



The African IXP Association

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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)
- 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 Af-IX?



- 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>

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.

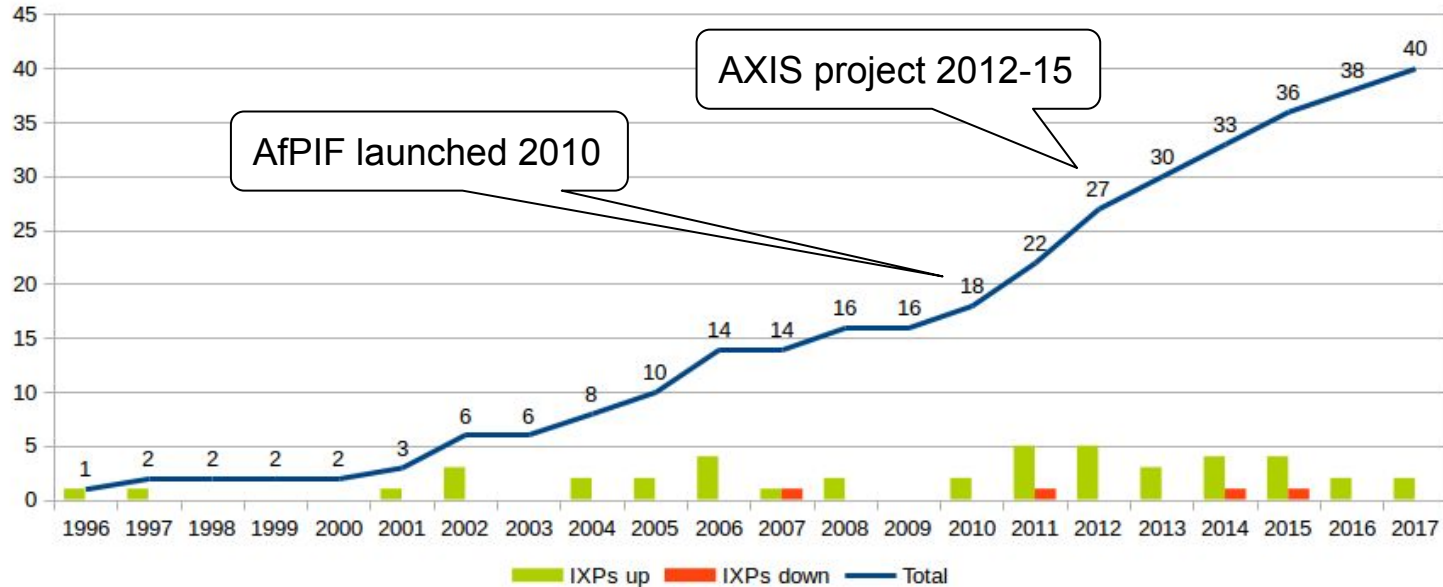
- Founded: 2012 at Euro-IX 21 in Stockholm
- Members: Euro-IX, LAC-IX, APIX, and AFIX
- Coordination, policy, advocacy, and research

Growth in Africa



African IXPs: Total Number of Active IXPs by Year

Source: African IXP Association (2017)

