State of African Interconnection & Peering

RIPE 2015

<Andrew Owens> Ripe <2015>

The Good News

- 30 Operational Exchanges in 22 countries out of 54
- Combined Peak Traffic of 52 Gbps

- Large Regional Networks e.g. Liquid Telecoms, Seacom, CMC Networks, Telkom, Internet Solutions

- Over 700 000km of terrestrial fibre
  - Reaching 40% of the population

- Multiple cables providing over 24 Tbps of landed capacity reaching major business hubs including South Africa, Kenya, Nigeria

- Neutral facilities are now a reality

- IXP community starting to work together
  - AF-IX key to this!

Regional Exchanges are a Reality

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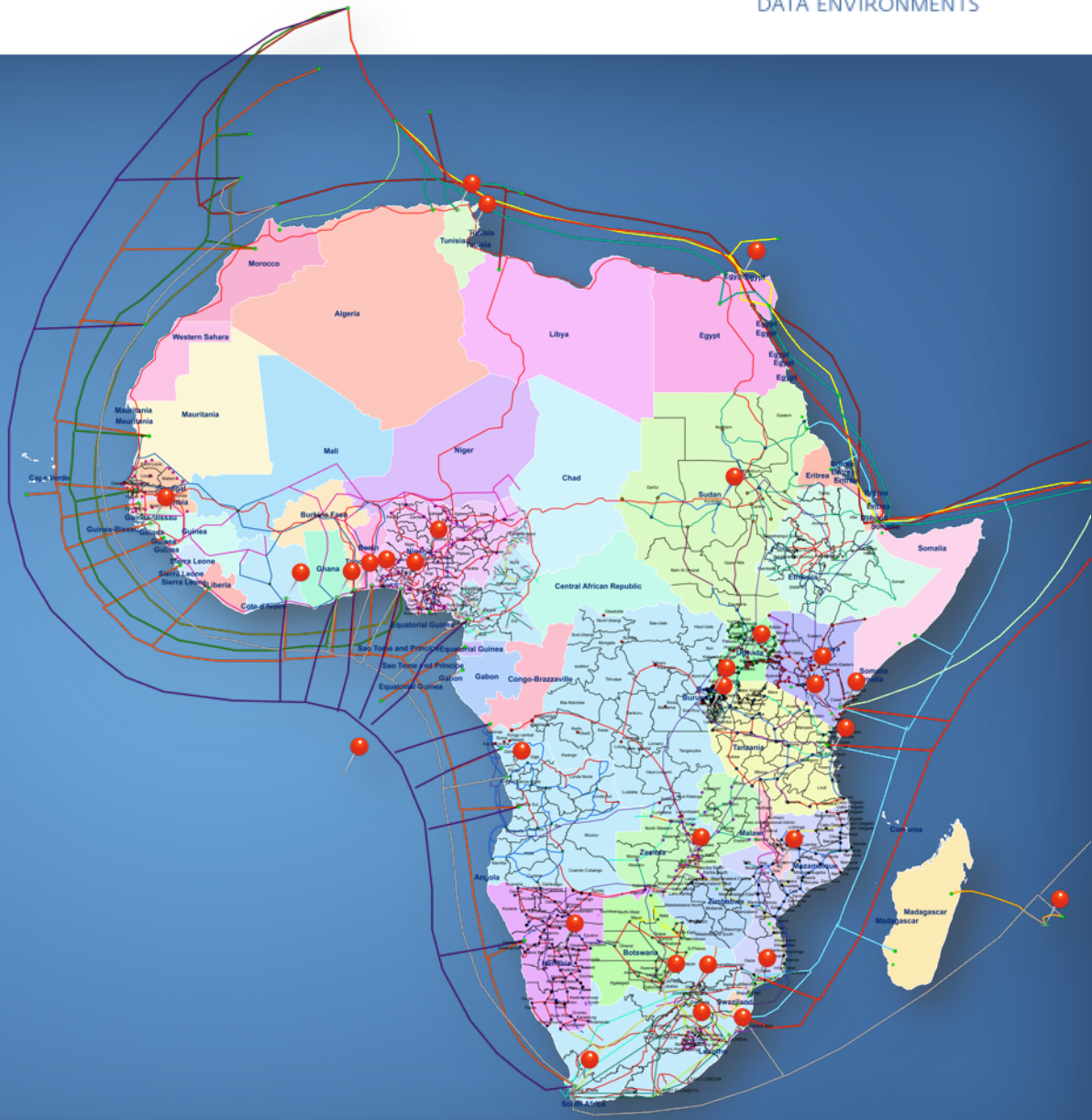
- Multiple IXP's in key hubs including South Africa, Kenya and Nigeria
- Larger traffic & members in the Capitals than at the landing stations
- Yes these exchanges are finally up and to the rights!



