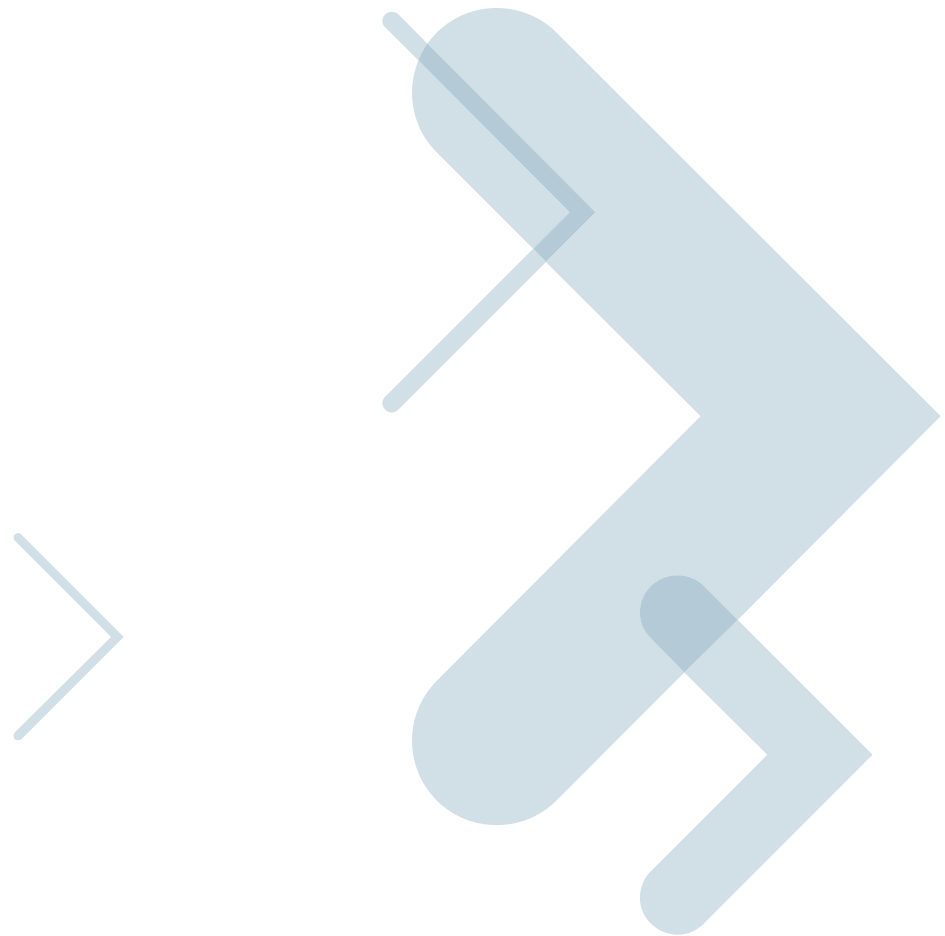




The Compelling Case for Managed Optimization Services: Enhancing Efficiency, Performance, and Revenues in Africa's Mobile Networks



Introduction

Mobile service providers in Africa are increasingly electing to out-task optimization of their networks to trusted partners with the expertise to enhance multi-vendor infrastructure and systems. In this analysis, Mark Holdsworth, Motorola's head of Professional Services for EMEA, provides insights into the types of techniques that can be exploited to drive network performance. The analysis also touches on the commercial drivers for deploying managed optimization capabilities including the imperative of reducing OPEX and CAPEX while maximizing investments in existing systems: benefits that are even more imperative during times of economic slowdown.

Subscriber growth in Africa remains extremely buoyant. In 2008, customer numbers outstripped North America (with 280 million¹ subscribers) and, by 2012, are predicted to reach 425 million²: an average of 36.25 million new connections per year. But volume doesn't equate to ARPU. Indeed, with many customers generating low margin business, service providers have to maintain tight CAPEX and OPEX controls – especially in times of economic uncertainty. This must be achieved while meeting the demand both for large numbers of connections and quality of service (QoS).