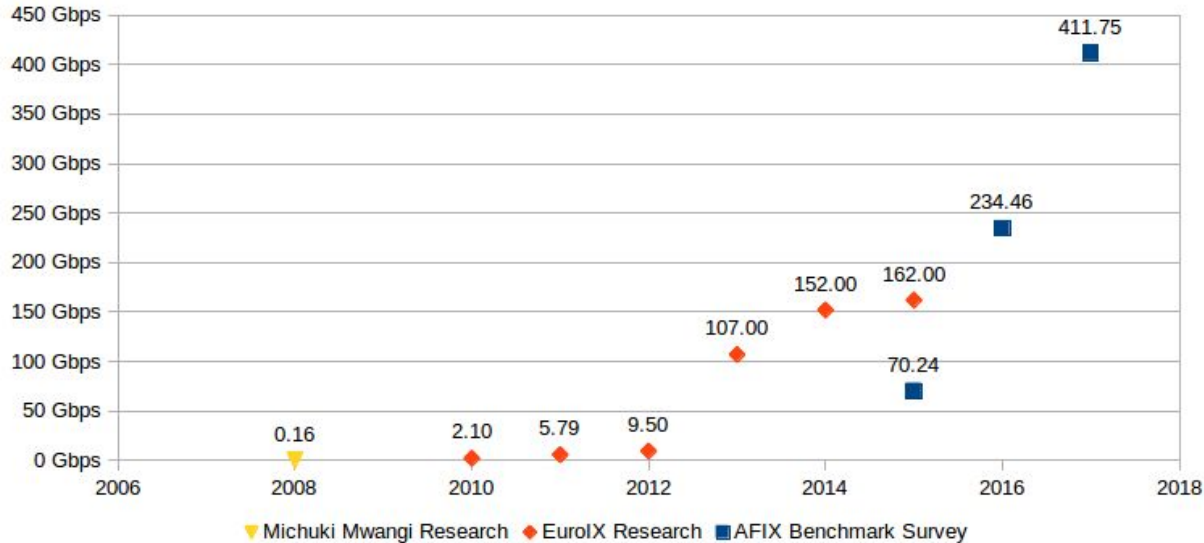


Traffic



African IXPs: Aggregate Regional Peak Traffic

Source: African IXP Association (2017)



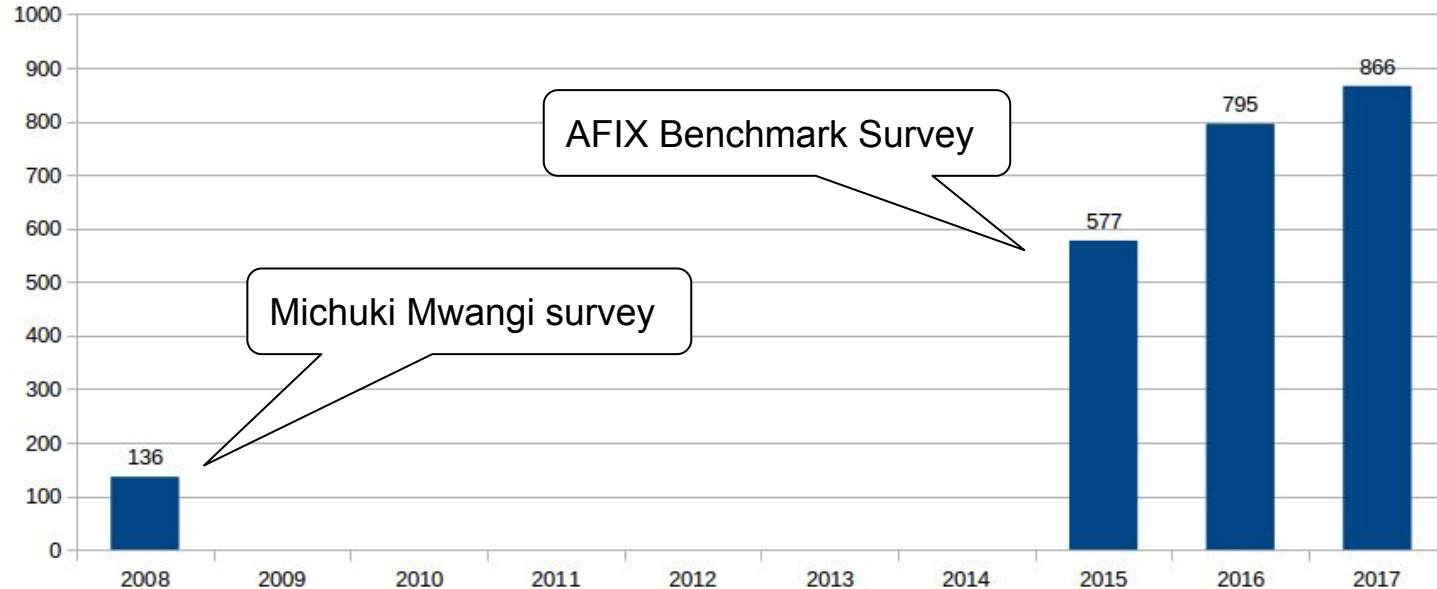
- No traffic data-sets are fully comprehensive
- Not all IXPs have and/or publish traffic statistics
- Inconsistent accounting of peak traffic statistics (e.g. monthly vs. daily)
- Some IXPs carry significant transit traffic

Connected Networks



African IXPs: Total Number of Networks Connected

Source: African IXP Association (2017)

