



AfPIF 2014

Pullman Dakar Teranga
Hotel, Dakar, Senegal

26th – 28th August 2014



The Africa Peering and Interconnection Forum

 **5** *A resounding
success*



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In the last five years, the Africa Peering and Interconnection Forum (AfPIF) has encouraged interconnectivity and sharing of content among African countries. The number of exchange points has grown and more operators are exchanging content locally and regionally.

This year, Senegal hosted 190 participants, coming from 62 countries, five continents, while 1,032 unique visitors were following online.

The three-day discussions dealt with the **future of peering** and how to continue reducing transit costs, **regional interconnection dynamics and content issues, and cross-border interconnection opportunities**. Participants were drawn from infrastructure providers, Internet service providers (ISPs), Internet exchange points (IXPs), international financial institutions, and policy-makers and regulators.

To keep the discussions dynamic and interesting, the meeting format was revised this year to encouraged more side-meetings and discussions on ways to increase peering, given that most peering agreements are made through informal “hand shakes” at peering events such as AfPIF.

This year’s meeting included a “day zero”, which was a day attended by African IXP operators, day one was for peering coordinators, and days two and three had general discussions for all.



190 Participants



62 Countries



5 Continents



1,032 Unique
visitors following
online



270 registered users
and 58 meetings were
scheduled



8-10 minute
presentations or talks.



French Peering
Simulation Game



Over **100** copies of the
“Manuel Du Peering”
given to participants

→ Key features this year:

1. **Bilateral meetings.** Bilateral meetings were made possible through a meeting-maker tool (courtesy of DE-CIX) that allowed participants to indicate the meetings they would like to have with other participants. There was a dedicated meeting room provided. In total, there were 270 registered users and 58 meetings were scheduled. These meetings were held on August 27th, as part of the sessions; participants were encouraged to think about it as “speed dating”.
2. **Lightning talks.** Lightning talks allowed participants who did not have a chance to present in the regular session to share topics in 8-10 minute presentations or talks. This allowed participants to get the most out of the sessions and participants.
3. **French Peering Simulation Game.** During the AfPIF-2013 peering simulation game, a mix of French and English speaking players highlighted an underlying language barrier. This experience triggered an interest for the organisers to conduct this year’s Peering Simulation Game entirely in French, and with the event being in the French-speaking region of Africa, the outcome was extraordinary. In addition, a new twist was added to the game where participants had to wear headphones playing music to distract them from hearing their competitor’s strategic decisions for the moves they made.
4. **“Manuel Du Peering” book launch.** The Internet Society supported the translation of the William B. Norton’s Internet Peering Play book into French by Ms. Irina Trentea of Lyon-IX. Over 100 copies of the “Manuel Du Peering” were signed and given to participants with the first two copies going to Malick Ndiaye the Permanent Secretary in the Ministry of Posts and Telecommunications in Senegal and Abdul Karim Sall, the Director General of ARTP - the Posts and Telecommunication Regulatory Authority in Senegal.



Over **30** Atlas probes distributed



50 female participants compared to 16 last year



The key highlight from the meeting was the willingness expressed by global network providers and content delivery networks to invest in the continent, even though the level of content is yet to hit global levels.

5. Atlas Probe Distribution Party. Following an informative Internet measurements panel, the two Atlas Probe ambassadors present were at hand to distribute new probes to those who were able to place them online. Over 30 Atlas probes were distributed.

6. Female participation. Women broke the record at AfPIF-2014, There were 50 female participants compared to 16 last year; one of the women became one of the first representatives from Zimbabwe to participate in an AfPIF.

The key highlight from the meeting was the willingness expressed by global network providers and content delivery networks to invest in the continent, even though the level of content is yet to hit global levels.

This year, *Akamai*, *CloudFlare*, *Jaguar Networks*, and *Interxion* shared their experiences on how to grow content and networks in the region and expressed interest in setting up infrastructure and share more content in Africa. *Google* has supported AfPIF for five years and has set up its Global Cache in several countries.

Previously, the question has been: “**How do we attract attention from global CDNs and network providers?**” But this year, the network providers and CDNs said: “**We are now ready!**”



➔ Major issues discussed:

1. The future of Africa peering

From 2010, Bill Norton has led the “Peering Simulation Game” which allows participants to take the same considerations they do in real life peering decisions. This year, he led the game together with Irina Trentea from Lyon- IX, who helped translate the Peering playbook into French. This year the game seemed easier, compared to previous years, because more participants have had experience with peering dynamics. From the discussions, it was clear the future of Africa peering is bright.

