IXP effort in Africa

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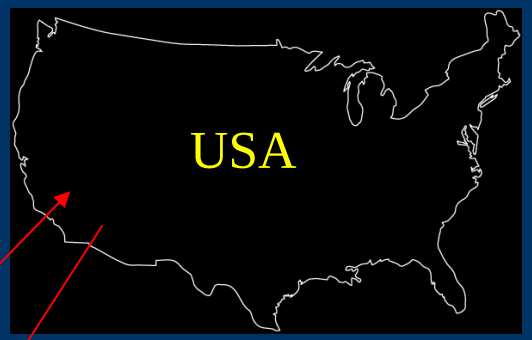
What is IXP?

- Internet Exchange Point
- Interconnection points of the Internet
- Place where ISPs come to interconnect with each other
- « Clearing House » for Internet trafic
- IXP can be considere the « ***keystones*** » of internet. ***Keystones are the critical stone in an arch that holds the entire arch in place. It is held in place by the collective pressure of the other stones in the arch.***
- IXP « Keep local trafic local »

What is IXP?

- ***KEEP LOCAL trafic LOCAL***
- ***ISPs within a region peer with each other at local exchange***
- ***No need to have traffic go overseas only to come back***



200 – 900 ms

200 - 900ms

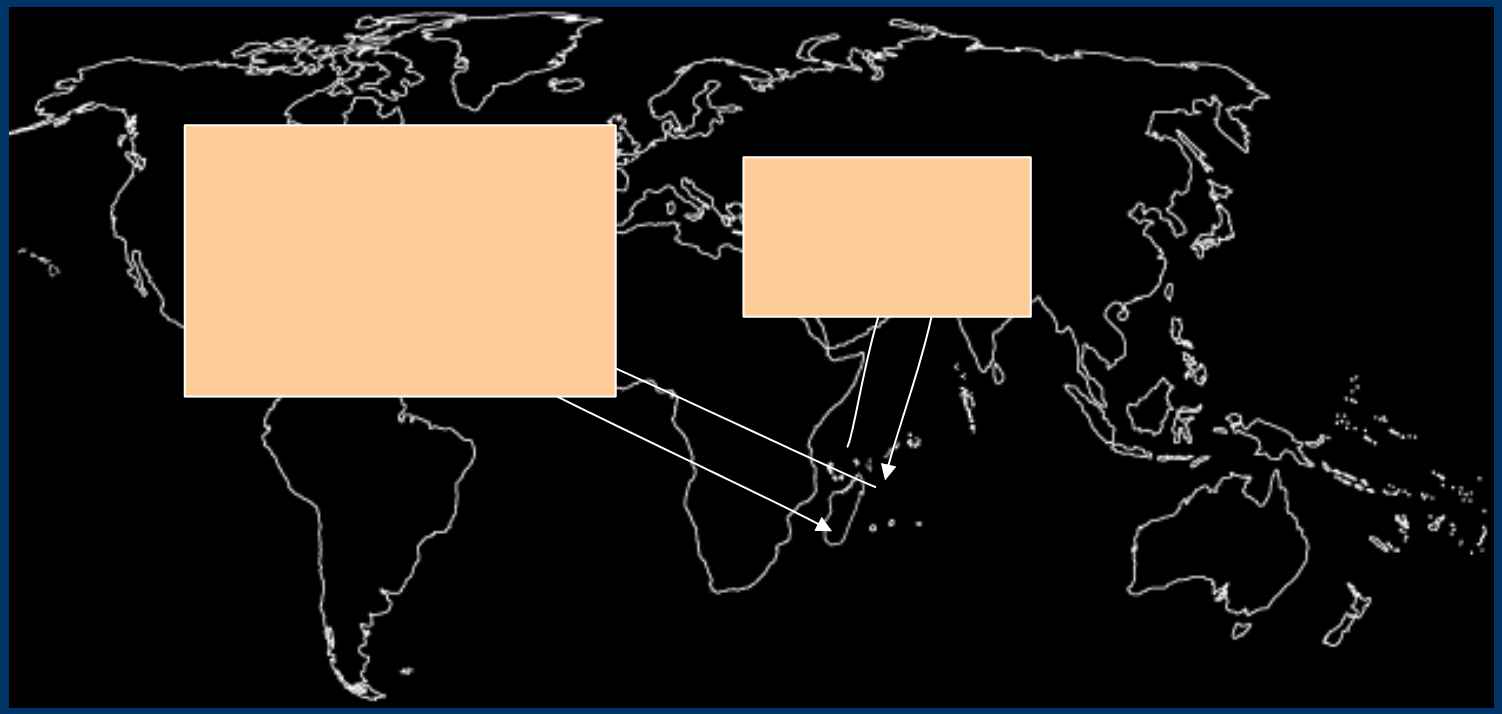
ISP A

ISP B

5 – 20 ms

IXP save money

- For many years the USA has been referred to as the "backbone" of the Internet.
- As more European countries established IXPs, some countries began using Europe for their backbone connectivity.



Benefit of IXP

- Improve quality
- Add value
- Save money
- New business and revenue opportunity

Major issues for the African Internet

- International bandwidth prices are biggest contributor to high costs
- African users effectively subsidise international transit providers!
- Fibre optic links are few and expensive → reliance on satellite connectivity
- High satellite latency → slow speed, high prices
- Growth of Internet businesses is inhibited

The solution: IXPs for Africa