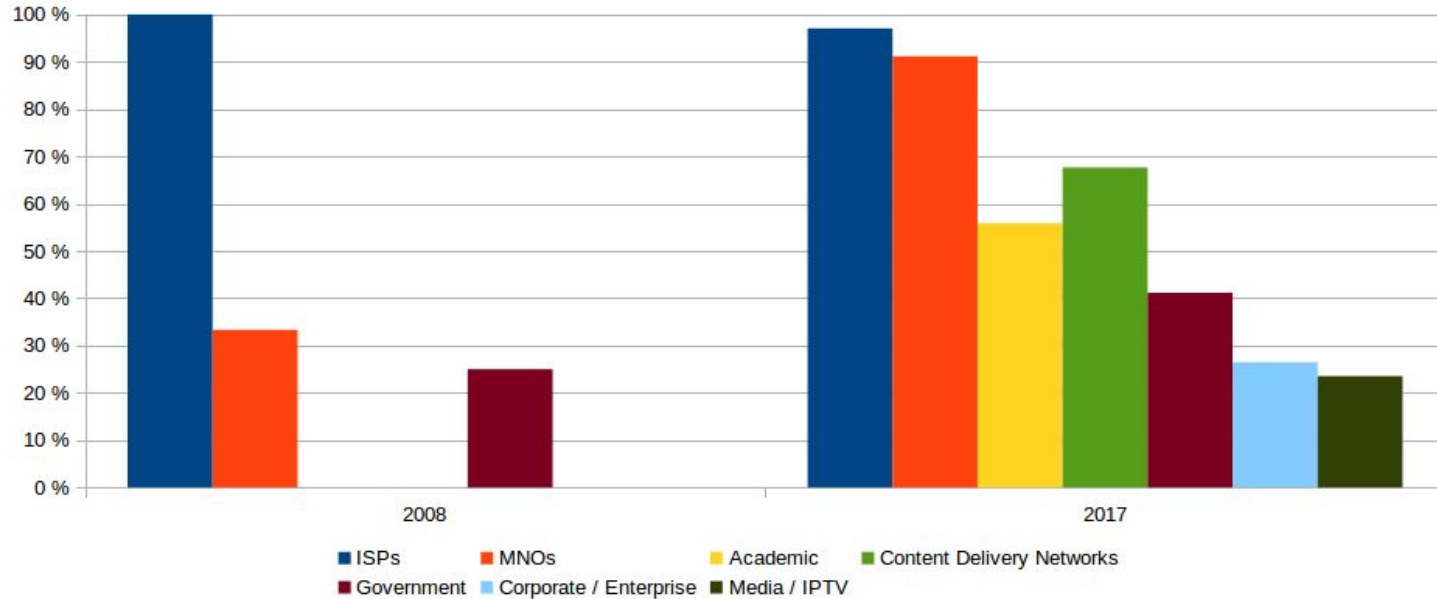


Network Diversity



African IXPs: Percentage of IXPs by Connected Network Types

Source: Michuki Mwangi (2008), African IXP Association (2017)

