The African IXP Association

Euro-IX 32 / April 17th, 2018 / Galway, Ireland
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Who am I?

Kyle Spencer

- E-mail: kyle@stormzero.com
- Uganda Internet eXchange Point (UIXP)
- African IXP Association (AFIX)
- Internet eXchange Federation (IX-F)
- Multiplayer gaming in Africa
- A few other hats
What is AFIX?

The African IXP Association (AFIX) is a group of Internet exchange point operators from across Africa, brought together by a shared need to coordinate and exchange knowledge.

AFIX aims to foster an enabling environment for IXPs, help them maximize their value, improve connectivity within the continent, and increase the Internet’s value for all.
What is AFIX?

- Launched in 2012 at AfPIF in Johannesburg
  - Member of the Internet eXchange Federation (IX-F) since 2014
- Currently 40 IXPs in 30 countries out of 55 (AU)
  - Oldest: JINX (1996)
  - New: Madagascar, Djibouti, Togo, Senegal
- We host bi-annual meetings at AIS and AfPIF
- We host a private mailing list for IXP operators
- We research and publish data about our region
- We host a website with useful information
  - URL: [http://www.af-ix.net](http://www.af-ix.net)
What is IX-F?

The Internet Exchange Federation (IX-F) is a group of Internet Exchange Point Associations (IXPAs) that aims to build a global community and further the growth of IXPs throughout the world.

- Founded: 2012 at Euro-IX 21 in Stockholm
- Members: Euro-IX, LAC-IX, APIX, AFIX
- Coordination, policy, advocacy, and research
Growth in Africa

African IXPs: Total Number of Active IXPs by Year

Source: African IXP Association (2017)

AfPIF launched 2010

AXIS project 2012-15
Traffic

No traffic data-sets are fully comprehensive

Not all IXPs have and/or publish traffic statistics

Inconsistent accounting of peak traffic statistics (e.g. monthly vs. daily)

Some IXPs carry significant transit traffic
Connected Networks

African IXPs: Total Number of Networks Connected

Source: African IXP Association (2017)

AFIX Benchmark Survey

Michuki Mwangi survey
Network Diversity

African IXPs: Percentage of IXPs by Connected Network Types

Governance Models

African IXPs: Governing Entity Types

Source: African IXP Association (2017)
Facilities

African IXPs: Facility Neutrality

2008 (12/16 IXPs) - 58% Neutral, 42% Non-neutral
2017 (35/40 IXPs) - 77% Neutral, 23% Non-neutral

YMMV

African IXPs: Facility Ownership Breakdown
Source: African IXP Association (2017)

- 23% Network operator
- 31% Carrier neutral DC
- 29% IXPs/ISP
- 11% Academic
- 6% Government
- 0% Other
Facilities

- The quality of IXP facilities has greatly improved in a relatively short period of time
- IXPs in carrier neutral DCs had the best amenities on average
- Reality: YMMV
Staffing

African IXPs: Full or Part-time Staff
Data from 34/40 IXPs / Source: African IXP Association (2017)

African IXPs: Paid or Volunteer Staff
Data from 34/40 IXPs / Source: African IXP Association (2017)
House Rules

African IXPs: Regional Peering Environment


- Layer 3 (typically mandatory multi-lateral)
- Mandatory multi-lateral (all networks are forced to peer with each other)
- Bi-lateral only (networks peer at their own discretion)
- Multi-lateral (route server available but usage is not mandatory)
Value Added Services

- VAS is more common:
  - 66% had some in 2008
  - 90% had some in 2017

- More IXPs with Root DNS nodes:
  - 3 in 2008
  - 26 in 2017

- Percentage of IXPs with Looking Glasses nearly doubled 2015-2017
Challenges

- Some IXPs lack effective governance models
- Some IXPs are in poor quality / non-neutral facilities
- Some IXPs have power and reliability issues
- Some IXPs are Layer 3 / MMLP
- Some IXP websites are poor quality and lack key data
- Many IXPs rely entirely on part-time volunteers and donations
Still more to do, but we’re growing fast.

Contact me if you’d like to join the party.
Thank you!

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- Visit the AFIIX website
  - af-ix.net