Regional Status Report

NANOG / **October 2019** / **Austin, Texas**

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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 Internet gaming in Africa
- A few other hats

What is AFIX?

The African IXP Association (AFIX) is a group of regional Internet exchange point (IXP) operators.

We aim to foster an enabling environment for IXPs in order to help them maximize their value, improve connectivity within the region, and increase the Internet's value for all.

Member of IX-F along with Euro-IX, LAC-IX, and APIX.
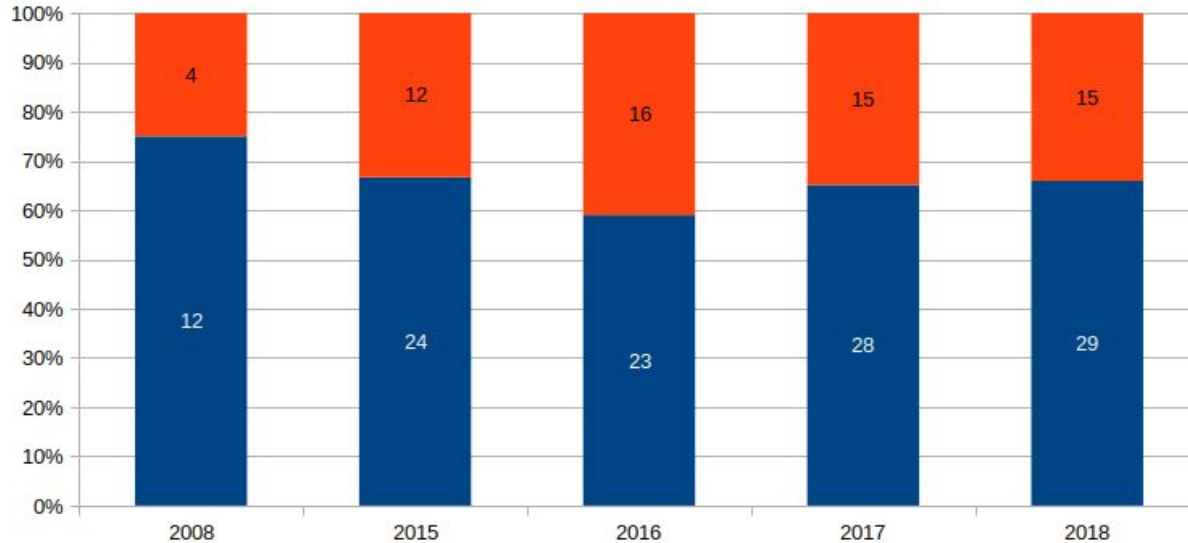
What is AFIX?

- Launched in 2012 at AfPIF in Johannesburg
  - Member of the Internet eXchange Federation (IX-F) since 2014

- Currently 45 IXPs in 41 cities in 33 countries
  - Oldest: JINX (1996)
  - Newest: Somalia, Zanzibar

- 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

- Website: http://www.af-ix.net

The Data

African IXPs: Survey Response Rates

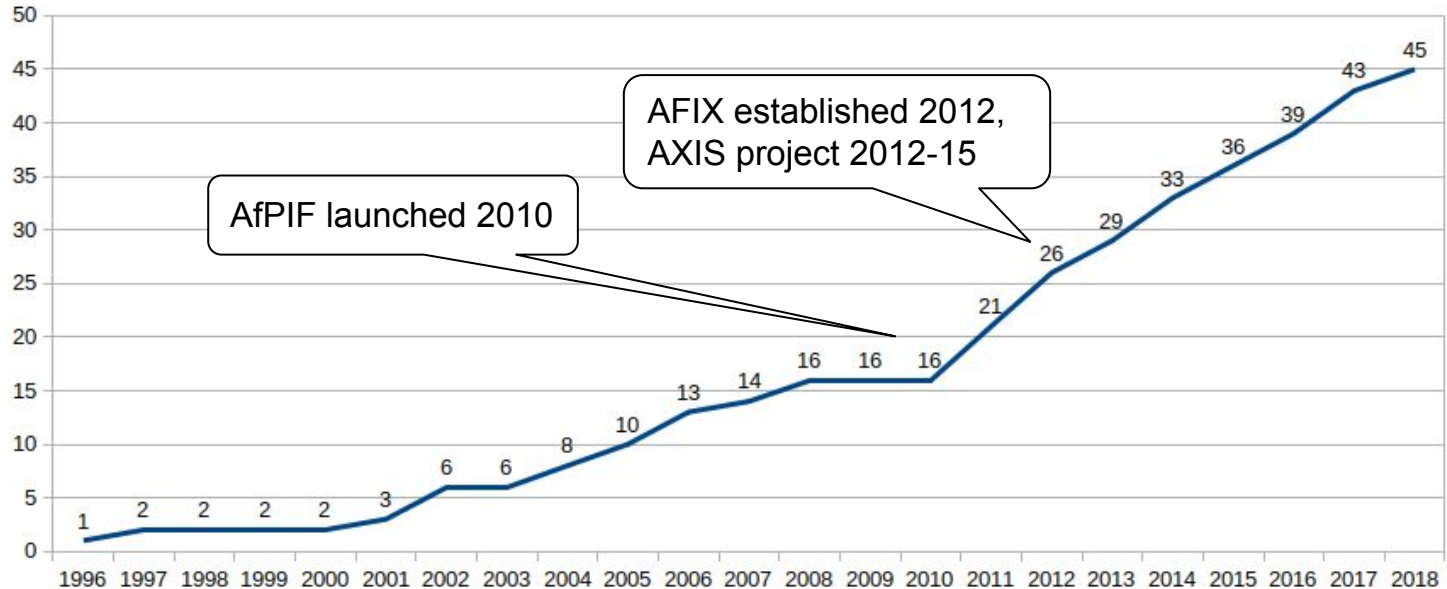Source: African IXP Association (2019)

