

When mobile goes broadband in sub-Saharan Africa

by Mike Last, Marketing and International Business Development Director, West Indian Ocean Cable Company (WIOCC),

Africa is transforming its connectivity capability, drawing in investment for terrestrial and submarine fibre-optics in a three-year 'step change' project. This will ensure diversity of cable options, availability across the continent and efficient backhaul. This, together with affordable smart handsets and broadband 'last mile' provide all the necessary elements for connecting Africa to fast mobile Internet and smart data services. This remarkable collaboration represents a great opportunity for growth and innovation in a continent where mobile penetration still has far to go.



Mike Last is Marketing and International Business Development Director at West Indian Ocean Cable Company (WIOCC), (www.wiocc.net), a specially created company set up to invest in EASSy - Africa's newest and highest-capacity (4.72Tbps) fibre-optic submarine system. WIOCC is using its 14 telco shareholders' terrestrial fibre networks to deliver affordable, reliable, end-to-end connectivity services into coastal and landlocked countries throughout eastern and southern Africa.

Mike joined WIOCC in 2008 and is now responsible for WIOCC's marketing activities globally. Mr Last has been an integral part of the company's development from start-up to full operations, developing and delivering a strategic market and communications plan that has raised market awareness and helped to deliver a strong pipeline of sales and prospects. Previously, Mr Last held key marketing and business development positions for 23 years with a variety of telecommunications companies including Turk Telekom, FLAG-Reliance, MCI Worldcom (now Verizon Business) COLT and BT.

Mike Last has an MSc in Computing Science from Staffordshire University and a BSc from the University of London.

Introduction

Africa is on an exciting and rapid journey to becoming a 'connected continent'. Until recently, Africa was held back from becoming a more important player on the world business stage by a number of factors including a lack of affordable and reliable, high-speed connectivity - both domestically and internationally - and little or no diversity in terms of available telecommunications networks.

Communications to, from and within Africa have recently seen a huge improvement and continue to get even better at a rapid rate. New, high-capacity submarine cables are having a dramatic impact on the continent's international connectivity and are also providing a variety of reliable and lower cost options. At the same time, there has also been a significant investment in terrestrial fibre-optic networks.

Largely unencumbered by legacy systems, the telecoms sector in Africa is experiencing prodigious growth. Deregulation and the resulting competitive environments are driving innovation and enabling technologies and mobile applications

to be quickly rolled out and adopted. This is leading to dramatic increases in mobile uptake and usage by domestic and business customers, which makes Africa a place of increasing opportunity for ISPs, carriers and major corporations.

Historically, the availability of mobile broadband in sub-Saharan Africa was extremely limited for many reasons. High-capacity international bandwidth (to connect with the world's Internet content) either wasn't available or was prohibitively expensive. Terrestrial networks that were restricted to low-capacity and high-cost backhaul, offered low levels of scalability and lack of diversity which left users vulnerable to system downtime caused by outages. The business case for high-speed 'last mile' deployments was difficult to justify and suitable handsets were prohibitively costly.

However, with the arrival of international submarine cables such as EASSy and WACS (*West Africa Cable System*) soon to come on the west coast, there is at last affordable international connectivity, offering sufficient capacity and diversity of options to meet the needs of demanding new data services.

Large investments are also being made in optical fibre-based terrestrial connectivity. Operators are building, extending and interconnecting domestic fibre-optic networks, adding cost-efficient, scalable, high-capacity backhaul.

The challenge for service providers now is to remain profitable in what are increasingly competitive, deregulated markets. They have to deliver a growing range of reliable and affordable mobile broadband services to a rapidly expanding and expectant customer base. If ISPs and telcos get this right, they will be able to take advantage of a rapidly growing mobile broadband market in which penetration is soaring and average usage per unit is rising sharply.

Huge potential in Africa

Africa is the second largest and third most populous continent, with a population close to one billion. Mobile penetration across the majority of the African continent is still growing rapidly. According to the GSMA, penetration across the African continent is just over

50 per cent, compared to 130 per cent in Europe and just over 100 per cent in South Africa - the continent's most mature telecoms market. This is up from around 28 per cent in 2008 and 21 per cent in 2007.

The continued growth in mobile demand in Africa is due to:

- regulatory pressures which have led to inter-operator charges being slashed;
- increased competition driving down voice charges (e.g. Bharti Airtel bringing their high-volume, low-cost business model), pushing all market players to differentiate through data service offerings;
- ever-growing consumer demand for feature-rich, high-quality, low-delay services;
- greater availability and accessibility of desirable applications - financial (e.g. m-banking) or social (e.g. Facebook, MySpace, etc.);
- and, increased availability of affordable, high-performance mobile devices.

