SEACOM's Head Of Engineering Explains What IXPs can bring to Entrepreneurs and Government Services

For the last 13 years, Mark Tinka has been actively involved in Africa's tech industry. He has been involved in training and policy discussions and has worked in Africa and abroad and very active at Africa Peering and Interconnection Forum (AfPIF).

Tinka is currently Head of Engineering at SEACOM, he shares his views on the achievements, challenges and opportunities that lie ahead for both small and big entrepreneurs and the role of e-government services in the growth of IXPs in Africa.

Three years ago, Africa was highly dependent on international transit, how has the situation changed?

It would not be unreasonable to say that Africa is still largely dependent on international transit bandwidth for access to the Internet. There are various reasons why this is so, but much of it boils down to legacy from the satellite era.

As optic fibre has hit the shores of Africa, and spread inward into many countries on the continent, prices have lowered, traffic has increased and the user experience has improved by a great deal. However, the majority of traffic is still being picked up internationally – Europe, North America and the Asia Pacific. Operators are still running loops into major data centres outside Africa to connect to the Internet. The only difference is that it is now faster and extensively cheaper than it was before.

I do not expect this to remain the case in the next three to five years. Rather, I expect that major global players in the content space will extend their services into Africa. This is critical in ensuring that the amount of traffic leaving the continent reduces substantially, which has a knock-on effect of lowering costs (and prices), as well as improving the user experience. This has not been a reality until now because all these content players are accustomed to delivering their services quickly and reliably, attributes that are typically offered best by optic fibre.

I also expect that as more fibre hits the shores and streets of Africa, competition will see the creation of smaller service providers who would not necessarily have the financial capacity to purchase international bandwidth. This will open up opportunities for African-based wholesale service providers, whose primary focus will be servicing these smaller providers, thereby reducing further dependence on international bandwidth. We have not yet seen this take off because the general mentality among African service providers has been that the only place you can receive quality upstream bandwidth from is internationally.

During the last two AfPIF meetings, it has been demonstrated that peering can lower the cost of connectivity, how comes there are ISPs that still opt for international transit instead of local peering?

Well, it's not so much a case of service providers choosing international bandwidth over local peering, as it is the various issues that surround this phenomenon:

- Some countries still do not have exchange points. The reasons for this vary from infrastructure to political to regulatory concerns.

- Some countries that have managed to deploy exchange points have not seen them grow as expected. As such, some service providers have not understood the value in investing further (or at all) in peering locally.

- In some economies, the majority of service provider traffic is international in nature. When compared against how much is exchanged locally, a number of service providers will not see the benefit in promoting local peering, simply because short-term gain is not directly feasible.

To encourage growth in local peering, I feel the following needs to be done:

- Key stakeholders at a national and regional level need to be educated as to the benefits of exchange points, and the advantages peering can bring to their respective communities. Various organizations continue to play a role facilitating workshops to this end, e.g., The Internet Society (ISOC), the African Network Operators Group (AfNOG), the Africa Network Information Centre (AfriNIC), e.t.c.

- Service providers need to arm themselves with the necessary knowledge required to understand the economics of peering; not only how they can do it, but how they can also benefit from it commercially. This will allow them to see opportunities that have yet presented themselves, and encourage them to promote local peering and the generation of local bandwidth. The Africa Peering & Interconnection Forum (AfPIF) is well poised to offer such insight into Africa's service providers, and I would encourage more participation from the community in this and other such fora.

- Active exchange points need to start considering how to grow their membership and traffic. Peering has a snowball effect – people will go to peer where there is already traffic, but getting traffic there takes hard work. Working with the various content players to localize content, encouraging foreign service providers to peer in-country, promoting local capacity building through technology hubs, e.t.c., are

among the many ways exchange points can grow. There are a few exchange points in Africa, which have adopted such practices with much success.

Local content is a major factor for ISPs and content providers considering peering or increasing capacity to the local IXP, what is the role of e-government services in development of IXPs?

This is the age-old problem – what comes first, content or infrastructure.

It is not untrue, that content will drive growth in local peering. However, it is also true that local peering will drive growth in content.