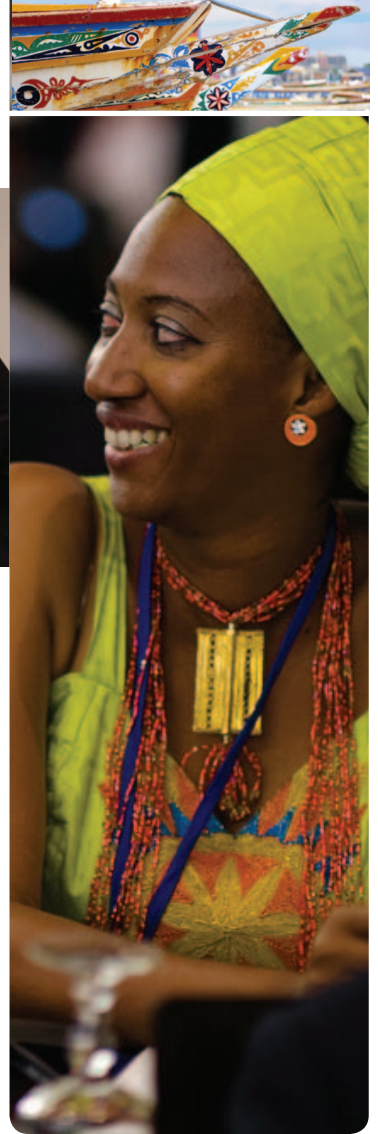
2. Getting the Google Global Cache

For many participants, getting a Google cache is a challenge but necessary for growth in the region; that is because Google services are widely used in the region and where the cache is set up there has been significant benefits to both network operators and end-users. As a result, Google may as well represent second level attraction for other global network providers and CDNs – the first being existence of an IXP; if there is a cache shared via the IXP, discussions with other global companies are likely to go easier.

The details on what is required to setup Google infrastructure in any country were discussed during the content panel. Their conditions are similar to other CDNs, such that if you comply, you will most likely comply with the conditions set by other CDNs.

3. Cross-Border Interconnection

This has been a consistent issue at the five AfPIF meetings; countries are still exploring ways to amend or set up laws that encourage cross-border interconnection and to a greater extent encourage growth of



Internet business. The global organisations at AfPIF-2014 suggested that in order to create a vibrant Internet business ecosystem, the regulatory and policy environment needs to be more conducive. There was a suggestion that regulators should change their name to “Business Development Agencies” and their core business would be to enable an environment that attracts both local and foreign direct investment in a country.

4. Role of local content and hosting

The issue of content hosting and the growth of local content has been a constant feature at AfPIF's. Most of the content accessed in the region is hosted abroad. Presenters and discussions pointed to the development of a local-hosting industry as a major catalyst to attracting global players in the region. It is also one way to make connectivity more affordable and peering more attractive to players in the market.



175 participants attended the “Peering Coordinators Day”



1,032 unique visitors participated remotely

➔ Daily Summary of Presentations

⌕ Day One Highlights

African operators deepen discussions on interconnection

In the last five years, Internet Service Providers, content providers and network providers have met to discuss ways to better interconnect the continent through more sustainable and efficient ways.

Day one is dedicated to the technical people who run the networks and can benefit from more technical knowledge on how to optimize their networks, and maximize the value they can derive from interconnecting at an Internet Exchange Point.

This year, about 175 participants attended the “Peering Coordinators Day” while 1,032 unique visitors participated remotely. The day starts with an invitation of the participants to forward their Autonomous System (AS) numbers information to the organizers. AS numbers are key in the “peering introductions” process that precedes the informal peering negotiations that take place during the three-day meeting. At the end of every day, participants take the floor and introduce themselves by AS number, locations where they peer, their peering policies and whom they would like to meet with during the course of the meeting. A brief overview of the AfPIF meeting and what to expect was also provided.

After introductions, the first session is “The Peering Simulation Game”, which sets the tone for the day by introducing the key terms used in the peering process and some of the factors to consider when deciding who to peer with. The game allows participants to make decisions as they would in real life situations; there is money involved and ‘networks’ that do not make wise peering decisions get



bankrupt, fast. The peering simulation game was, for the very first time, conducted entirely in French.

For old and new participants, the game provides background and pointers on what to look for or ask for during peering negotiations taking place at the meeting.

As an ISP operator, one of the key questions networks ask is; **“why should I peer with you?”** *Jeremy Fleury*, from *CloudFlare* took participants through the process of using available tools to better understand one’s network traffic composition. The understanding of network traffic composition is useful in answering some of these fundamental questions.

Through Netflow and S-Flow, the ISP can improve its traffic engineering, gather and share information on the amount of data being exchanged with other networks, and inform the need for peering. These tools can also be used to provide data to network operators on the kind of Distributed Denial of Service (DDoS) attacks, security threats and measures put in place to thwart such attacks.

