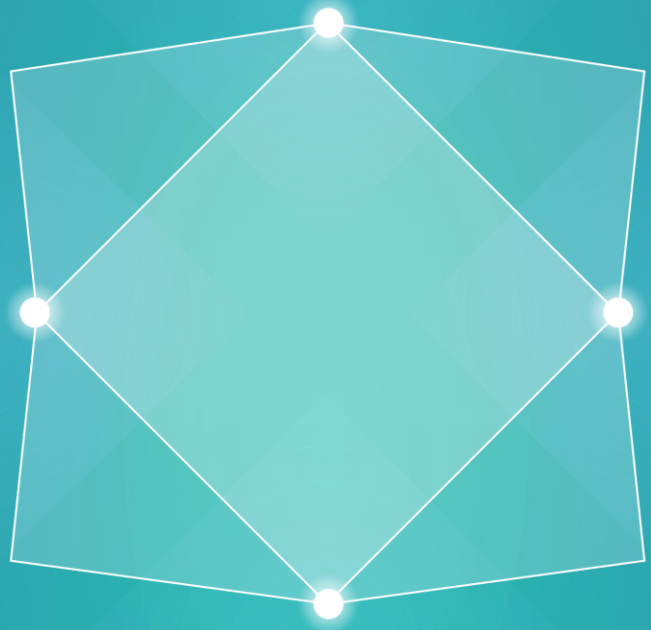
A New Interconnection Hub in East Africa

Why are LINX entering the African market and how does this benefit interconnection in Kenya?



Nurani Nimpuno
LINX Head of Global Engagement

Monday, 23 August 2022

AfPIF 2022

Agenda (1)

- LINX: Global Interconnection Hub
- LINX Strategy: Why Africa? Why Now?
- Connectivity Around Kenya
- What Can LINX Bring to Kenya?

Agenda (2)

A New Interconnection Hub in East Africa

LINX: Global Interconnection Hub

London Internet Exchange (LINX)

- Established 1994
- 950+ strong non-profit membership community
- Members from all major cloud, data communications, telecoms, financial, and enterprise networks
- Members located in more than 80 countries worldwide.

