

Connecting Africa

Challenges and solutions for evolving networks
from cellular to FTTH

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As the world's second largest and most populous continent, Africa offers an abundance of untapped resources, which is one of the reasons it has drawn attention from big tech companies like Microsoft and Amazon. Yet until now, most of Africa's half a billion mobile users have relied solely on cellular networks with operators hesitant to consider the longer-term investment of fibre to the home (FTTH). The continent cannot exist on dated cellular networks alone; they must evolve to support emerging technologies, applications, and services. For businesses and people in Africa to thrive in our increasingly connected world, they need a reliable, sustainable, and affordable high-speed fibre network – and investors who are willing to implement it. While investment in the region has picked up considerably over the past decade, many challenges remain. Fortunately, pre-connectorised solutions can help address many of the challenges including cost, diversity, and security while quickly and efficiently building a strong fibre backbone.

Costs and Investment

While fibre has revolutionised connectivity for billions of people across the world, working with fibre optics requires a different skill set than traditional copper cables. In contrast to copper, fibre must be spliced, and there is a lot of fibre to be spliced in rolling out an FTTH network. Splicing requires a lot of time and expensive equipment, but it also requires a significant amount of skill. Technicians trained in fusion splicing are unfortunately in short supply and those that have specialized in this field can be hard to source from different regions on a continent as large as Africa. An adequate number of experienced technicians can become even more difficult to source during major deployments.

Yet connectors don't require specially trained splicers. With pre-connectorised FTTH solutions, what was once a process only carried out by a skilled craftsman becomes as easy as plugging in a light. Unskilled technicians can use connectors to more quickly and efficiently connect households with fewer installation teams than before, and the process is less disruptive to residential customers. Since all components and equipment are assembled and tested in factory-controlled conditions, they are consistent and reliable and can stand up to tough environmental conditions, a critical factor for networks in Africa.



Figure 1: Difficult and time-consuming splicing becomes as simple as plug and play with pre-connectorised solutions.

Pre-connectorised solutions are also flexible in design, which means each module can be easily upgraded or expanded. This flexibility allows for simple and cost-efficient scalability. And while pre-connectorised methods do require greater up-front costs than splicing, they break even and proceed to save money at a take rate of only 6 percent.

Installed Cost vs. Take Rate

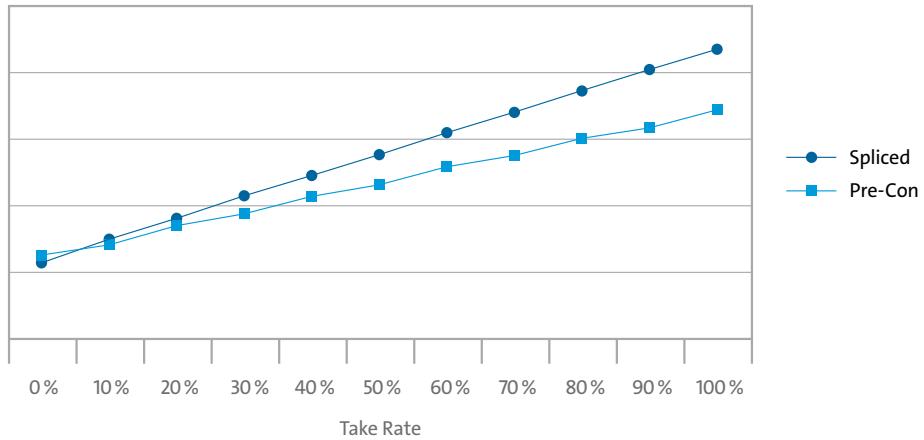


Figure 2: Initially higher costs for pre-connectorised solutions break even at a 6 percent take rate.

Diversity and Infrastructure

Africa is home to more than 3,000 ethnic groups that speak over 2,000 different languages, but this diversity extends beyond cultural and ethnic differences. Operators need to deploy their networks in all kinds of environments, from booming metropolises to isolated, rural towns where they may be faced with underdeveloped civil infrastructures.

As civil costs can account for up to 80 percent of an overall network build, it is essential to exploit existing infrastructure – so flexibility is key. Across the continent, a wide variety of methods are in use, from aerial to underground, deployed in ducts or buried directly in the ground ... wherever installation was possible. Especially in rural regions, aerial deployment has been frequently used. Fibre can be deployed anywhere, but as digging becomes more and more expensive and disruptive, aerial installation is becoming the preferred option in the region. Drop cables allow operators to easily install, access, and upgrade these kinds of networks, and there is already a variety of flexible solutions available to fit any network configuration.



Figure 3: Aerial deployment exploits Africa's existing infrastructure.

Security

For a successful deployment, products must meet universal application standards and be able to withstand the harshest and most variable environments. Optical outside plant hardware typically has an IP68 rating, meaning it is dustproof and specified for use in water up to 1 metre. However, telecommunications standards for hardened fibre optic connectors go a step further with Telcordia specifications for connectors (GR-3120) as well as closures and terminals (GR-771). These measures are especially important in a region that encompasses varying climates from arid desert to tropical monsoon climate, and many in between.

While environmental conditions are a huge consideration, the network and the installers deploying it must also be protected from outside security threats. Over the past several years, the fibre industry in Africa has been the target of crime, theft, and hijacking attempts – some even escalating to violence. Since criminals recognise fibre splicing equipment as a valuable asset, installation teams are regularly put at risk as well as the equipment itself. The FTTH Council Africa has begun combating this problem by establishing an equipment database and opening a line of communication between all of the parties affected by theft. Yet pre-connectorised solutions go even further by eliminating the need for fusion splicers and other expensive tools in the first place, reducing the incentives for criminals. Here's another security benefit: pre-connectorised solutions can dramatically reduce – by half! – the total time technicians (and their equipment) spend in the field at each network access point.

Outlook

According to reports from Research & Markets, the number of homes and premises passed by fibre has more than tripled since 2014 and is expected to continue growing. As the continent becomes more and more connected with reliable, high-speed broadband, it will become more attractive to foreign and domestic investors. But there are still hurdles to overcome.

Costs, diversity, and security are three issues that may deter investors from the region, but Africa offers significant opportunities for those willing to face the challenges. The key to success in this diverse and rapidly changing region is to embrace existing infrastructure and leverage new technologies that combat the shortage of skilled labour, while protecting equipment and installers alike. Pre-connectorised solutions do all of the above. And with a slightly larger initial investment compared with traditional deployment methods, now operators can roll out high-speed broadband networks across Africa more quickly, safely, and profitably.

Notes:

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