There were presentations from Bangladesh that demonstrated how the peering and transit business model can direct the technical strategy of an ISP to great success. Further, the participants also had the opportunity to listen to innovative approaches to building terrestrial fiber infrastructure from Uganda and Rwanda.

Over the years, successful IXP operators have attributed the growth of peers to the presence of a Google Global Cache. *Mike Blanche*, from *Google* took participants through the process of peering negotiations at a peering forum such as AfPIF.

The key factors to success are:

1. Do research and analysis of your network
2. Sign up for the meeting-maker tool, which facilitates meetings with various participants at AfPIF
3. Meet potential peers
4. Exchange ideas and agree to set up peering
5. Set up peering and configure the hardware



➤ Day Two Highlights

Addressing Content Generation, Hosting and Policies

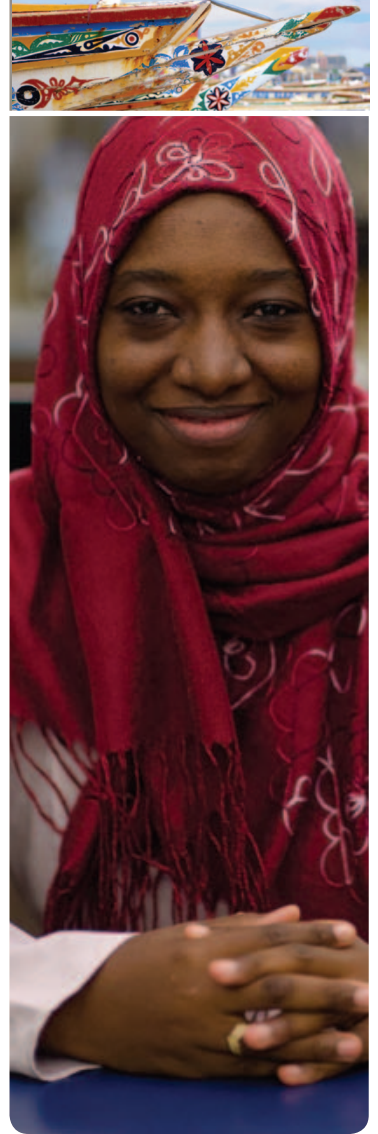
After eight years of investing heavily in telecommunication infrastructure, African operators are ready to move to the next level of generating and hosting content locally.

Day two at AfPIF was dedicated to content discussions; ways Africa can grow its content hosting business, cross border interconnections, regulatory challenges and good practices from other regions like the EU, where cross border connection and hosting business is seamless.

The day started with opening remarks by [Sofie Maddens](#), *Senior Director of Global Services, Internet Society*. In her speech, Maddens underscored the role of the Internet Society, which operates at the intersection of policy, technology, and development. She noted that for more than 20 years, the global teams, working with partners around the globe, have been focused on engaging with communities of practice, sharing technical expertise and knowledge, and exchanging information to extend an open, interoperable, ubiquitous and accessible Internet for people throughout the world.

While emphasizing the role of a reliable and sustainable Internet in economic development, Maddens noted that Internet development is fundamentally about people and the Internet Society works for the community, with the community and in the community.

She highlighted the Interconnection and Traffic Exchange program, where the Internet Society has worked with many partners to change the Interconnection and Traffic exchange landscape in Africa. The Internet Society is also implementing the African Internet Exchange System (AXIS) project for the African Union with Best Practice workshops held in 29 countries around Africa, and technical workshops in close to 30 countries. Five Regional Internet Carriers and Regional Internet Exchange Points workshops were held in 2014 and finalized completion of a second phase of the AXIS project.



Maddens highlighted the fact that the investments in infrastructure have led to significant content growth in the region, but that delivery of that content is still held back by lack of interconnection and by the lack of local-hosting facilities. From Nollywood to content production in Nigeria, on-line content production and E-Government services, Maddens noted that Africa is producing its own content and enhancing the relevance for its users.

Present at the opening ceremony were [Abdul Karim Sall](#), *Director General of the Posts and Telecommunication Regulatory Authority (ARTP) Senegal* and [Malick Ndiaye](#), *Permanent Secretary, Ministry of Posts and Telecommunications, Senegal*.

In his speech, Sall noted that the regulator had made strides towards ensuring that all major players in the Senegalese ICT sector are ready to work together and deliver the first IXP in the country.

He noted that Senegal was committed to innovation and development of applications that increase the level of content and add value, making the country more attractive to investors in the future.

Ndiaye, who is a founding member of ISOC Senegal in 1999, said the country has benefited from the AXIS project; helping the stakeholders develop a policy and are now about to kick off the operational phase.

In stimulating the growth of Internet infrastructure, Ndiaye said the government will strengthen its Public Private Partnerships, starting with the development of a digital city a few kilometers outside Dakar.