- 2008: Michuki Mwangi

- 2015-2018: AFIX Benchmark Survey

- Different mixture of IXPs respond each year

- Some 3rd party sources

- Some data is manually collected or refined

Growth in Africa
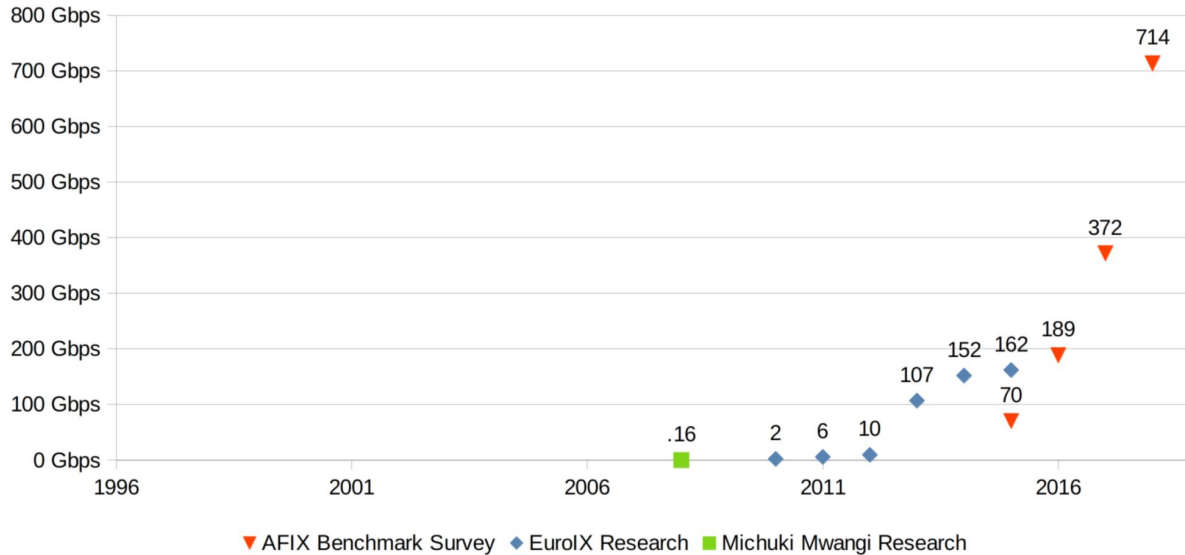
African IXPs: Total Number of Active IXPs by Year

Source: African IXP Association (2019)

AFIX established 2012,
AXIS project 2012-15

AfPIF launched 2010

Traffic

African IXPs: Peak Traffic

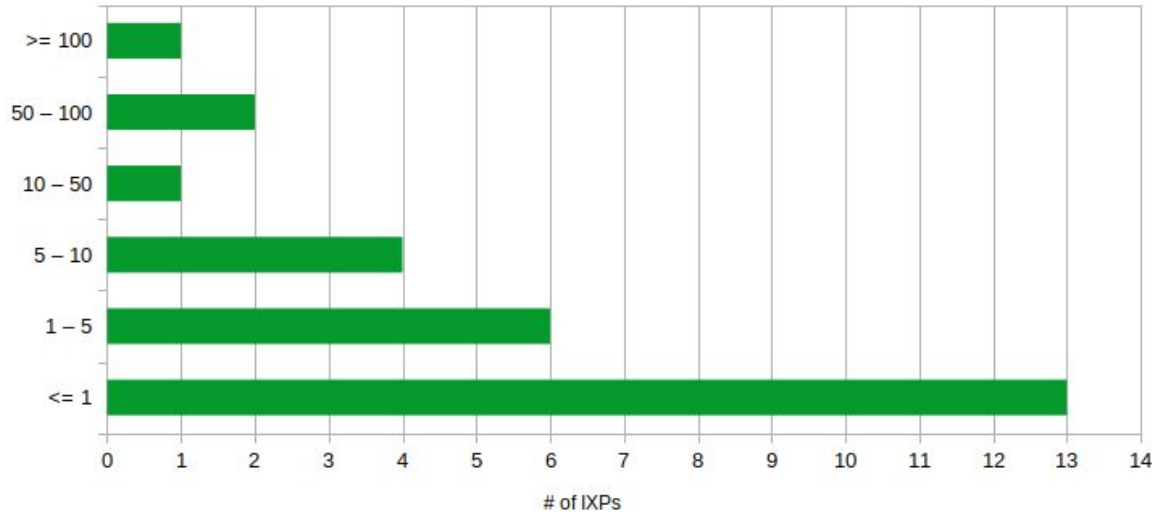Source: African IXP Association (2019)