QoS remains an important issue. Dropped calls, failed connections, and call quality are high on the agenda for legislators. Action to advance QoS in some markets has seen service providers expected to provide free calls (in lieu of dropped calls), the implementation of monthly penalties (if service targets are not met), and even restrictions on promotions activity targeting new customers. And while customer demand is strong, competition for new subscribers is intense.

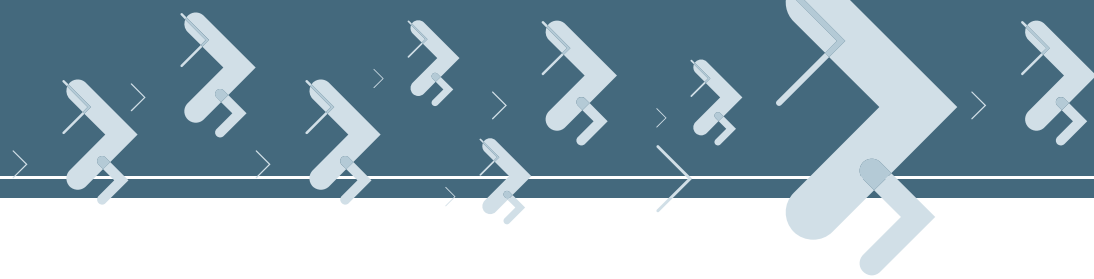
As well as meeting legislators' QoS demands, the customer experience is a critical area with service providers keen to differentiate their business by enhancing voice performance, supporting roaming, launching special offerings (such as guaranteed service benchmarks for high-value customers), and introducing data products. With investment capital scarce, operators are turning to optimization expertise to achieve the lowest possible CAPEX per subscriber through effective network design and enhancement of their existing assets. Cost savings can then be diverted to more advanced technologies such as UMTS/HSPA.

There is also an expectation from the business team that any new services must be launched quickly and at a high quality to capitalize on market demand. With the drive to add data capabilities, networks are becoming more complex to operate. Moreover, the ability to retain talented engineers required to maintain and enhance systems is limited by the rapid growth in mobile networks during the last five years.

Combine all of these challenges and it's clear that African service providers face a unique set of challenges: to deliver the best possible subscriber experience in an ever more complex network, at the lowest possible cost in the shortest possible time while servicing huge demand. If ever the phrase "doing more for less" applies, it's now. Faced with these pressures, service providers are increasingly turning to managed service expertise to cost-effectively optimize network performance.

¹ Wireless Federation.com

² BMI TechKnowledge: *Communication Technologies Handbook 2007*



CASE STUDIES:

MTN Uganda

MTN Uganda is deploying Motorola's network optimization services in a three-year deal to drive improvements in three key areas:

- Voice calls
- Data performance
- Roaming experience

A specific area of focus will be on improving MTN's packet data throughout the network as well as call capacity.

MTN Nigeria

MTN Nigeria will improve network performance through multi-vendor GSM optimization services.

Motorola will apply innovative tools and processes to advance frequency planning, hardware optimization, traffic and layer management, coverage design and capacity planning.

These improvements will enable MTN to increase its subscriber base while delivering a high quality of service and introducing new products to customers.

MTN Ghana

Following on from the successful relationship between Motorola and MTN Ghana during the African Cup of Nations (Motorola enabled the connection of over 100 million calls while improving speech quality by 35 percent and reducing dropped calls by 15 percent), the two companies have embarked on a three-year optimization contract. The deal sees Motorola tasked with optimizing MTN's GSM RAN to drive efficiencies and capacities across the multi-vendor network.

The Case for Optimization

The case for using trusted service partners to optimize networks can be divided into operations and business drivers.

Operations

With operations, Motorola provides complete multi-vendor capabilities, presenting the option to advance the performance of end-to-end networks. Its dedicated teams are highly experienced, bringing in-depth knowledge of implementations across the globe to the table. The services provided can enhance network performance – e.g. providing immediate capacity gains – without needing to invest any additional capital. Moreover, team resources are immediately available to oversee any requirement.

Business

From the business perspective, the case for managed optimization services is clear. The strategy acknowledges that accessing the expertise, capability, scale, and proven experience of managed service companies is more cost-efficient than building equivalent expertise in-house. Moreover, Motorola also takes on the risk of the project. A predictable cost for the service is provided. With payments tied to guaranteed Service Level Agreements (SLAs), operators can focus on generating value elsewhere in the business safe in the knowledge that processes are being managed to a high degree of quality for a fixed cost.