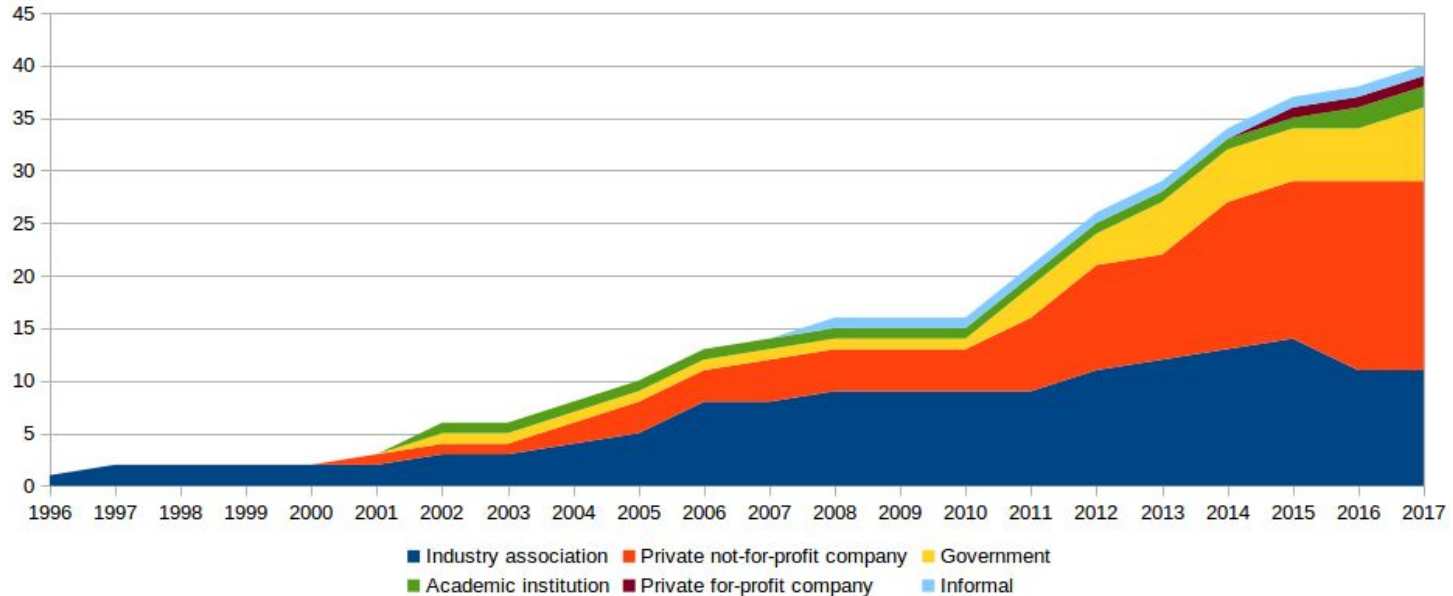


Governance Models



African IXPs: Governing Entity Types

Source: African IXP Association (2017)

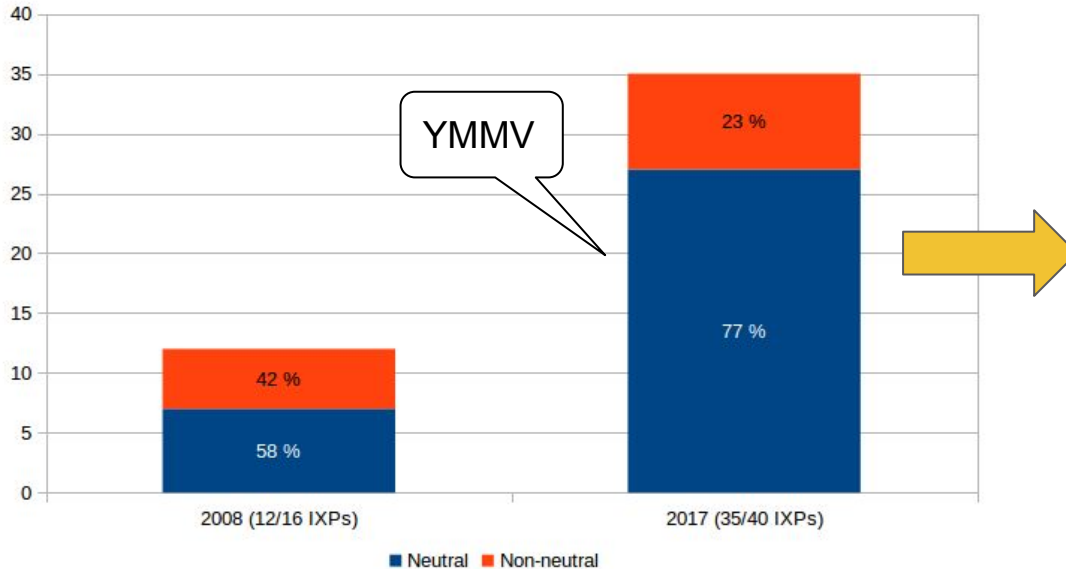


Facilities



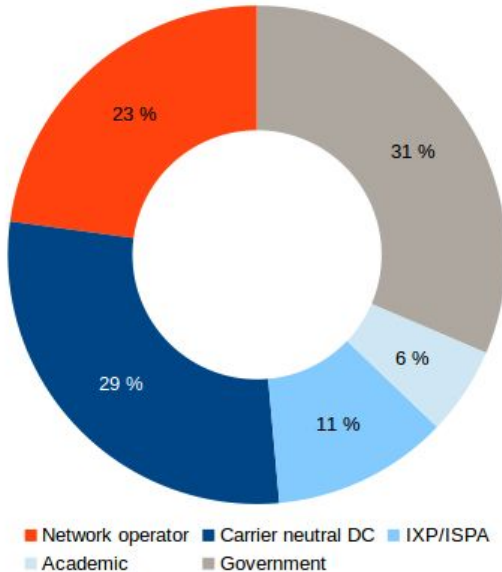
African IXPs: Facility Neutrality

Source: Michuki Mwangi (2008), African IXP Association (2017)