- Conservative figures

- No traffic data-sets are fully comprehensive

- Not all IXPs have and/or publish traffic statistics

- Inconsistent accounting of traffic statistics

- Some samples include significant transit traffic

Traffic

African IXPs: Peak Traffic - Distribution in 2018 (in Gbps)
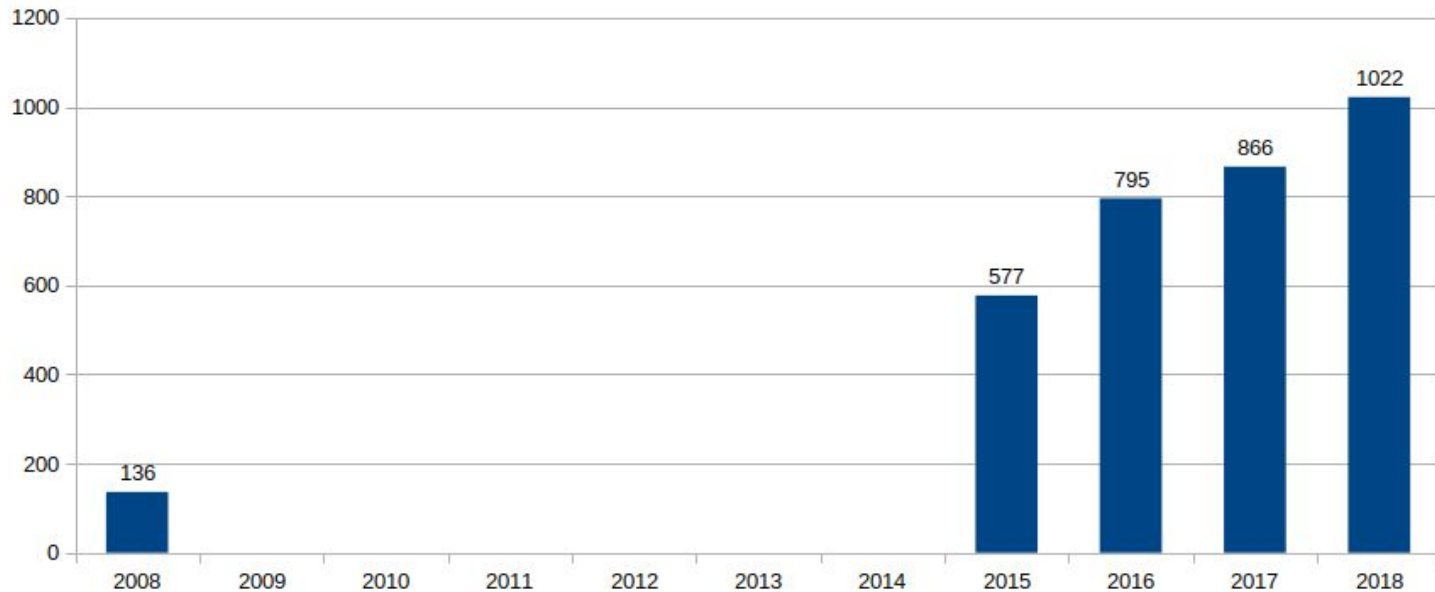
Source: African IXP Association (2019)

- Nearly universal growth, but uneven distribution

- Largest was ~480G

- Approximately half carry less than 1 Gbps
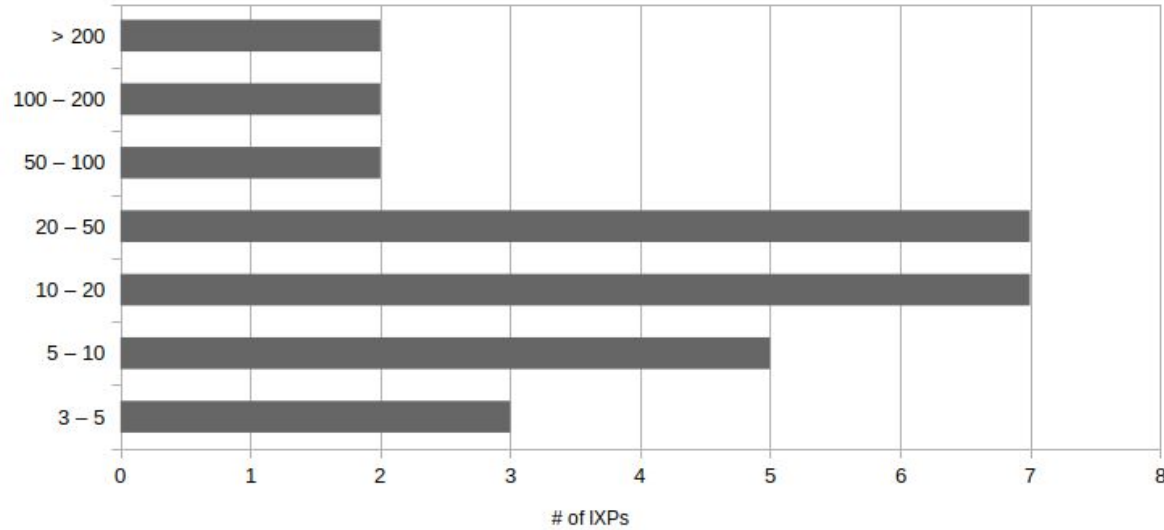
Connections

African IXPs: Network Connections

Source: African IXP Association (2019)

