



The Africa Peering and Interconnection Forum | 2015

Girassol Indy Congress Hotel & Spa
25–27 August 2015 | Maputo, Mozambique



➤ Meeting Summary





Internet engineering experts, Internet Service Providers, Content Distribution Networks, IXP coordinators infrastructure providers and government representatives gathered in Maputo for the annual Africa Peering and Interconnection Forum (AfPIF).

The theme this year was: “Lessons Learnt” and discussions drew from the five meetings held since 2010. The forum attracted 232 participants from 57 countries and online participation from 978 people in 77 different countries.

The meeting is meant to encourage more Internet interconnection and exchange of online content between African countries through peering. Most peering agreements are made through “handshake” and AfPIF encourages meetings between parties interested in exchanging content.

During the meeting, there is a daily session known as “peering introductions” where a network introduces its Autonomous System Number (ASN), its peering policy, and locations where it is currently peering. The goal of the peering introductions session is provide a visual link between the networks’ representative at the event to the potential peers it is seeking to attract. This year, there were 27 peering introductions up from 21 introductions last year.

Over the years, AfPIF has enjoyed generous support of sponsors and the numbers have continued rising, from five sponsors in 2010 to 18 sponsors this year, the highest number yet.

Thank you to our sponsors!



232 Participants



57 Countries



5 Continents



**978 online participants in
77 different countries**



➤ Highlights on ‘Lessons Learnt’

- 1. The correlation between content and data center growth** - in his keynote speech, Richard Bell, one of the leading lights in Africa tech, demonstrated how growth in local content leads to demand for data center services. Bell owns a stake in Wananchi Group, an East African ISP that owns Zuku, an Internet, television and communications (triple play) cable and satellite TV service provider. In his presentation, it was clear that the growth in local content production leads to demand for carrier neutral data center services. During the presentation, Bell announced his new initiative – *Kooba* Data Center, a 2MW facility being set up in Mombasa, and expected to be operational end of Q1 2016. Kooba has already raised \$25 million in funding. Given his experience in ISP and broadcast business, Bell is hoping to attract the growing demand for local and international content with attractive data center solutions.
- 2. Data centers provide stable environment for IXPs** - the presentations ranged from how to set up a stable data center to running it and attracting more business. *Interxion*

shared its journey running data centers in Europe, including the facilities that attract international organizations to a data center. Stable power and cooling is key, as well as modern equipment capable of being scaled. *Teraco*, Africa's largest carrier neutral data center operator shared how availability of top notch facilities and equipment had allowed its *NAPAfrica* IXP to grow its capacity. Participating IXPs shared how hosting in a carrier neutral data center had improved reliability, attracting more peers and content. Availability of stable affordable grid power remains a challenge for many African countries.

- 3. Setting up an IXP is affordable** - for countries without IXPs, the big questions are; is it expensive to set up an IXP? How do I grow the IXP? One of the presentations demonstrated how an IXP can be set up with \$1,000 budget. It demonstrated that it is easy or affordable to set up an IXP but the detail was in the scaling. Participants wondered whether the best approach was to grow the content before setting up an IXP, or set up the facility then encourage

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A stable data center requires stable power and cooling, as well as modern equipment capable of being scaled.

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peering. Majority of participants felt that it is better to set up the IXP then grow the peers while demonstrating the value. For instance, Rwanda IXP shared how they started and were able to grow the membership and capacity, by sharing the Akamai and Google global cache at their IXP.

- 4. Measurement and statistics are key attracting global CDNs to IXPs** - In the last six years, Google has been the most consistent global CDN at AfPIF meetings. Akamai and Cloudflare have shown interest with their ongoing infrastructure deployment in Africa. During presentations by Akamai, Google and Cloudflare, there were questions on how to attract global companies. It was clear that the CDNs look for high traffic volumes in order to justify the business case.

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In Africa, there has been lack of statistics of capacity and peers at the various IXPs. Availability of measurement tools and statistics is seen as one of the ways to attract a CDN. The African IXP Association (AF-IX), shared their recent survey that provided basic information on African IXPs; how they are operated, number of peers, capacity and peering policies among other IXP best practice issues. IXPs were encouraged to take advantage of existing measurement tools like RIPE Atlas probes and anchors.

- 5. Growing importance of the meeting tool** - because most peering agreements are made through handshakes, participants are encouraged to book appointment with any other participant that they may want to meet during the course of the AfPIF event. This tool has been effective in initiating peering agreements between various parties.