IXP Ownership

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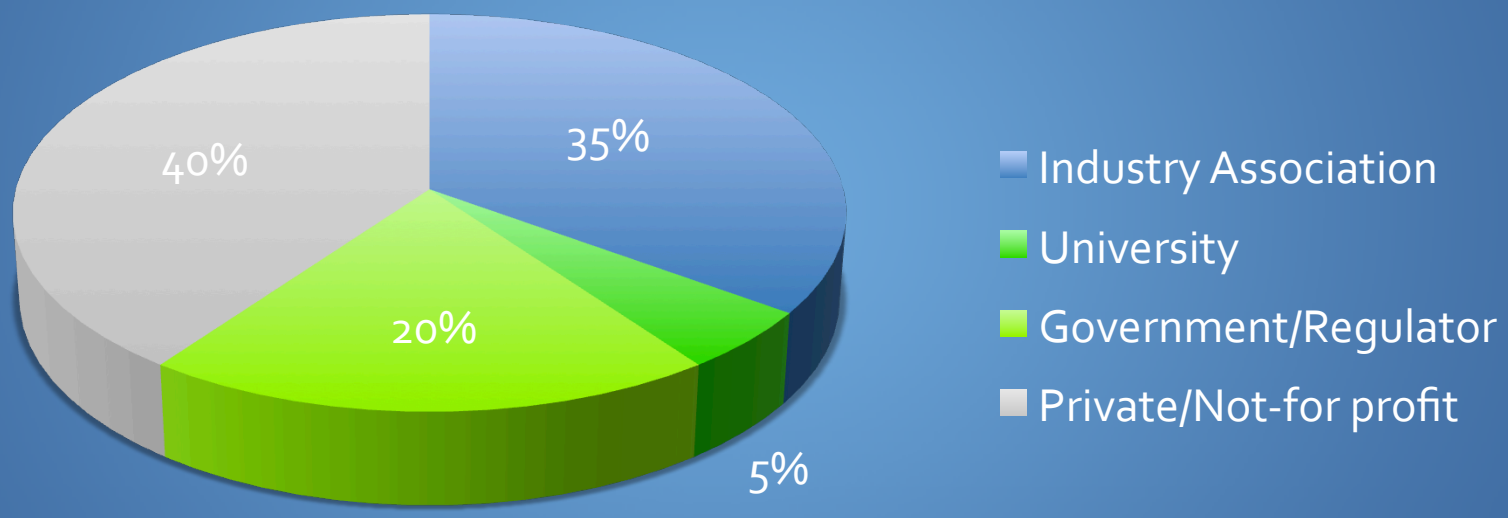
Who owns the IXPs?