Connections

African IXPs: Network Connections - Distribution in 2018

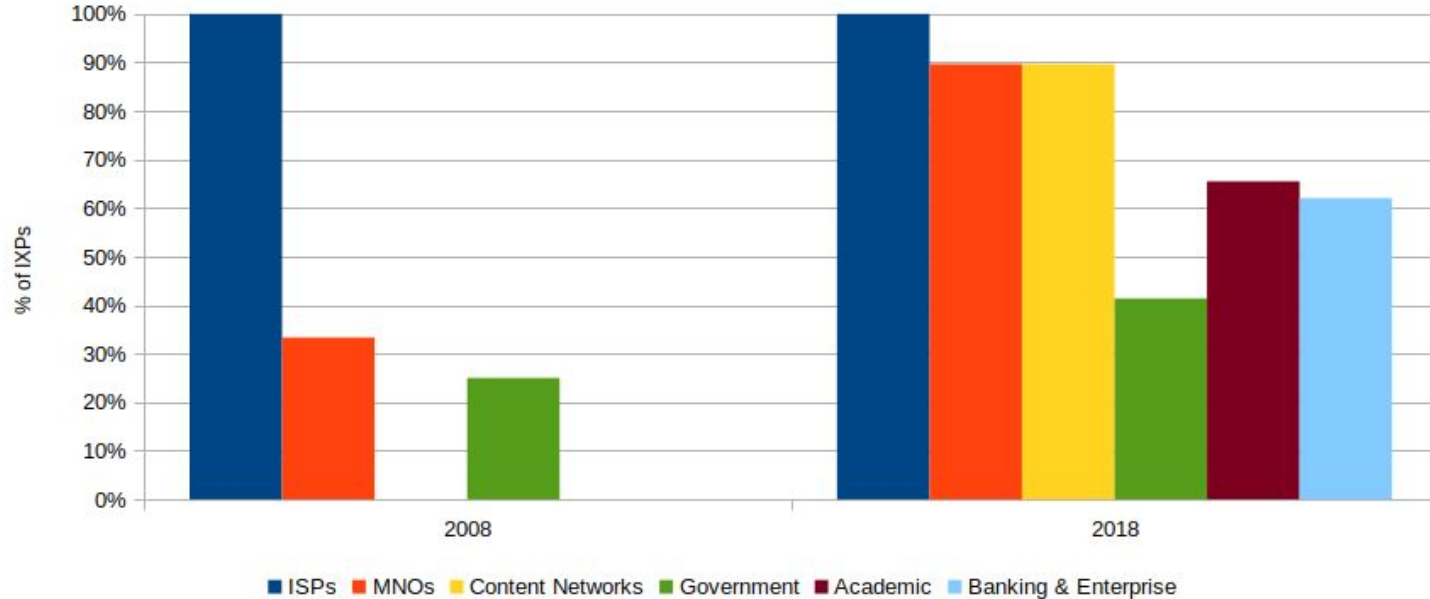Source: African IXP Association (2019)

- Nearly universal growth, but uneven distribution

- Largest had 302

- Approximately half had between 10 - 50

Membership Composition

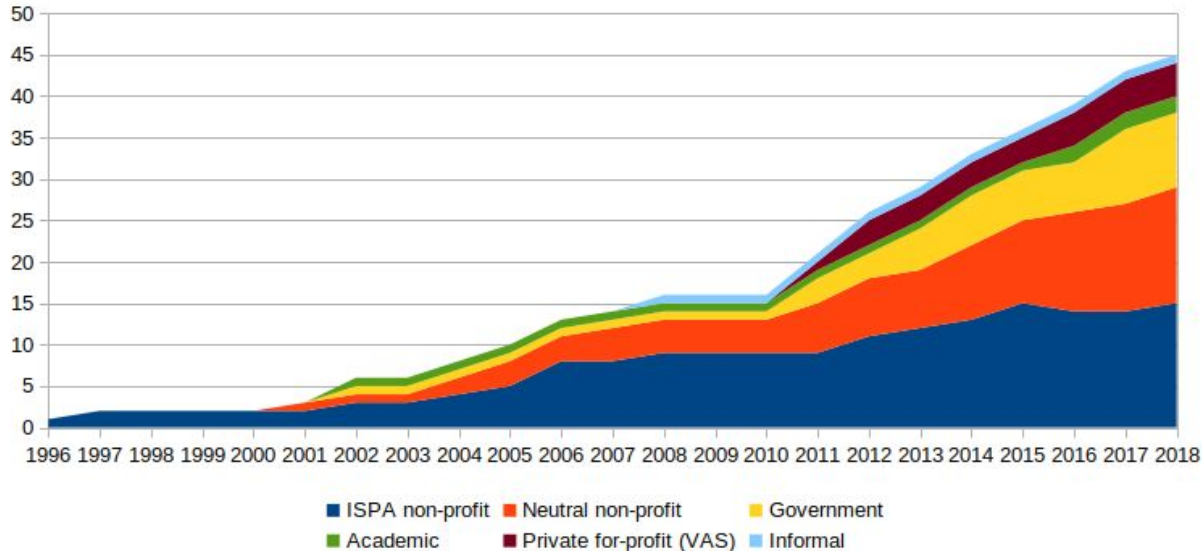African IXPs: Regional Membership Composition

Source: African IXP Association (2019)

Legend: ISPs, MNOs, Content Networks, Government, Academic, Banking & Enterprise

Models

African IXPs: Governing Entity Types

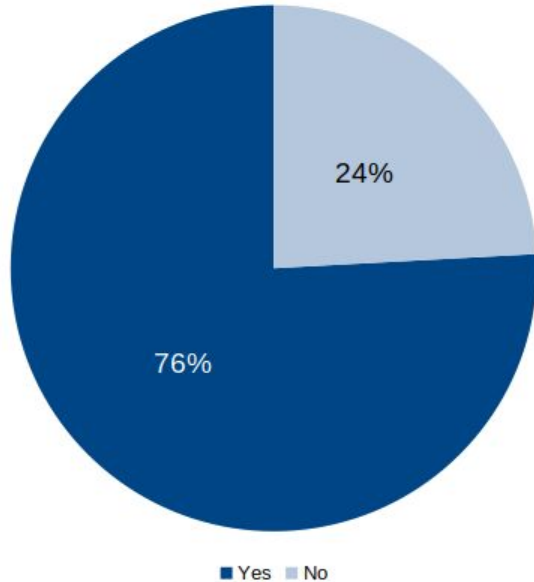Source: African IXP Association (2019)

- Government IXPs had lowest average annual growth rates:

  - 91 Mbps
  - 1 network

- For-profit IXPs had the highest average annual growth rates:
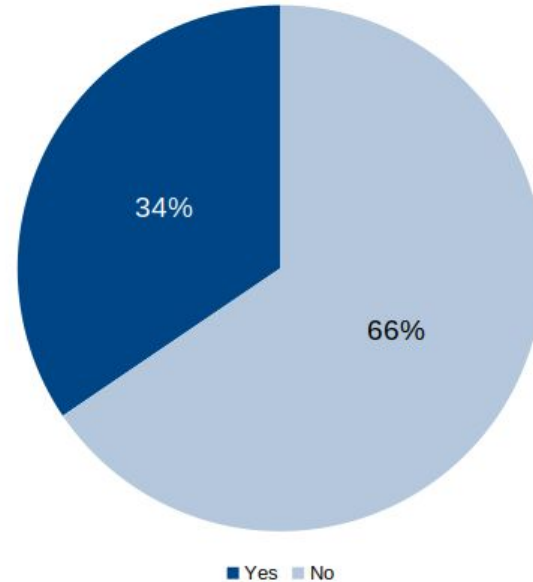
  - 20 Gbps
  - 19 networks

Contracts

African IXPs: Formal Contract Required to Join?

Source: African IXP Association (2019)

24%

76%

■ Yes ■ No

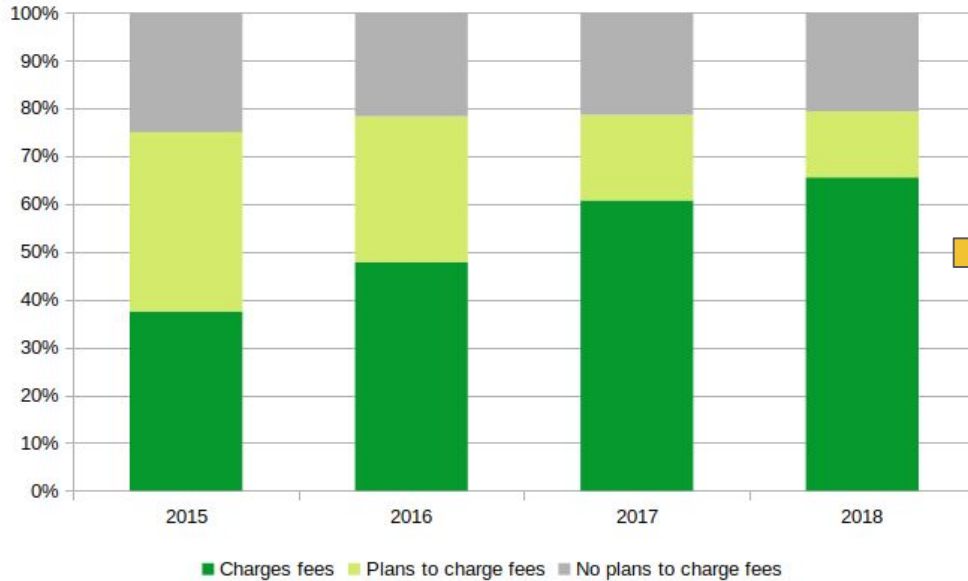## African IXPs: Service Level Agreement Offered?
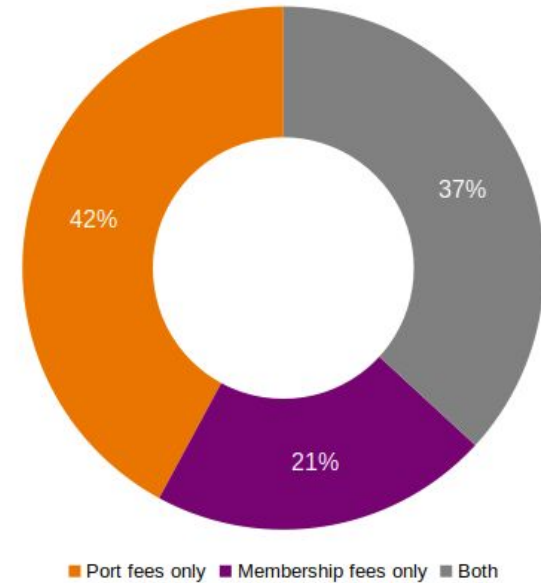
Source: African IXP Association (2019)

34%

66%

■ Yes ■ No

Service Fees

African IXPs: Service Fees

Source: African IXP Association (2019)

Charges fees ■ Plans to charge fees ■ No plans to charge fees

African IXPs: Service Fees by Type in 2018

Source: African IXP Association (2019)

42%
37%
21%

■ Port fees only ■ Membership fees only ■ Both
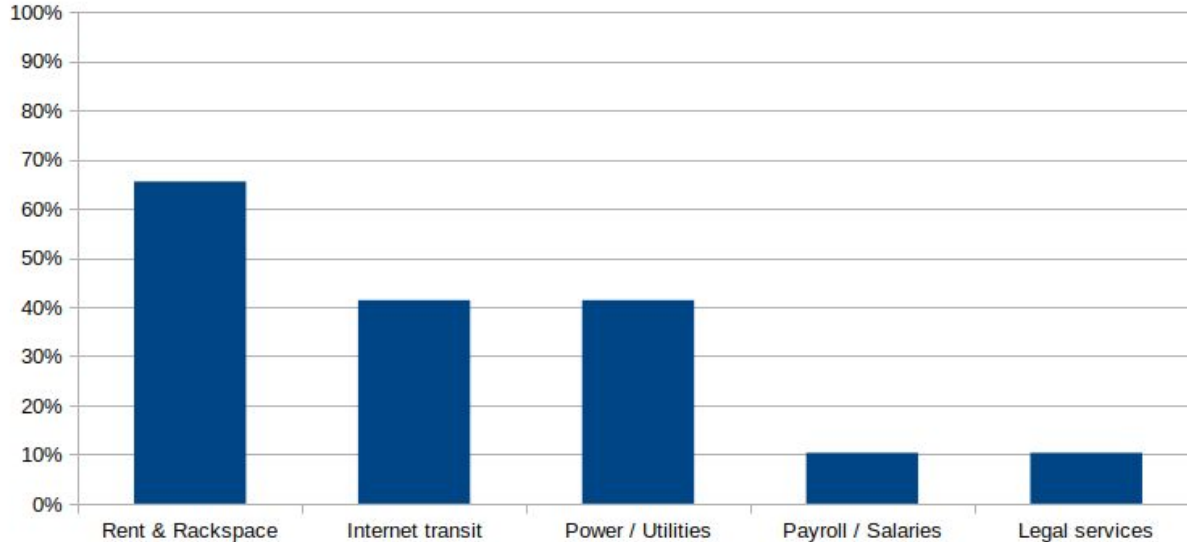
Donations