- So far, 10 out of 53 countries have IXPs (2005 count)
- More IXPs → lower latency, lower costs, more usage
- Both national and regional IXPs needed
- Also needed: regional carriers, more fibre optic infrastructure investment

IXP in Africa

IXP in Africa (2)

IXP	Established	No of ISPs
Johannesburg JINX	Dec'96	15
Nairobi KIXP	Feb'02	13
Maputo MOSIX	Jul'027	
Kinshasa KINIX	Nov'02 4	
Cairo CR-IX	Dec'02	9
Ibadan IBIX	Mar'03	2
Kampala UIXP	Jul'035	
Dar es Salaam TIX	Jan'04	10
Mbabane SZIX	Jun'04	3
Kigali RINEX	Jul'046	

Obstacles

- Current providers (cable and satellite) have a lot to lose
- Many of these have close links to regulators and governments
- Regulatory regimes on the whole closed and resistant to change
- Sometimes ISPs themselves are unwilling to co-operate

IXP Set-Up Issues

- Cost? low
- Socio-Political Aspect: People Issues
- Technical Aspect: Minimal BGP Skill

Case study :South Africa, JINX

- Established in 1996
- 12 ISPs connected
- Hosted by one of ISPs, who pay to host
- Http:www.jinx.net.za

Case study: Kenya, KIXP

- Start after 6 months of efforts
- Shutdown by the regulator 10 days after
- Take 1 year and half to restart
- KIXP is run and operated by the Telecommunication Service Providers of Kenya (TESPOK). This is an association of the ISPs in Kenya
- Upstream providers are connected to IX
- Academy on the way to connect
- Telco connect on april'05
- Vodacom (offering gprs) on the way

Case study: Uganda, UIXP

- Established in 2003 after 2 years of talk bettew ISPs
- 6 ISPs connected out of 7
- http://www.uixp.co.ug/