There have been a number of success stories for exchange points in Africa that have flourished due to membership by government; where government services are now served online, e.g., tax return filing, home affairs services, e.t.c. While I will not take away from the significance of such developments, it still remains that exchange points should look at other ways to grow peering at the exchange point, by typically considering growth in membership, and/or growth in content that members are seeking.

Some e-government projects have included infrastructure rollout by the governments. Exchange points can take advantage of this by securing inexpensive optic fiber capacity toward them, thereby eliminating the bottleneck that exists between many a service provider peering at a local exchange point, and their nearest PoP.

In the grand scheme of things, content need not be local, in the sense that it is generated by natives. It only need be local in physical location, e.g., content could be from an international player, but as long as it is locally available in country, local peering will flourish. Service providers, exchange point operators and the government must put in place supporting infrastructure to encourage the growth in locally hosted content, both local and foreign.

IXPs participating in the last two meetings have expressed interest in attracting global content providers like Google and Akamai, what does it take for an IXP to attract global content carriers?

Global sources of content tend to have certain criteria by which they choose to enter a market. This criteria will determine whether they not only enter a market, but at what kind of scale.

The key issues that content providers consider when entering new, growing markets are:

- Eyeballs. How much of my traffic is in demand in this new market.

- Depending on the size of eyeballs in this new market, what kind of infrastructure will I deploy? Will it be a small cache, a big cache or a cluster of caches?

- What is the data center hosting situation on the ground? Can I find reliable and stable power, cooling, space, e.t.c.?

- What is the bandwidth situation on the ground? Can I secure fast and reliable connectivity back to "base" in order to populate the caches?

- What is the regulatory situation on the ground? Will it be easy for me to not only deploy my infrastructure in this new market, but also disseminate it to all eyeballs, especially those not using the incumbent networks?

Exchange points need to come together with service providers (who are, generally, their members) to cohesively work on encouraging global content players to come into their market, by ensuring that the areas of concern to said global providers are adequately (if not well) addressed.

Global content providers tend to have a reputation to maintain, and instances abound where entry into a new market has been foregone purely on that basis. This means exchange points in Africa need to up their game, work together as an industry community and do their very best in offering the global content providers reasons to deploy in their markets.

Many peering agreements are made through "handshake" or social forums, how true is this and what is the importance of attending AfPIF?

It is quite true that nearly 99% of all global peering in the world is done through "handshakes", many times over a beer.

Experience in the Internet industry has shown, over and over again, that reducing or eliminating complexity in turning up peering relationships between service providers is by far the easiest and quickest way to get peering going.

Exchange point operators have taken this one step further by introducing and maintaining so-called "Route Servers". These route servers provide a central point where new members can easily start peering with, thereby receiving all routing information that has been collected by the route server. Peering with route servers tends not to require any form of written agreement, making it ideal for quick and easy turn-ups.

Peering arrangements that have often required written, legal agreements, are those, which are heavily entrenched in commercial detail so that both partners are sure that benefit is mutual.

The role AfPIF plays in all of this is that as a platform, service providers that attend the meeting are able to easily and quickly strike peering agreements over coffee, lunch, dinner or a cocktail just by being at this purpose-built event and merely talking. Many peering arrangements have been born at such meetings where two providers are trying to reach others' networks during the conference, and realize they can do so more efficiently by peering at a common location somewhere in the world. It is an ideal environment in which to engage with fellow service providers in the community, and help make the Internet run more efficiently. One cannot underestimate the power of physical and face-to-face contact in building and improving peering relationships.

Any other comment?

As optic fibre has since hit the shores and streets of Africa, traffic volumes are increasing and making it ever so important to optimize service provider operations through improved efficiency.

Peering is a very easy and effective method of implementing efficiency across the Internet. However, with increased volumes comes increased complexity in understanding the various attributes associated with peering, transit and everything else in between.

For Africa to develop on the Internet, build its own communications hubs, strive harder at keeping local traffic local, as well as encourage global operators to come into our market, it is vital that we question and understand the economics of running the Internet; whether it be peering, whether it be transit capacity.

In understanding the economics that go together with this very hot and important topic, operators will not only improve efficiencies and keep end users happy, but also open up new and exciting opportunities never before imagined, as a new source of additional revenue.

Happy peering!