➤ Meeting tool stats

60% of registered users (**226**) activated their meeting tool account compared to **56%** in **2014**

51% of active users had at least one meeting compared to **41%** in **2014**

102 meetings were scheduled compared to **58** in **2014**

64 meetings were confirmed compared to **35** in **2014**

15 meetings were scheduled to an alternate location from the rooms provided compared to **1** in **2014**.

➤ Summary of the three-day proceedings

AfPIF 2015: Day One

High Level Summary

The first day of AfPIF is usually known as “Peering Coordinators’ Day”, and focused on addressing emerging technical issues on interconnection in line with this year’s theme “Lessons Learnt”.

For AfPIF-15 Day 1, topics for discussion related to data centre operations and features such as cross-connects. There was a session that shared peering and transit experiences and tutorials. why should we be measuring interconnection was the title of the last panel discussion that showcased the state and evolution of interconnection in Africa. The last session of the day is one of the best - “Peering Introductions” - where participants introduce their networks and state their peering policies and express their interest to meet potential peers at AfPIF.

Data centres

Interxion shared their experience running carrier neutral data centres in Europe and offered lessons for African companies who want to run resilient and agile facilities capable of attracting big businesses. In terms of facilities, a data centre can be in a remote or metropolitan area, but must have high connectivity, grid power, and clear standard operating procedures, scalability, a trained workforce, and a well-outlined business case.

NAPAfrica is probably Africa's largest carrier neutral data centre, launched in 2009, after the deregulation of the South African telecommunication market in 2008. The launch of several telecom companies, deregulation, entry of submarine cables, and general business growth has driven demand for NAPAfrica services.

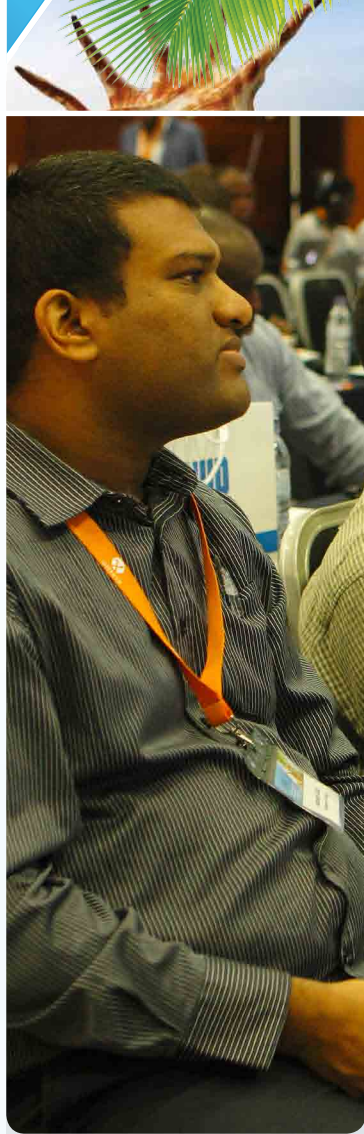


A data centre can be in a remote or metropolitan area, but must have high connectivity, grid power, and clear standard operating procedures, scalability, a trained workforce, and a well-outlined business case.



You can find Day 1- AfPIF 2015 presentation slides and livestream here:

<https://www.internetsociety.org/afpif-2015/day1-presentations-and-livestream>



AfriNIC's new policy which reserves IPv4 addresses for IXPs while maintaining the 100% discount policy is seen as a big boost for IXP development in Africa.

Challenges

For *NAPAfrica*, and common to many African countries, power outages have been one of their biggest challenges but at the same time their best indirect advertisement opportunity. Availability of power can be used to determine the data centre location, given cooling needs and a growing demand for increased power, to cope with a growing business.

Highlights

Seacom's announcement that it will be shift to an "open" peering policy was big news for this community. This means any network in Africa that is not a customer of *Seacom* can peer with them at any of their current eight (8) and future peering locations. *Seacom's* decision to peer openly is inspired by the need to grow the level of content exchanged within the continent. This experience prompted *MainOne*, a submarine cable operator in West Africa speaking during the peering introductions, to mention that they would review their selective peering policy in the days ahead.

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A number of presentations during the course of the day highlighted on routing security an indicator that more on this area needs to be done. The MANRS initiative presented by the Internet Society proposed a collaborative approach towards addressing some of the issues.