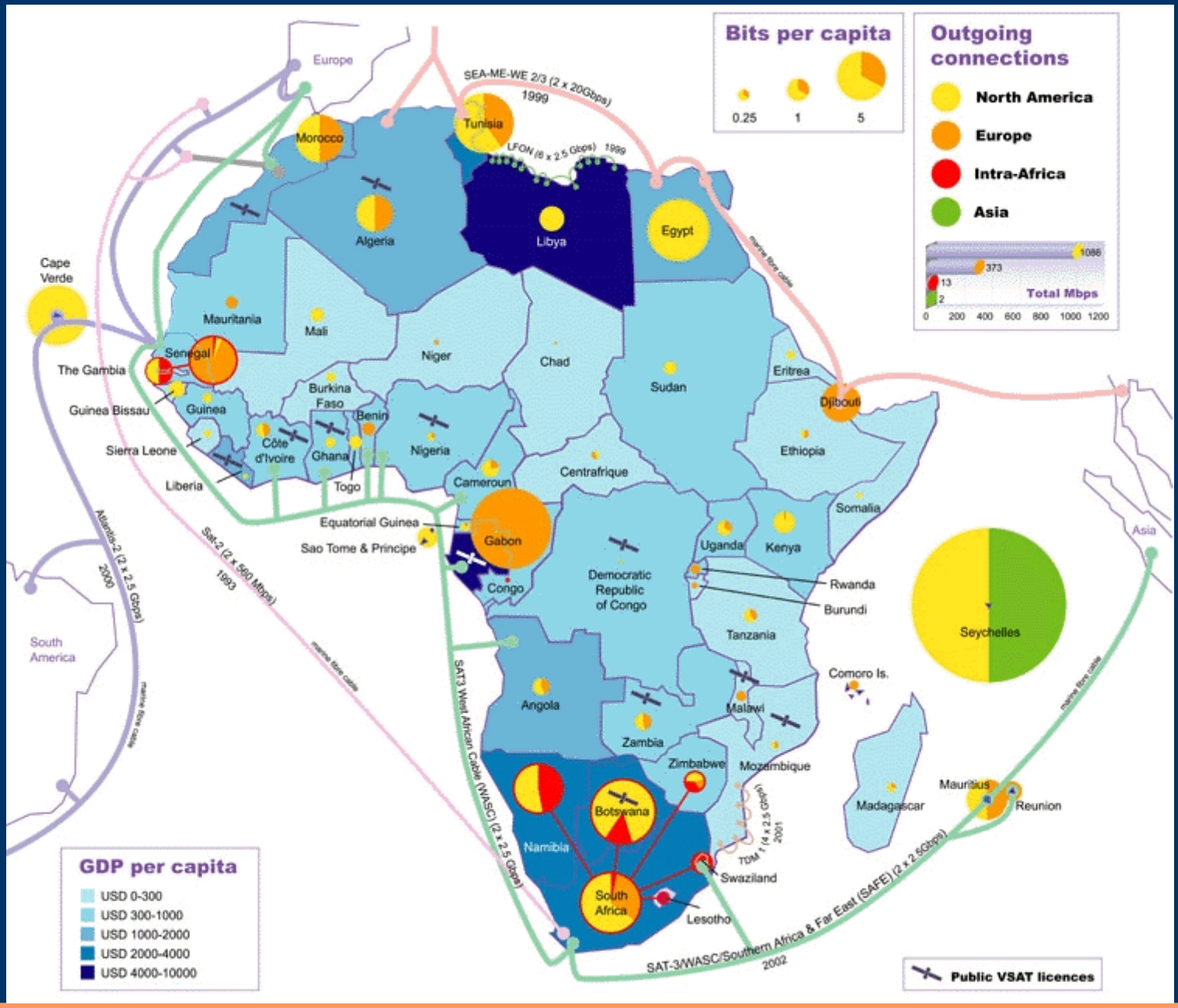
Case study: Swaziland, SZIX

- Established from Uganda experiance
- Two of Four ISPs are connected
- Telco willing to connect