African IXPs: Facility Ownership Breakdown

Source: African IXP Association (2017)

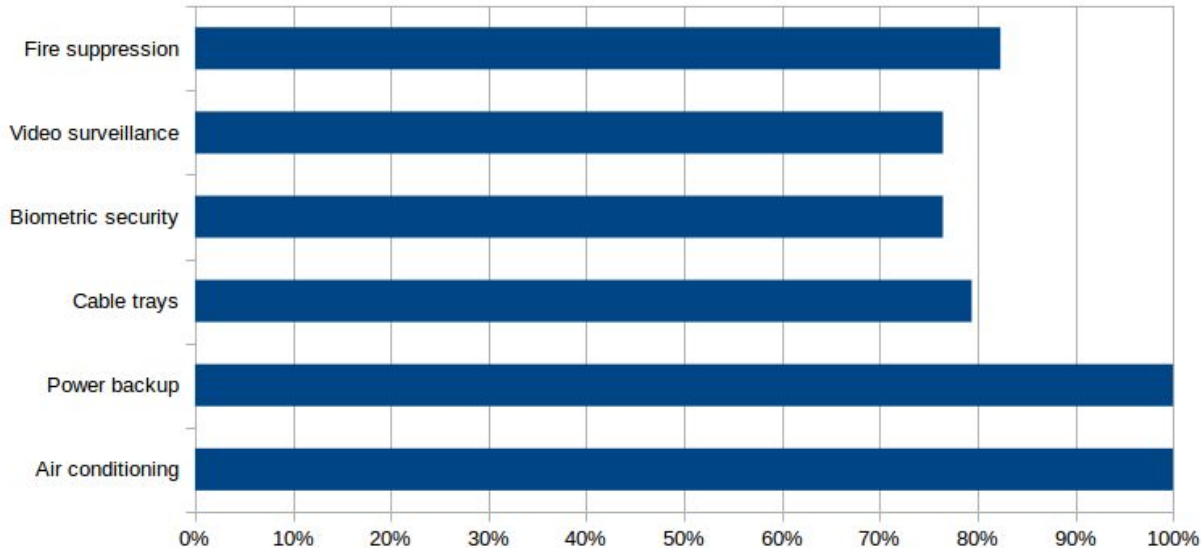


Facilities



African IXPs: Facility Amenities

Data from 34/40 IXPs / Source: African IXP Association (2017)



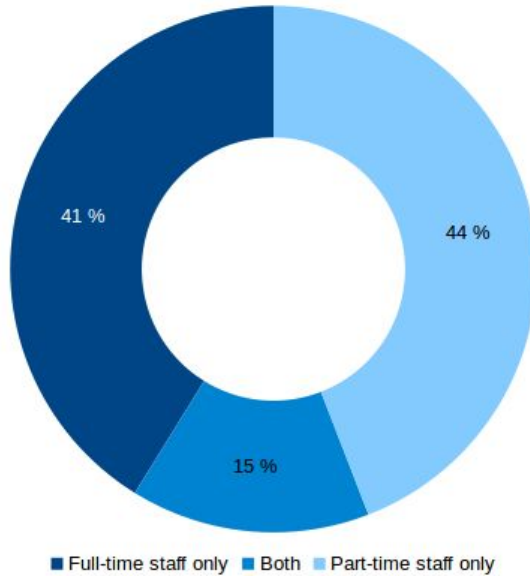
- The quality of IXP facilities has greatly improved in a relatively short period of time
- IXPs in carrier neutral DCs had the best amenities on average
- **Reality: YMMV**