African IXPs: % of IXPs w/ Recurring Donations (2018)

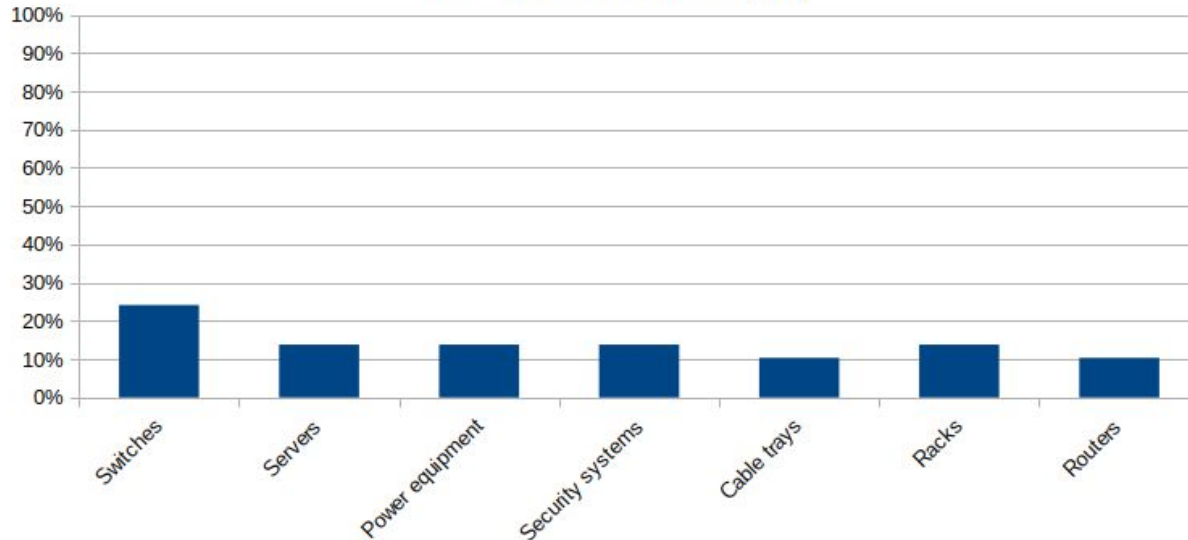Source: African IXP Association (2019)

- 59% of IXPs receive recurring donations

- 41% of IXPs have received a hardware donation in the last 12 months

- 21% of IXPs have received grant funding in the last 12 months

Donations

African IXPs: % of IXPs w/ Donations in Last 12 Months (2018)

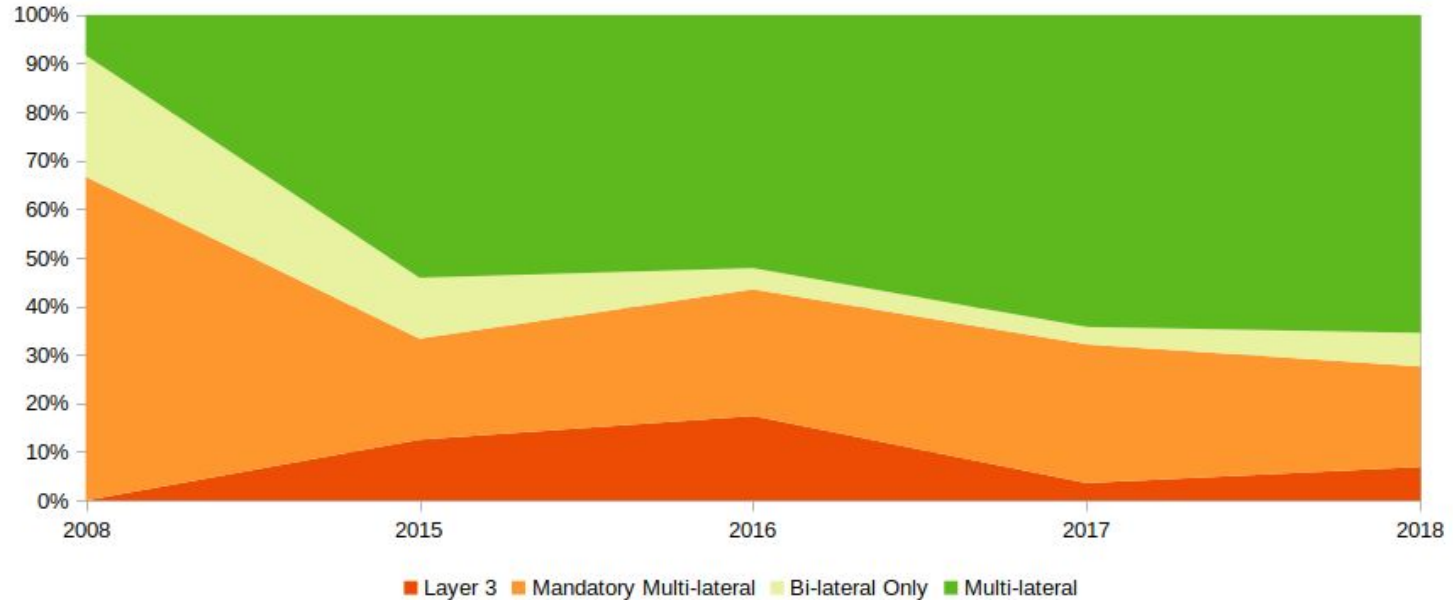Source: African IXP Association (2019)