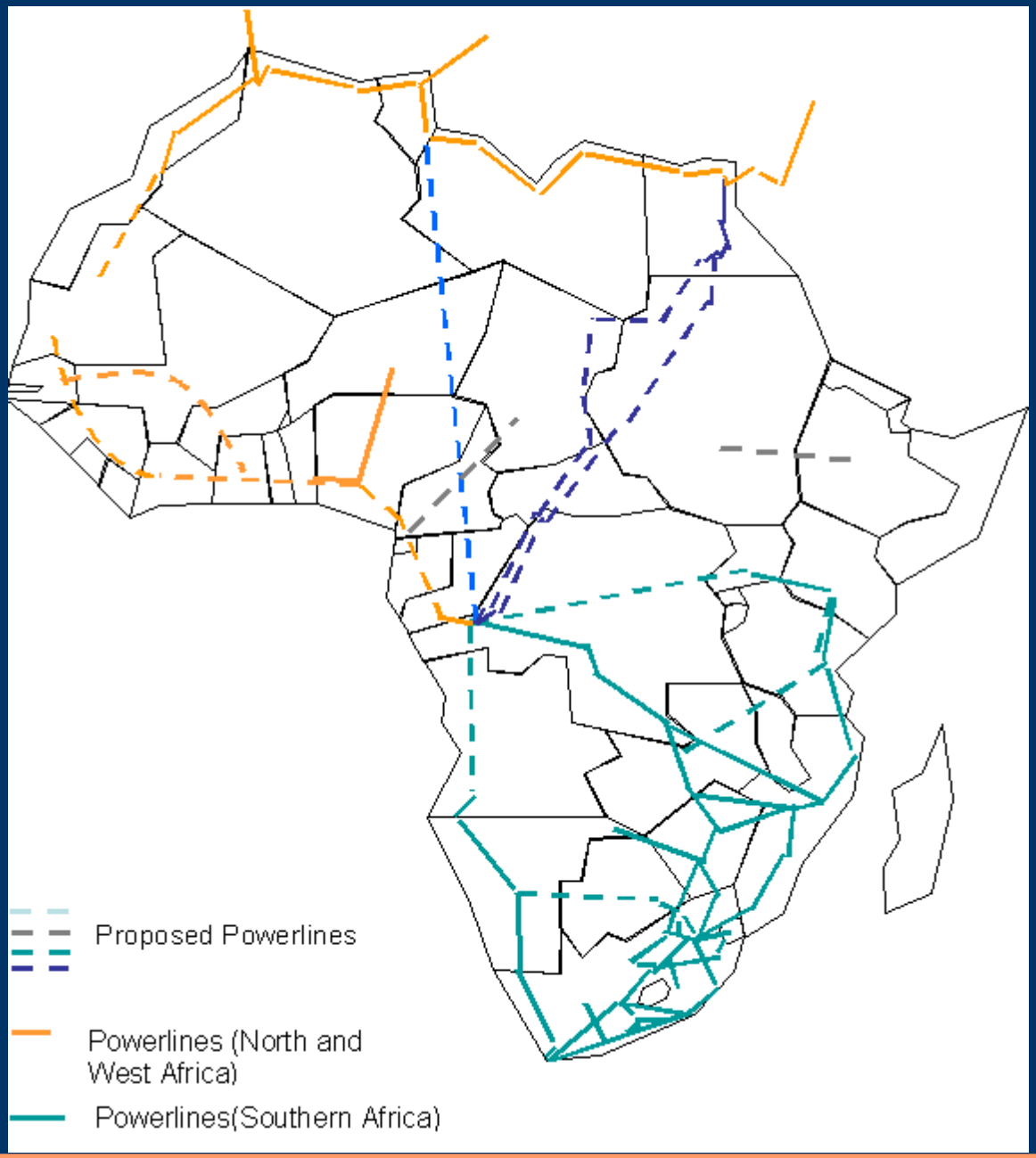
Case study: Nigeria , Ibadan

- Established in march 2003
- 2 ISPs connected out of tree
- Was suppose to be an example for Lagos
- French Governement & Nortel pushed for Lagos by offering financial support and equipement, the IXP is installed but no peering yet
- http://www.ib-ix.net/