With these benefits in mind, service providers in Africa are opting to involve managed service companies in their businesses. So what types of optimization processes are deployed and what are the results? Given the extensive portfolio of services offered by Motorola, the analysis below focuses on a typical requirement within African service providers – to optimize the RAN – to provide an indication of the types of advances that can be achieved.

Typical Performance Advances

With GSM multi-vendor RAN optimization, Motorola applies a range of analysis and techniques to enhance network performance. Key highlights of these processes include:

Network benchmarking

Information collated at the interface within the GSM architecture, between the BTS (Base Transceiver Station) and BSC (Base Station Controller), generates a high volume of detailed information about the RAN infrastructure's day-to-day activities. The data is complemented by Mobile Measurement Reports (MMRs) that capture the constant status reports broadcast by users' devices to the network: It's the most accurate "subscriber view" of services available. By applying geolocation analysis to the MMRs and A-bis data, a detailed picture of network performance emerges across systems, by service and user type, providing invaluable insights into areas for improvement.

Intelligent hardware analysis

The analysis often uncovers problems with hardware that might not be showing a direct fault. For instance, equipment may not have been integrated properly, the feeder system into the antenna may be damaged by water ingress leading to a drop in power, or antenna cables could be damaged or not laid off properly. An underutilized carrier (identified by analysis) is a sign that underlying hardware issues are at play and Motorola works with service providers' maintenance teams to resolve hardware problems.

From Key Performance Indicators (KPI) to Key Quality Indicators (KQI)

Motorola is taking multi-vendor network optimization across 2G, 3G and 4G networks with guaranteed outcomes to a new level. The industry has traditionally focused on a range of technical KPIs collated from the network layer to ascertain performance. This can lead to expenditure to improve services that actually deliver little impact on customer service. It also provides a narrow view of performance that cannot map to different customer segments or usage patterns. Deploying real-time end-user analysis techniques (with a focus on the most important subscribers and services) alongside traditional KPIs and network probes, Motorola has defined KQIs that provide insights into the actual end-user experience across services from voice calls, to SMS, MMS, and data. The indicators focus expenditure on changes that demonstrably impact the customer experience. They are built into Motorola's SLAs and are proving to lower CAPEX while enhancing service levels apparent to the subscriber.

Intelligent neighbor optimization

Insights are also provided during data collation into the performance of network mobility. If the neighbour relationships and associated database configurations are not properly configured, service quality can be impaired. This issue tends to arise in rapidly expanding networks where new sites are regularly added to meet user demand. Any configuration and topology issues between base stations will be apparent from the analysis and will be addressed.

Frequency planning

One of the key outcomes of the network benchmark is a revised frequency plan. The information captured from network monitoring, A-bis data, and user-generated MMRs is fed into Motorola's Automated Frequency Planning service, which applies advanced algorithms to produce a new plan. This optimizes the frequency plan in the network by significantly advancing the allocation and reuse of the radio channels to deliver powerful results.

The impact of RAN optimization

Optimizing systems allied to frequency planning can deliver significant and immediate improvements. For instance, using Motorola's multi-vendor GSM optimization service, a major European operator has unlocked a 4-percent increase in traffic with no additional CAPEX or OPEX – estimated to deliver €100 million more revenues per annum.

Typical results

RAN optimization contracts are usually three-year engagements. Typically during the first pass of optimization changes, Motorola sees a 25-percent improvement in dropped call rates while at the same time increasing the traffic-carrying capacity with no additional expense in operations or capital expenditure. In rapidly expanding African networks, dropped call rates are usually around 1 to 2 percent. Motorola manages to improve these to below 1 percent within a year with advances continuing into the future: performance that generates significant revenue gains. Enhancements are delivered to a predictable cost and on a risk-reward basis to make a very compelling case for leveraging Motorola's optimization expertise. Indeed, given the commercial pressures to reduce costs, while at the same time enhancing network performance to improve QoS, introduce new services, and attract and maintain subscribers, the option to use managed/augmented optimization services is being embraced by an increasing number of service providers in Africa.



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