In addressing the problems of hosting, [Mathieu Paonessa](#) from *Jaguar Networks* gave his keynote speech on the future of content hosting in Africa. He went through some of the sites like news sites, blogs, movie and music sites that had content being accessed in Africa, but hosted abroad.

He noted that the increased infrastructure had led to low connectivity costs but regulatory challenges were still hampering cross-border connectivity. He gave an example of Kinshasa and Brazzaville, the closest capital cities in the world, separated by a river, yet they have been unable to find ways to efficiently exchange content and share infrastructure. He compared the case to Europe, where an operator just



needs one license and can operate across borders without setting up local companies as required in many African countries.

The upshot of the keynote was that if Africa is to develop hosting businesses that policy and regulatory issues have to be addressed at the same speed that infrastructure investments are made.

The afternoon panel addressed issues of content policies and how to get more peers at the IXP, which will eventually make the IXP more attractive. The highlight of the panel was the presentation by [Thomas Volmer](#), from the *Google Global Cache*, who talked about factors that Google considers before setting up infrastructure in a country. From the analysis, the Global Cache is the entry-level infrastructure that Google deploys at locations that meet their set criteria.

What are some of the questions that Google asks before deploying a cache?

1. Does your country have a running IXP?
2. Can you provide 6U in rack space?
3. Do you have Internet bandwidth to the GGC?
4. Do you have a sponsoring network or cost sharing agreement between IXP members?

The last session of the day was the peering meet-ups arranged individually or through the meeting-maker tool.



➤ Day Three Highlights:

Africa's Future is Bright!

Africa's peering future looks bright. That was the resounding feeling for the 190 participants who have been exploring ways to interconnect and exchange content better.

The third day was dedicated to the future of Africa peering, with speakers exploring the history of peering and wondering whether we can predict the future, a panel on opportunities to grow national and cross-border peering, and internet traffic measurement that can help make an IXP more attractive.

[Bill Norton](#), commonly known as “Dr. Peering”, gave the keynote speech on the future of peering. He traced the history of peering to the early Internet days in the U.S, when the government was involved in Internet Infrastructure investments, up to the transition period of private sector involvement.

He also noted the crucial role content such as video plays, adding that increasing content brings in more players to IXPs. To encourage growth, Dr. Peering said the IXP operator should know all the peers and bring them together to exchange content more easily.

Dr. Peering is the author of the Peering Playbook that has been translated into French by Irina Trentea from LyonIX. The book addresses the issue of language barrier, which has been identified in the past as a stumbling block for peering agreements. The book was available in English only, which provided a practical problem that French speaking IXP operators may have, when communicating with an English speaking IXP operator.

The panel of the day addressed some of the strategies that Africa can adopt to guarantee growth. First, it was stressed that the absence of infrastructure shouldn't deter a country from investing in an IXP. [Wouter Van Hulten](#) from *Interxion* gave an example of how, when the company started in 1998, they were on a side of town that had no fiber connectivity. The sole fiber provider encouraged them to give up, but



they didn't. Today, that side of the business has several data centers operated by different companies.

While panelists discussed ways an IXP can reduce costs by attracting CDNs and other large players, the role of the regulator as a catalyst for business growth was discussed, and there were suggestions that the name of the regulator should change from regulator to "Business Development Agency" to spur Internet business growth in countries by attracting both local and foreign-direct investment.

The first panel in the afternoon session was on measurement tools that an IXP can put in place to gather the right data and help members make decisions on security, understand ways to bring content as close to the people as possible.

The highlight was the RIPE-ATLAS probes! They were distributed to participants who were sure they could make them available online. The project is in partnership with AFRINIC and is calculated to provide as much data as possible to measure Internet connectivity and reachability in real time.

One of the new features this year was a lightning session; where participants who were not able to make a presentation or who had something short to discuss can spend ten minutes talking about a project.

The session had talks ranging from the IXP toolkit that is seeking to expand IXP activities to more emerging markets, IPv6 webinars, experiences setting up an IXP from Burundi to the process and lessons Kenya IXP learnt in its migration process.

The main lesson was from Burundi IX. The community in Burundi spent 18 months setting up an IXP. The majority of that time was spent navigating administrative challenges. The technical set-up took only a week.



The closing ceremony was the last session of the day, with remarks from [Dawit Bekele](#) and [Malick Ndiaye](#). They were grateful to the participants who attended the meeting, even as the world feared travel to West Africa because of Ebola outbreak fears.

This year the meeting attracted 190 participants, 1,032 unique views from 62 countries and 13 sponsors.

AfPIF 2015 will continue to build on the excellent event in 2014 – many thanks to everyone who made it happen!



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