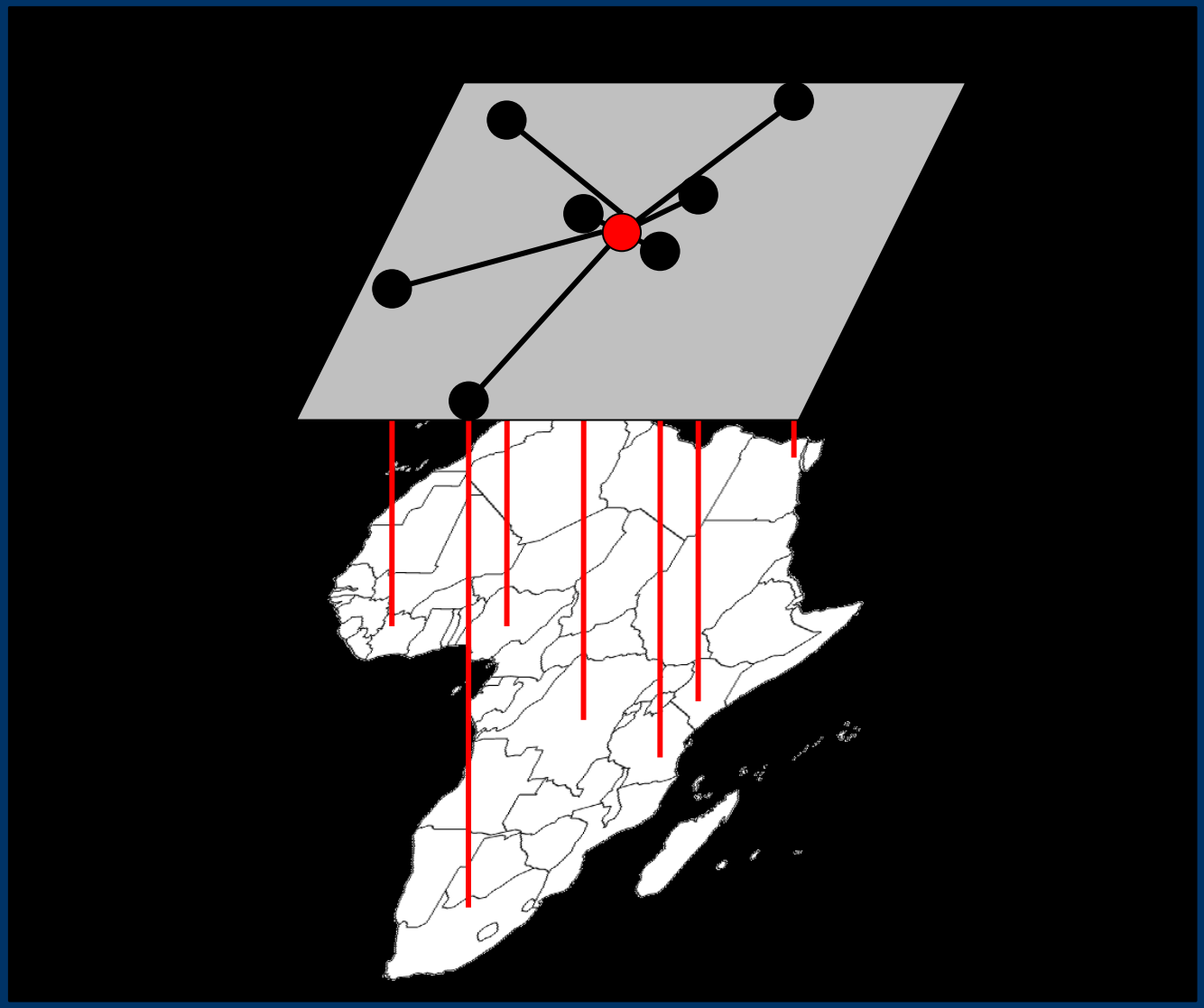
Africa Submarine fiber



Possible continental backbone



Pan African Virtual Internet Exchange - PAVIX



Usefull Links on IXP in Africa

- http://www.afrispa.org
  - Will maintain database on African IXPs and tools/resources for establishing IXPs
- http://www.afrinic.org
  - African IP Address Registry - will facilitate blocks of IP address space and ASNs for IXPs
- http://www.ep.net
  - route server and statistics resource
- http://www.nsrc.org/AFRICA/afr_ix.html

Thank you !