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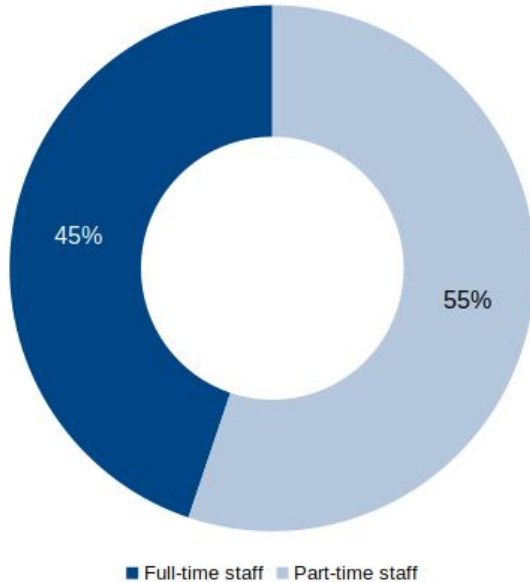
House Rules

African IXPs: Peering Environments
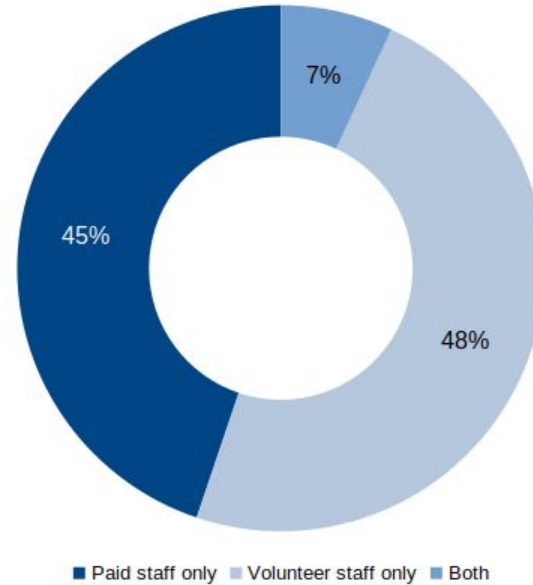
Source: African IXP Association (2019)

Staffing

African IXPs: Full or Part-time Staff in 2018

Source: African IXP Association (2019)

45% 55%

■ Full-time staff ■ Part-time staff

African IXPs: Paid and Volunteer Staffing in 2018

Source: African IXP Association (2019)

7% 45% 48%

■ Paid staff only ■ Volunteer staff only ■ Both
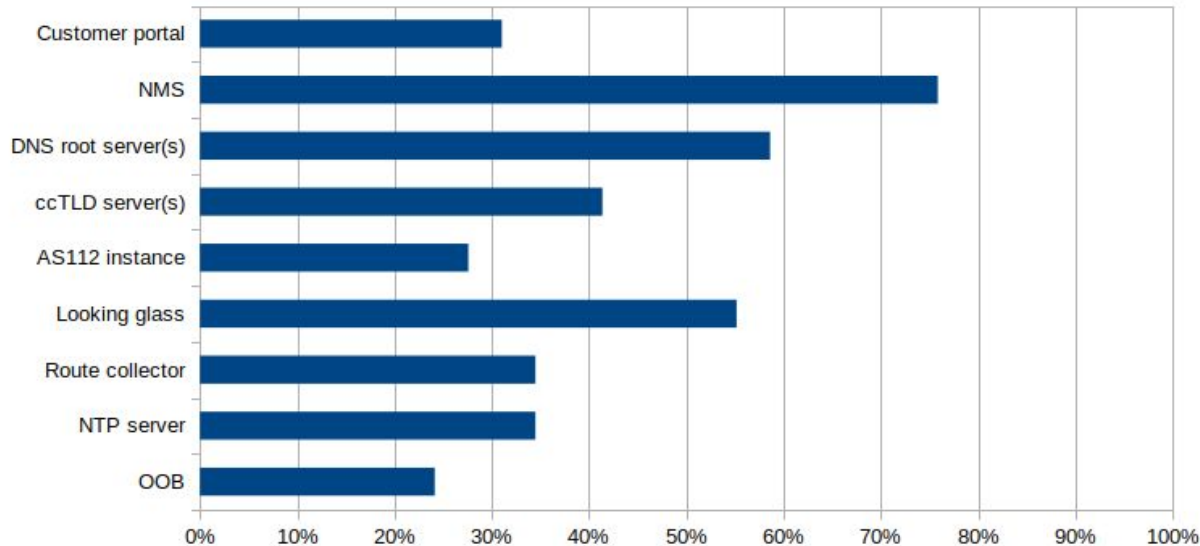
Value Added Services