Staffing



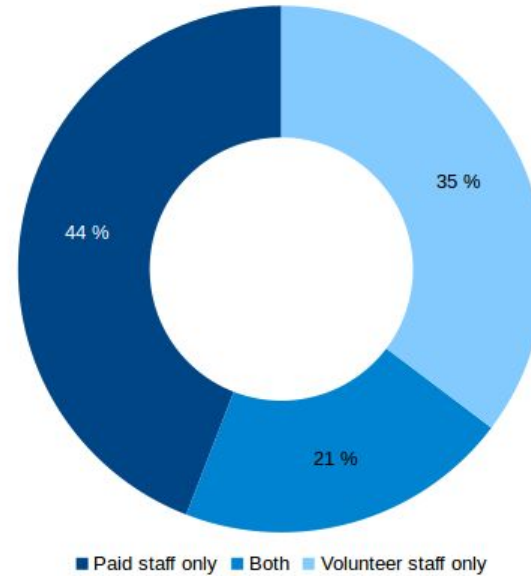
African IXPs: Full or Part-time Staff

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)

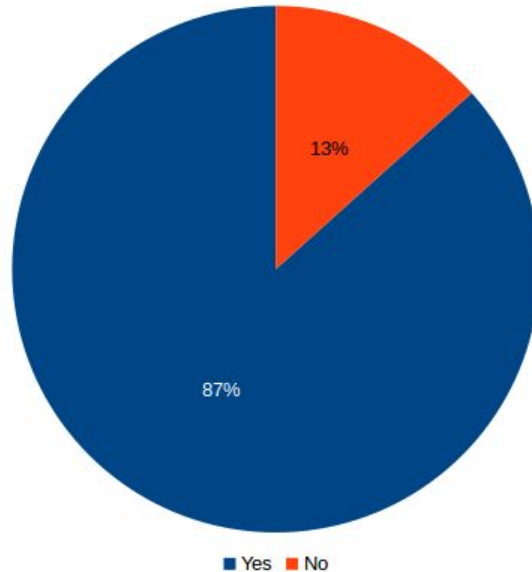


Contracts and Fees



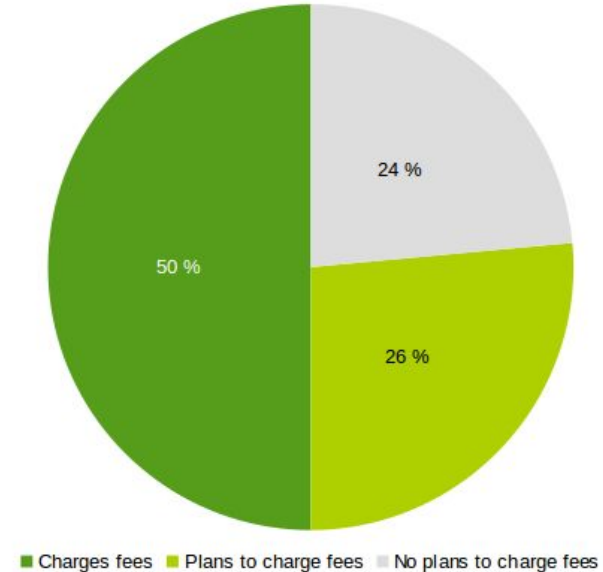
African IXPs: Formal Contract Required to Join?

Data from 30/40 IXPs / Source: African IXP Association (2017)



African IXPs: Fees

Data from 34/40 IXPs / Source: African IXP Association (2017)