Peering Options

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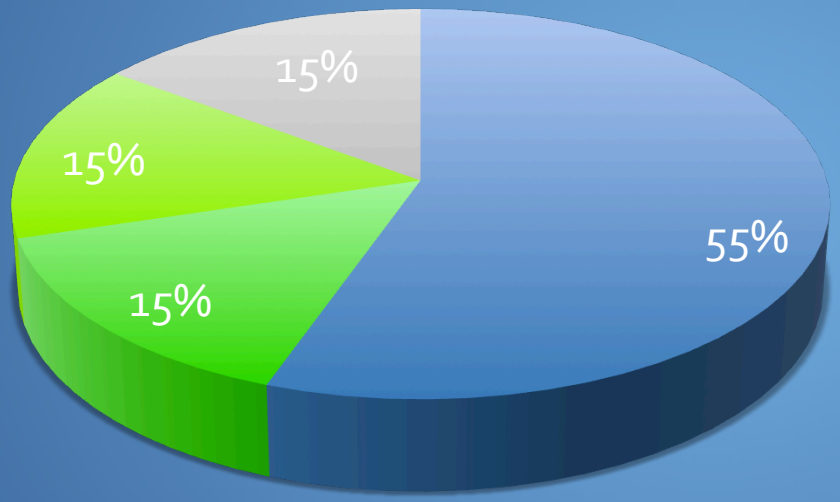
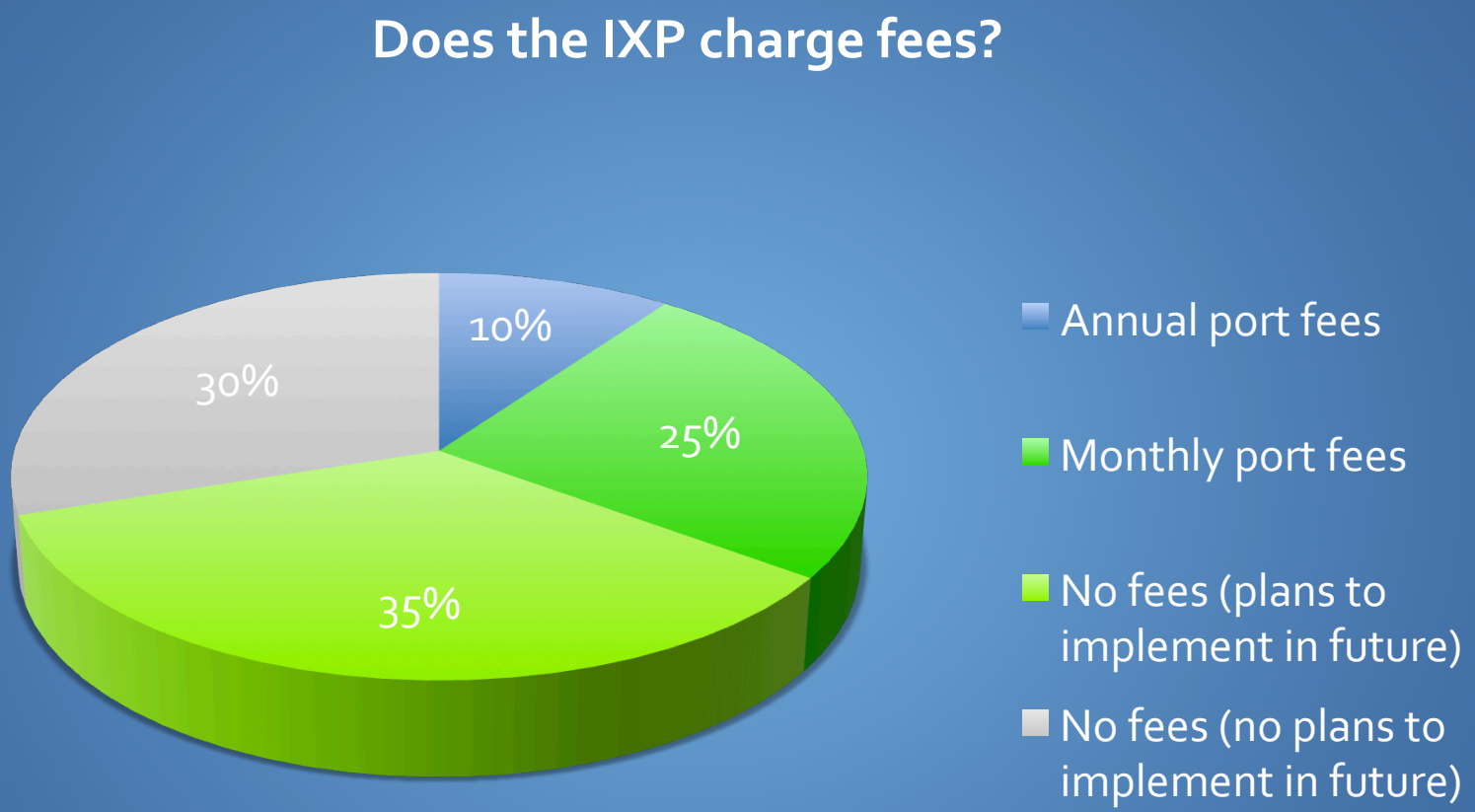
Peering Models



- Multi-lateral (route server, use not mandatory)
- Layer 3 peering (networks connect via layer 3 to IXP route server)
- Mandatory multi-lateral (all networks forced to peer openly)
- Bi-lateral (networks peer at own discretion)

Commercial Models – IXP's adding Value



The Bad....