LINX Statistics

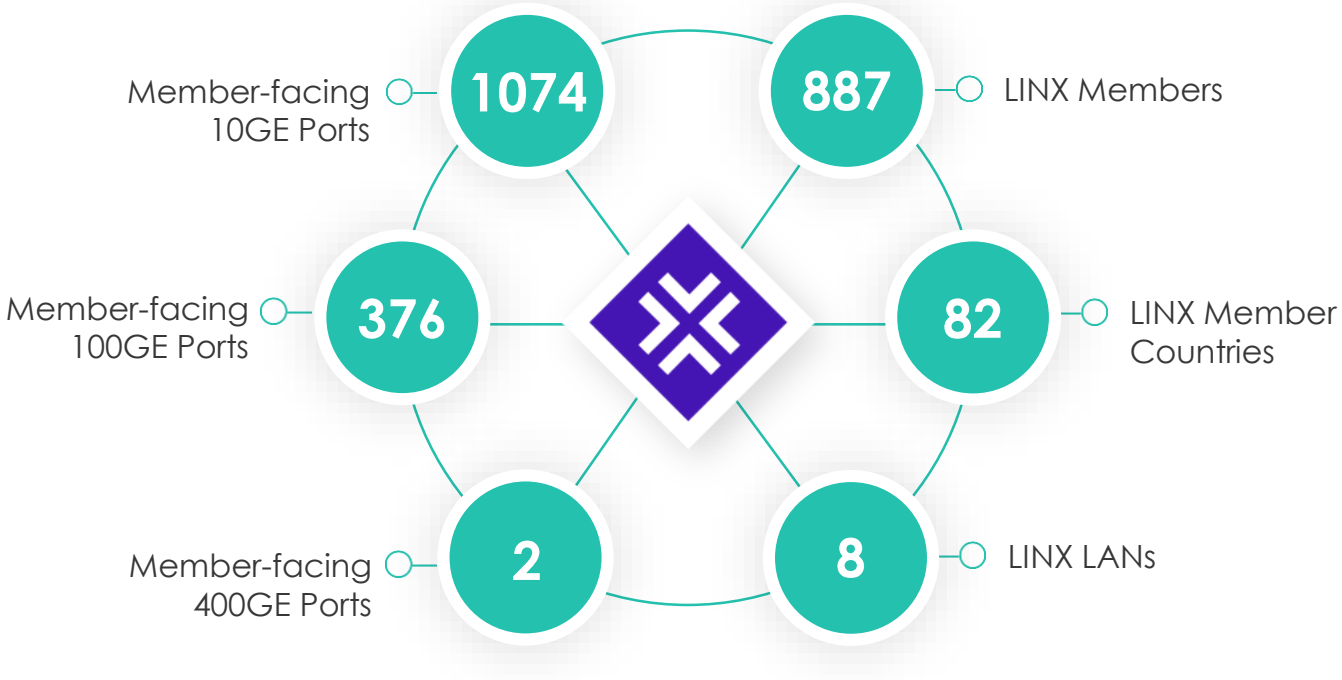
August 2022

1769
Connected Member Ports

6.271Tbps
Peak Traffic

979
Member ASNs

49.457Tb
Connected Capacity



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LINX Strategy:
Why Africa? Why Now?

LINX Strategy

- LINX is committed to exploring global partnerships and expansions into new markets in a manner that benefits the LINX members as well as the local Internet community
- LINX's commitment to "keep local traffic local"
  - The current status of Internet routes to Europe is not sustainable and does not enrich the local ecosystem
  - LINX is committed to supporting local interconnection on the continent
  - Supporting resilience, improved speeds, saved costs, and local content

LINX Strategy: Why Africa? Why Now?

- We understand that Africa is a rapidly developing market and we believe that by working together we can accelerate growth still further
- LINX has built strong relationships over the years, and have been supportive African events and local Internet initiatives
- LINX's African partners include…

This is just the Start!

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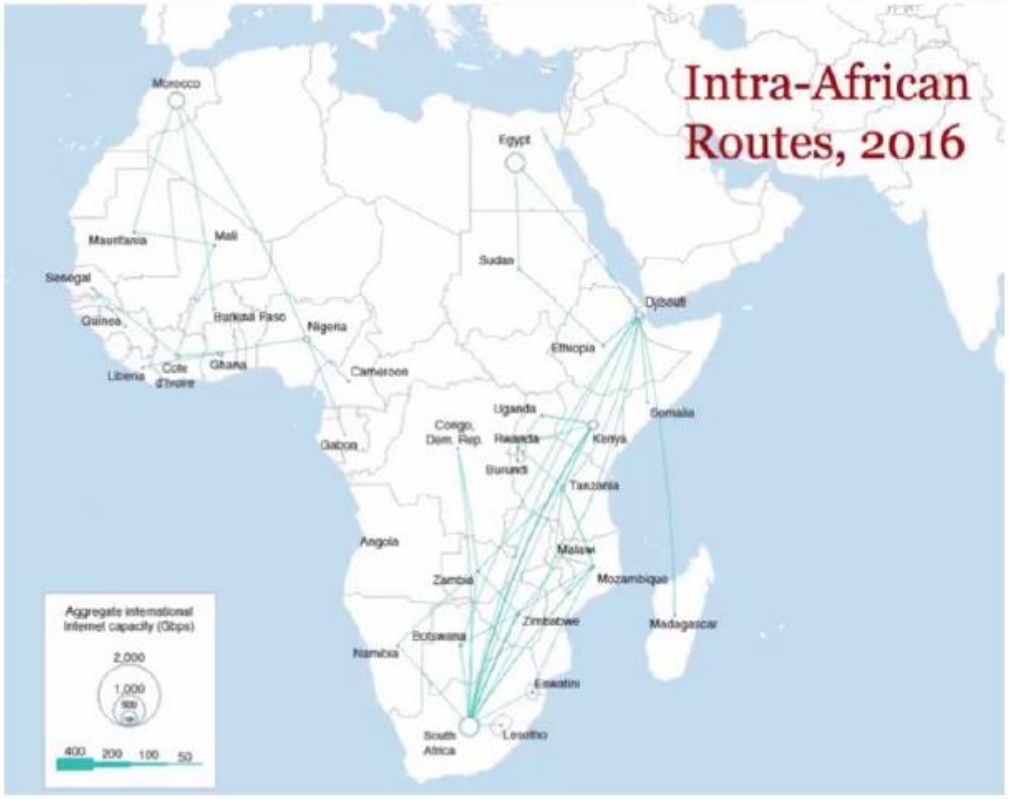
Connectivity Into and Around Kenya