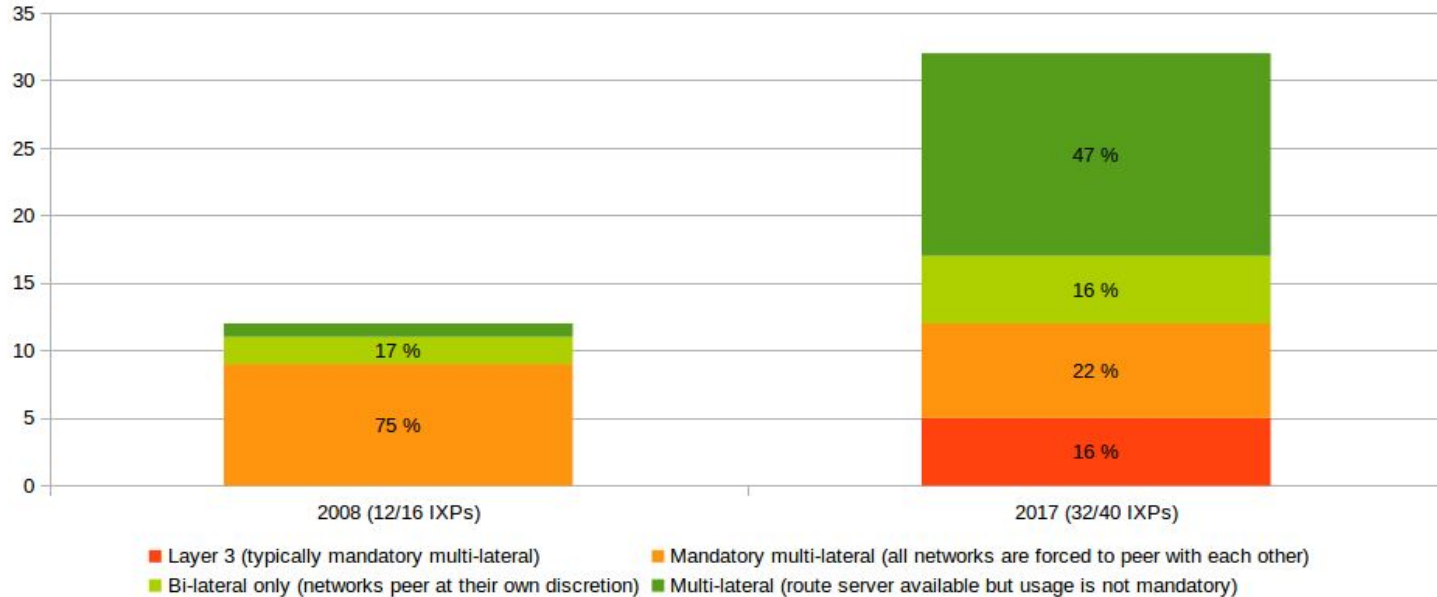


House Rules



African IXPs: Regional Peering Environment

Source: Michuki Mwangi (2008), African IXP Association (2017)

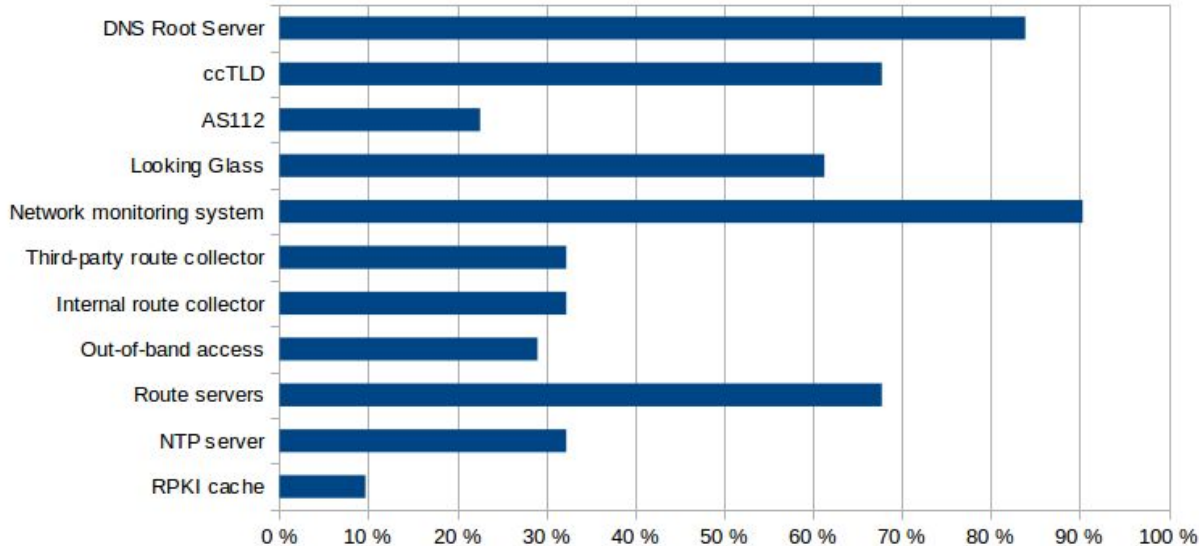


Value Added Services



African IXPs: DNS and Value Added Services

Data from 31/40 IXPs / Source: African IXP Association (2017)



- 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 still have power and reliability issues
- Some IXPs are Layer 3 / MMLP
- Some IXP websites are poor quality and lack key data
- Many IXPs still rely 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 AFIX website
 - af-ix.net