place and time were and still are all key success factors.

In addition to broad expertise and experience in designing and deploying IP networks, Nokia provided a fully field-tested Managed Services delivery model, called the Blueprint, to enable a rapid project implementation and a start to operations consistent with the Airtel time frame.

A close relationship has been built between Airtel Africa, Nokia and the individual country operations that ensures that the IP backbone network needs are met – across the Airtel Africa network, as well as the individual network health, service quality and information needs of each country’s operations and customers.

Nokia has become a trusted partner to accompany Airtel on their IP transformation journey.
Challenges:

- Replace legacy SDH network for cross-country interconnection with a full end-to-end IP backbone network to improve existing, and enable new services
- Quickly implement a new technology in their infrastructure without available, experienced in-house resources
- Improve network performance, flexibility and scalability at technical and operations level

Solutions:

- Advanced network leveraging Service Routers, Service Access Switches and Service Aggregation Routers positioned in the 40 Airtel-owned PoPs and monitored by the Nokia Service Aware Manager platform
- Build a trusted partnership with a complete global managed services Build-Operate-Manage (BOM) solution for the Airtel Africa backbone network
- Rapid start of operations leveraging a temporary local NOC in Kenya progressively transitioned to global delivery model within 6 months
- Manage operations using Nokia’s Blueprint Delivery Model to assure Airtel customers across 17 African countries always have the highest quality network experience

Benefits:

- A focus on growing the business and developing top-of-the-line services for existing and new customers
- Minimized risk with a critical and complex project for a multinational backbone network thanks to a proven delivery model — the Nokia Standard Delivery Blueprint
- Significantly improved network performance, network availability and quality of service with the use of Nokia’s standards-based network performance tools and expertise which strongly contributes to the reputation of Airtel Africa service offerings
- Simplified structure of point-to-point, non-scalable networks with the right level of robustness, flexibility and reactivity in operations to align the network to customers’ evolving demands