On the measurements panel the data sets on the launch of the Liberia IXP in early August provided empirical data on the visible benefits of an IXP. The measurements made use of Atlas Probes in Liberia. This may have triggered renewed interest in the deployment of the probes, as over 17 measurement probes were distributed to 10 countries across Africa thereafter.

There were 13 ASN's that stood to introduce themselves at the end of day one with more expected the next day. The meeting convened the following day with the official opening by the Mozambique Ministry of Transport and Communication.



AfPIF 2015: Day Two Summary

Working with Local Partners

Day two started with the opening ceremony, attended by leaders from Mozambique's government, education sector, and the private sector. Mozambique's team is really helping make a difference by opening up the market, supporting the IXP, and working on innovative University projects.

Raul Echeberria, VP, Global Engagement at the Internet Society, gave the opening address; underscoring the importance of training and partnerships, if Africa is to achieve its technology goals.

"The Internet Society has trained more than 1,000 engineers and held more than 75 IXP related workshops in Africa; Internet penetration has grown from seven percent in 2008 to 20 percent today, this is good progress but we still have 80 percent to go," Echeberria said.

In his speech, *Prof. Orland Quilambo, Rector, Eduardo Mondlane University (UEM)* underscored the role the university has played in ICT infrastructure growth in Mozambique, from bringing Internet into the country, to facilitating the set up of the first IXP.

Dr. Ema Chicoco, CEO, Instituto Nacional das Comunicações de Moçambique (INCM) highlighted the crucial role the regulator has played in ensuring network growth to remote areas, through the universal access fund. She added that the regulator recognises that ICT infrastructure develops fast and there is a need to encourage business models that grow the economy.

Prof. Venancio Massingue, Internet Community Representative and CEO, Science Innovation and Information and Communication Technology Research Institute (SIITRI) is considered the father of the Internet in Mozambique. Prof. Massingue reminisced his attendance of the INET event in San Jose, California in 1998 and the opportunities the training exposed them to. He highlighted the need for increased research within countries, training youth, and knowledge sharing.

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Raul Echeberria, VP, Global Engagement, Internet Society



You can find Day 2-AfPIF 2015 presentation slides and livestream here:

<https://www.internetsociety.org/afpif-2015/day2-presentations-and-livestream>



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Dr. Manuela Rebelo, Vice Minister, Ministry of Transport and Communications formally opened the event, with a commitment that Mozambique will continue with infrastructure growth. She said that the country was also in the process of the digital TV migration, which will open-up more spectrum for infrastructure and ICT business avenues.

Highlights

The highlight of the day was a panel discussing lessons learnt over the last six years of AfPIF. The Serekunda IXP in Gambia, one of the IXPs that came up under the AXIS project, had the opportunity to share their one-year experience. Launched in July 2014, the IXP has seven peers, and already is in discussions with *Google* and *Akamai* to host their caches.

Lessons Learnt from Growing African Cloud Services

- Setting up the IXP is the easy part for the tech community. Running it and making it attractive to peers is what has proved to be more challenging than expected.
- Proving an IXPs value to bigger networks when starting out.

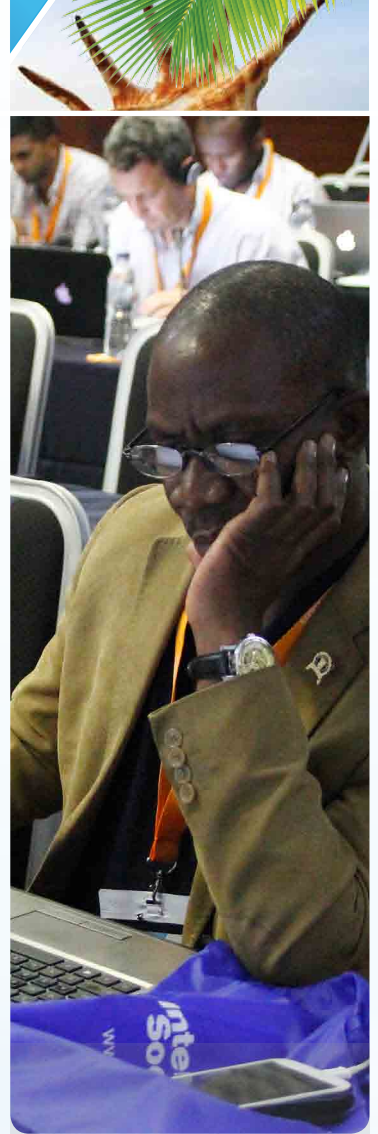
This presentation prompted the question whether countries with limited local content should bother setting up IXPs or should wait for local content to increase. The response was that the best approach is to set up, because there is no way of telling the reaction from the market.