Whilst the potential is huge, more infrastructure investment is required to carry the growing traffic load - particularly data traffic. Overall traffic volumes are increasing rapidly, but revenues per unit are shrinking fast. Lower unit prices for Voice more than offset increases in user numbers and overall usage levels. Therefore, higher growth of data services are seen as the means to plug the resulting revenue gap, with the promise of significant new revenue streams. Telkom Kenya Orange, for example, recently announced plans to increase its annual revenues from data services from 15 per cent to 40 per cent by the end of 2011. However, successful roll-out of data services requires a significant investment in upgrade and expansion of domestic and international infrastructures. This must be justified not only by revenue growth but also by cost reductions from more efficient operations.

Three-year step change in African connectivity

International cables

With the most popular Internet content and applications located outside Africa, cost-effective, scalable, high-performance connectivity to the global Internet is vital to the development of mobile broadband across the continent. Unlike satellites, which have finite capacity, fibre-optic cables deliver scalable, high-capacity international connectivity at an affordable price.

Africa is in the midst of a three-year phased deployment of fibre-optic submarine cable, by the end of which the continent will be on a par with the rest of the world in terms of high-speed international connectivity. The arrival of multiple cable systems is bringing lower prices, with international bandwidth costs already falling more

than 50 per cent in the past 16 months. This is an opportunity for service providers to build the requisite levels of resilience into their international infrastructure, taking advantage of the connectivity options now available through cable diversity.

The most recent and highest-capacity submarine cable to go live in sub-Saharan Africa is EASSy (*East African Submarine System*), a 10,000 km 4.72Tbps, fibre-optic cable with landing stations along the coastline from South Africa to Port Sudan and excellent onward international connectivity to Europe and the rest of the world.

Since it went live in July 2010, EASSy has proved very popular with national and international carriers, telcos and ISPs. The system's design capacity of 4.72 Tbps represents more than 70 per cent of all the international fibre-optic inventory on Africa's east coast (the international capacity of alternatives TEAMS and Seacom, is 1.2 and 0.6 Tbps respectively). EASSy's operational capacity will be more than doubled by the end of the year, driven by faster-than-expected capacity uptake - most of it carrying Internet traffic.

These latest capacity increases will make it easier for purchasers of connectivity to and from sub-Saharan Africa to continue to meet the growing needs of domestic and international clients.

Connectivity in Africa is improving further:

- The West Africa Cable System (*WACS*) is under construction and when complete will provide faster, more reliable and cost-effective global connectivity between southern and western Africa and Europe.
- The Europe India Gateway (*EIG*) will enable the completion of a ring around Africa by linking EASSy and WACS through the Red Sea and the Mediterranean Sea. The system is partially live now, with its route across Egypt expected to be live before year-end.
- Further investments are also being proposed, with deployments planned over the next two years.

Terrestrial connectivity

Whilst the international connectivity landscape has already changed dramatically, the domestic environment is still catching up. Recent research (Hamilton Research Ltd 2010) reveals that the operational terrestrial transmission network in Africa increased by 26 per cent (to 585,471km) in the 12 months to July 2010. This growth is set to continue, with well over 150,000km of further fibre currently either already under construction (45,391km), planned (83,406km) or proposed (28,629km).

Some of this deployment has been government led, with countries such as Rwanda and Kenya

constructing national fibre networks where none previously existed. However, in most countries this is being driven by the private sector, with incumbents, mobile operators and other players all racing to install and extend fibre-optic networks to replace legacy satellite and microwave solutions.

WIOCC's shareholders - 14 telcos from across Africa - are major contributors to this terrestrial expansion, rolling out high-capacity fibre-optic backhaul networks to carry mobile and fixed-line voice, data and Internet traffic domestically and across national borders. These networks are also extending reach to EASSy's coastal landing stations from business locations throughout eastern and southern Africa.

WIOCC shareholders such as Telkom Kenya Orange, Zantel (Tanzania) and BTC (Botswana) are also amongst those deploying 3G and other high-speed wireless and fixed-line technologies to extend high-performance connectivity to end-users.

Radio connectivity

Broadband mobile air interface is another prerequisite to enable the African connectivity progress. The WiMAX forum reports 117 WiMAX deployments in Africa covering 43 countries, and the CDMA Forum lists 60 CDMA operators in 38 African countries.

Summary

The successful delivery of mobile broadband services demands:

1. International submarine connectivity - to provide reliable and affordable, high-speed access to international Internet exchanges, where the majority of content originates.
2. Cost-effective and scalable terrestrial backhaul.
3. Diversity - national and international network resilience to overcome cable breaks caused by accident, construction, theft or sabotage.
4. Reach (ie backhaul and last-mile connectivity) - from optical fibre-based national networks connecting users via high-speed wireless and fixed-line technologies, supplemented by satellite in remote areas.
5. Improved connectivity into landlocked countries.

All of these requirements are now either in place or very close to being delivered. Therefore, Africa is on its way to becoming a truly connected continent. For those ISPs, telcos and corporates who are at the heart of Africa's mobile broadband revolution, the future looks very promising indeed. ●