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- Cost of bandwidth still high but dropping rapidly;
- Majority of “eye balls” do not have technical skills or assets therefore still heavily reliant on transit
- Majority of countries still operate as a monopoly managed by governments
- Limited marketplace to obtain members – new members generally need to be convinced to let go of existing transit arrangements
- Existing ASN application process very slow and expensive for new entrants
- Interconnection costs high and slow delivery in non neutral environments e.g. Djibouti $18000.00 1Gbps fibre non redundant, Nigeria $2000.00 per cross connect, Kenya $300 per cross connect
- Government involved in Regional Exchange points – Market should decide where best to peer
- Council power a limited resource e.g. Nigeria, South Africa, Kenya primarily relies on wood fuel & coal;

The Ugly…. Southern African Example

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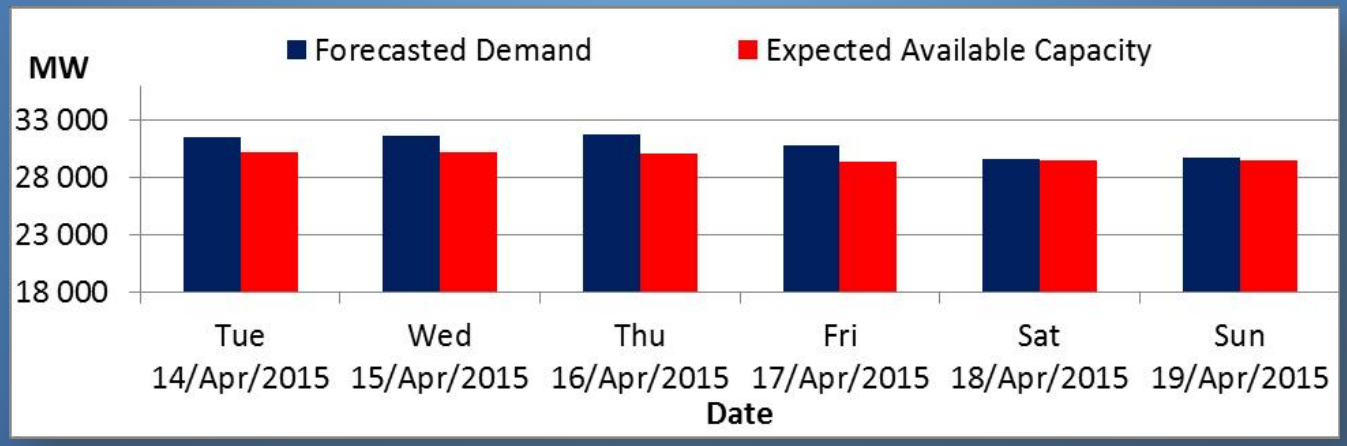
Power, Power Power……

- Eskom – Services Southern Africa Region e.g. South Africa, Swaziland, Lesotho etc.
  - Ongoing Load Shedding – No leadership and 3x over their budget
  - Two years behind maintenance e.g. Silo collapsed November 2014
  - Medupi power station was meant to go live in 2013, only at full capacity in 2018 with 6x800MW Turbines – only just meet current demand;
  - Annual power Cost of power estimated more than CPI;
  - Reality is additional Council power only ready in 2019 which can only meet current demand



The Ugly…. Kenya Example

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Already at 80% of power demand with underestimated annual growth

Load Forecasting

Projected Peak and Annual Energy Demand

	12/13	13/14	14/15	15/16	16/17	17/18	18/19	19/20	20/21	21/22	22/23
% Gth in Basic Demand	5%	6%	6%	6%	6%	6%	6%	6%	6%	6%	6%
Basic Demand(MW)	**1,354**	**1,435**	**1,521**	**1,613**	**1,709**	**1,812**	**1,921**	**2,036**	**2,158**	**2,288**	**2,425**
VISION "2030" FL. SH											
ICT Cities				10	30	40	60	80	100	120	150
Lamu Port/Lapset				10	20	30	40	50	60	80	100
Railways					10	20	30	40	60	80	100
Mining Industries					20	40	60	70	80	90	100
Other Industries				10	20	40	60	80	100	120	150
Total Demand (MW)	**1,354**	**1,435**	**1,521**	**1,643**	**1,809**	**1,982**	**2,171**	**2,356**	**2,558**	**2,778**	**3,025**
Ann. Energy (GWh)	**8,124**	**8,611**	**9,128**	**9,856**	**10,856**	**11,892**	**13,024**	**14,135**	**15,348**	**16,665**	**18,149**

Av. Annual Load Growth = 8.3%

The Ugly…. Nigeria Example

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- *Roadmap provides for 40,000MW by 2020, were 200,000MW is actually required to sustain growth*
- *Currently delivering 4,400MW which peaks at 4,517 MW with a short fall of over 1,482MW*
- *Alternative Energy is key to the survival*