- *Liquid Telecom* shared how it took them 10 years to get to 72% local content (54% Africa peering + 18% CDN), and
- *Teraco* shared how one client was able to reduce their transit costs by 40 per cent, just by peering at *NAPAfrica*, and

To demonstrate how peering can reduce costs across sectors, *Teraco* shared how the South African banking market has been able to save R8 million (US\$ 800,000) just by peering at *NAPAfrica*.

Angani Limited, one of Kenya's cloud services providers, shared their experience in attracting local businesses to their network. The company was started last year, and currently serves leading email and hosting providers in Kenya, bus companies running ticketing applications, e-health apps and media content. "Uptime" is critical and redundancy helps. **Angani** collocates at two data centres and is currently pushing 40 Mbps of Internet traffic to KIXP.

- Affordable pricing, redundancy, security and reliability are key.
- Peering at KIXP has allowed **Angani** to provide free local capacity, allowing media companies to back up and archive content easily



**Affordable pricing,
redundancy, security and
reliability are key.**



AfPIF 2015: Day Three Summary

After three days of discussions, the sixth edition of Africa Peering and Interconnection Forum (AfPIF) came to a close. This year's event attracted 232 participants, from 57 countries. The meeting also drew 978 online participants from 77 different countries.

The last day had presentations on technical aspects of starting and running an IXP and the issue of content and its role in growing an IXP.

Starting an IXP

For the new participants coming from countries without IXPs, the main questions usually are; how much does it cost to set up an IXP? And should we wait for the local content to grow to set up an IXP or should we set up an IXP and grow the local content exchange after?

The morning session had a presentation on how to set up an IXP with US\$ 1000 budget. The presentation went into details of the equipment and factors such as power and budget allocations. The presentation demonstrated that it was possible to have a functional IXP with the US\$ 1000 budget.

What do you need to do?

1. Market research
2. Build a community
3. Build a platform
4. Figure out the content providers in the country/region

Role of Content in Growth of IXPs

The role of content in growth of IXP has become a major topic for AfPIF in the last four years. As IXPs continue growing, the issue content and attracting more peers become more apparent.

Google has been involved in AfPIF since 2010 and is considered the most common CDN in African countries. *Akamai* first presented at AfPIF three years ago and has underlined its commitment to spreading its infrastructure in Africa.

This year's event attracted 232 participants, from 57 countries. The meeting also drew 978 online participants from 77 different countries.

In its presentation, *Akamai* indicated that it was open to peering at either IXPs or ISP networks, but the main challenge was the cost of international transit, which Akamai leaves to the internal community to decide.

Rwanda, which is running *Akamai* at the IXP shared its experience; how local peers worked together to sort out the issue of international transit and the increase in capacity at the IXP. The capacity increased from peak of 500Mbps to 1.2Gbps.

After the presentations, there was a discussion whether the issue was locally developed content or locally hosted content. It was clear that local hosting is important, for locally relevant content. For instance, major newspapers in Rwanda are hosted abroad, and therefore contributed to the increase in content, with the *Akamai* cache.

Why are CDNs shying away from Africa?

There were questions why the CDNs were opting for other markets in US, Europe and Asia; the question was whether Africa lacks the market to make the business case, or that Africa is doomed to be a consumer market.

Both *Akamai* and *Google* representatives noted that there lacks the business case in Africa but added that with the pace of growth, it was a matter of time before business caught up. They added that even in other markets, it had taken 20 years for the markets to mature.

How do we reduce barriers to content growth?

1. Higher level of trust and collaboration, the rest comes automatically
2. Increase locally relevant content hosting
3. Increase local skills and training
4. Availability of cheaper capacity
5. Development of data centers and cloud platforms that can host the content
6. Lower local loop pricing, it will remove some of the barriers
7. If you don't have an IXP, then you have no local content to exchange, once you get an IXP, you start thinking of how to improve it.



You can find Day 3-AfPIF 2015 presentation slides and livestream here:

<https://www.internetsociety.org/afpif-2015/day3-presentations-and-livestream>



The question was whether Africa lacks the market to make the business case, or that Africa is doomed to be a consumer market.



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