African IXPs: Value Added Services in 2018

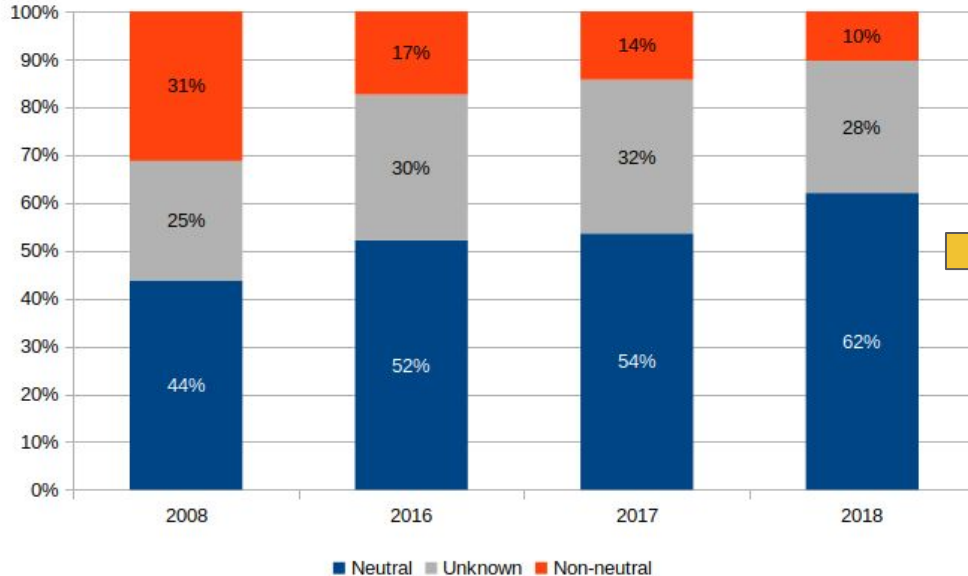Source: African IXP Association (2019)

- VAS is more common:

  66% had some in 2008
  100% reached in 2018

- More IXPs with Root DNS nodes:

  25% in 2008
  66% in in 2018

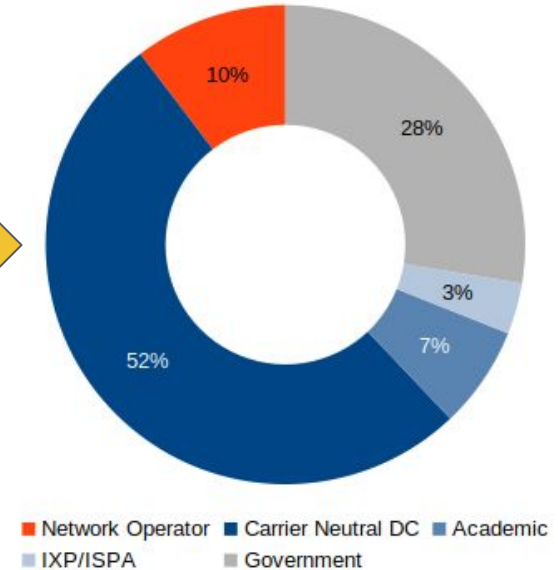- Significant growth in customer portals and automation systems

Facilities

African IXPs: Facility Neutrality

Source: African IXP Association (2019)

Neutral • Unknown • Non-neutral

African IXPs: Facility Ownership in 2018

Source: African IXP Association (2019)

Network Operator • Carrier Neutral DC • Academic • IXP/ISPA • Government
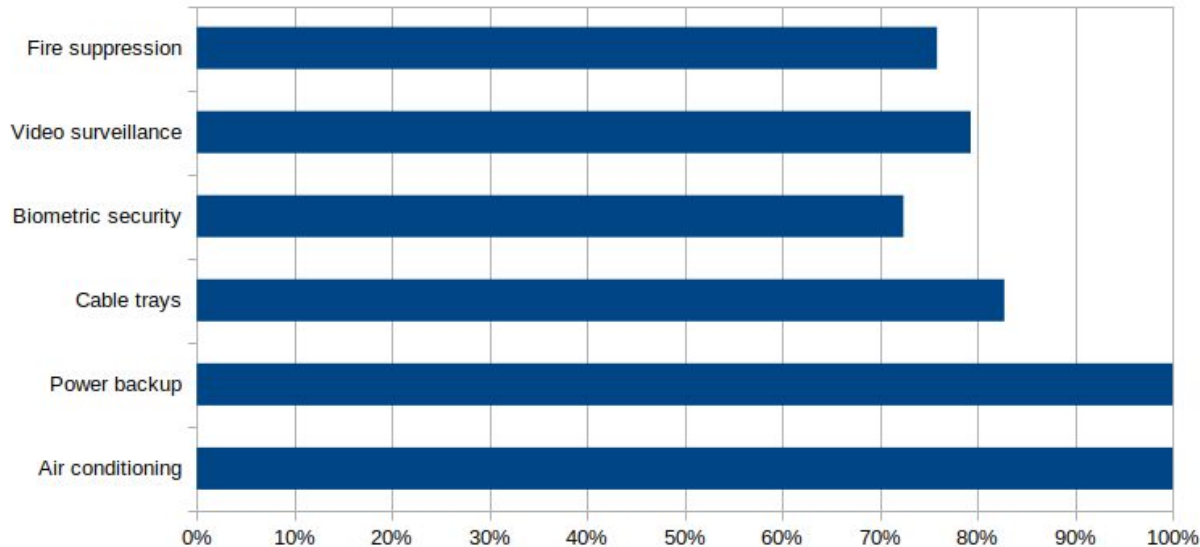
Facilities

African IXPs: Facility Amenities in 2018

Source: African IXP Association (2019)

- The average quality of IXP facilities has greatly improved in recent years

- IXPs in carrier neutral DCs had the best amenities on average

- **Reality: YMMV**

Thank you!

- Kyle Spencer
    - kyle@stormzero.com

- Visit the AFIX website
    - https://af-ix.net