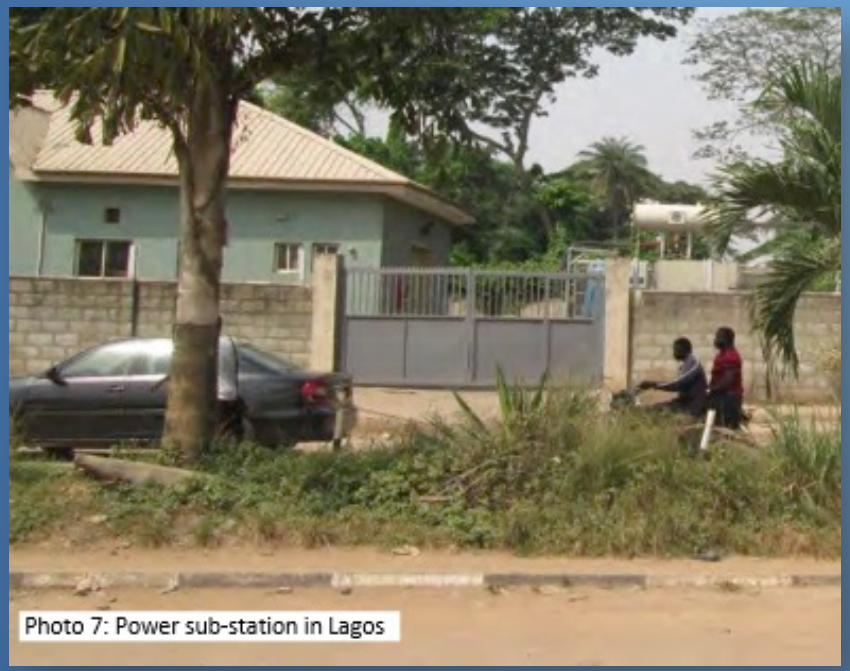

Photo 7: Power sub-station in Lagos

Photo 3: Epileptic power supply make Nigerian enterprises dependant on alternative electricity sources.

Massive opportunity but always double check

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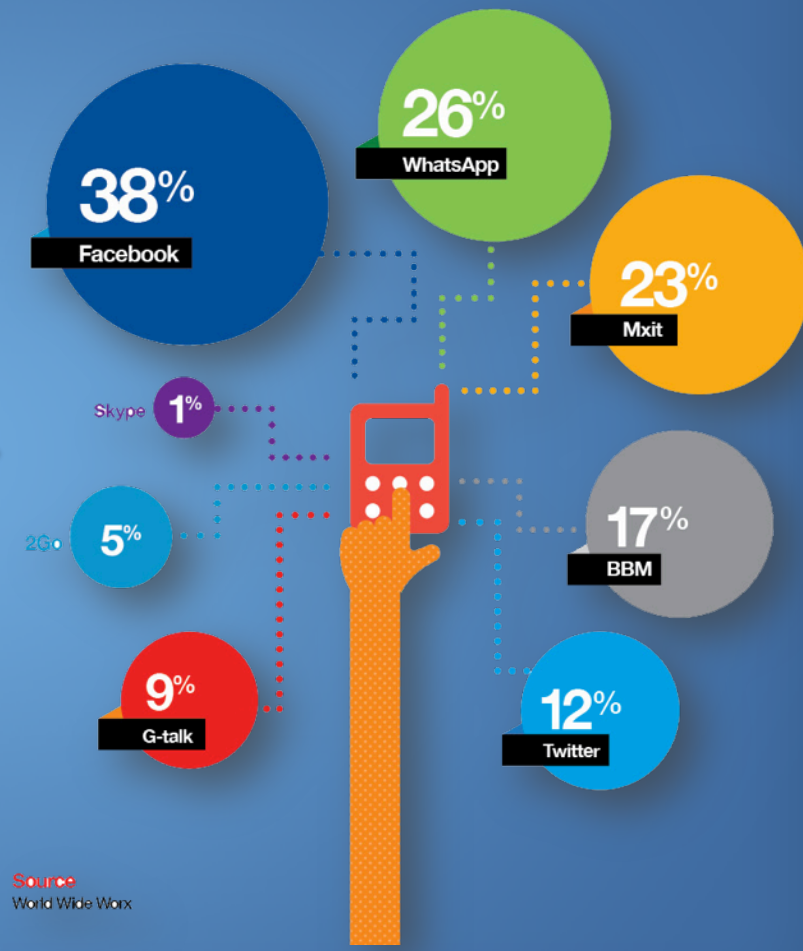
- Put your SLA to the test on power and Interconnection
- Truly Neutral Data Centres key to IXP growth
- Work together with Data Centre operators for best transport costs
- Reduced IP transit fees – innovation required



Thank you – Questions?

andrew@teraco.co.za