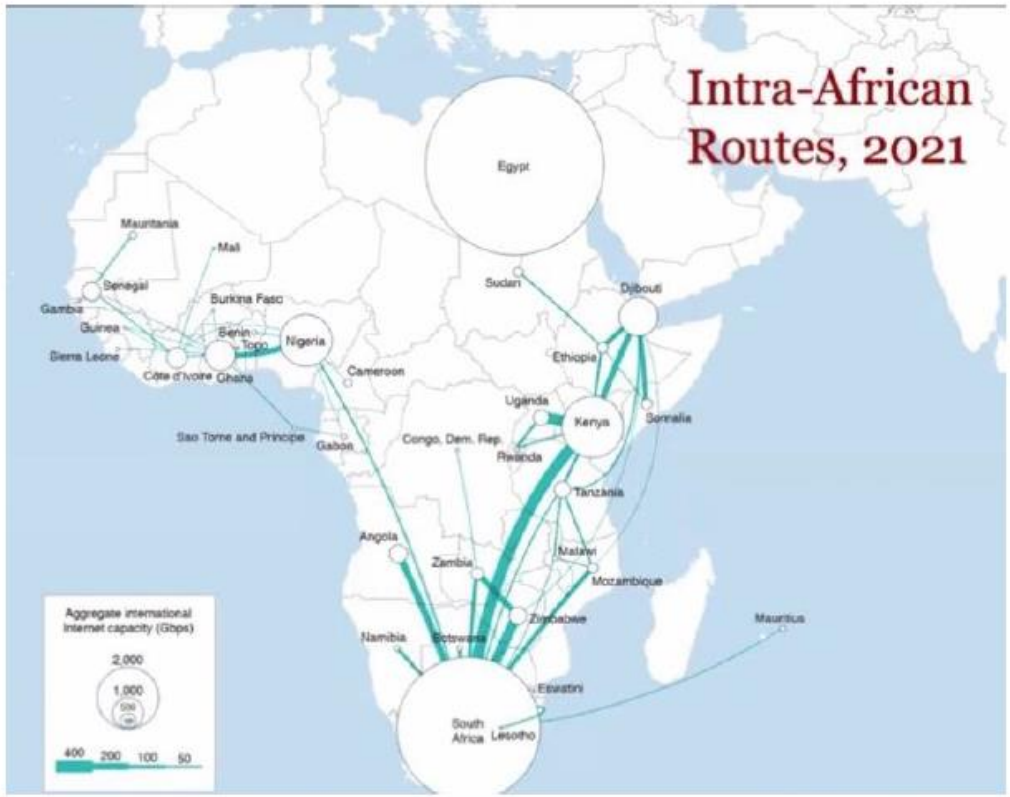
Connectivity In and Around Africa

Intra-African Routes 2021

- According to the Telegeography's presentation on cross-border connectivity in Africa, most fibre routes in Africa go between Kenya and South Africa.
- Other fibre routes between Kenya, Uganda, Rwanda, and Djibouti.
  - Uganda and Rwanda: Small, but functional IXPs in place
  - Djibouti: Four submarine cables landing in the Djibouti data centre (EASSy, EIG, and SeaMeWe-5)

Connectivity In and Around Africa





Map Sources: Telegeography

Kenya

Internet Statistics

- **Fast growing Internet**
  - **47M** Internet users
  - **89.7%** of population connected
  - **Ranked 3rd** in Africa on Internet quality
  - **151** unique ASNs in Kenya
- Huge infrastructure investments
- Several submarine cables landing on East coast in Mombasa

Kenya Country Profile

- **Kenya has identified technological innovation as one of the key pillars in its 2030 plan**
  - Nairobi is sometimes referred to as the 'Silicon Savannah' and is home to a large number of technological incubators and start-ups
  - Companies such as IBM, Microsoft, and Google have set up AI research labs in Kenya
  - Google also announced in April 2022 that they are investing in its first-ever Africa product development hub in Nairobi as part of the tech firm's Sh115.5 billion investment on the continent over the next five years
    - https://www.businessdailyafrica.com/bd/corporate/technology/google-to-opentech-hub-in-nairobi-as-part-of-sh115-5bn-3788490

Kenya Internet Ecosystem

- There is a maturing market and ecosystem in Kenya with huge potential for growth
- With IXAfrica, there will be three large data centres in Nairobi
- Several international players, cloud providers and hyperscalers have already established PoPs in Kenya, most of them in Nairobi, including:
  - Microsoft, Amazon, Meta, Google, China Mobile, HUAWEI CLOUDS, Netflix, Cloudflare, PCCW, Hurricane Electric, China Telecom.

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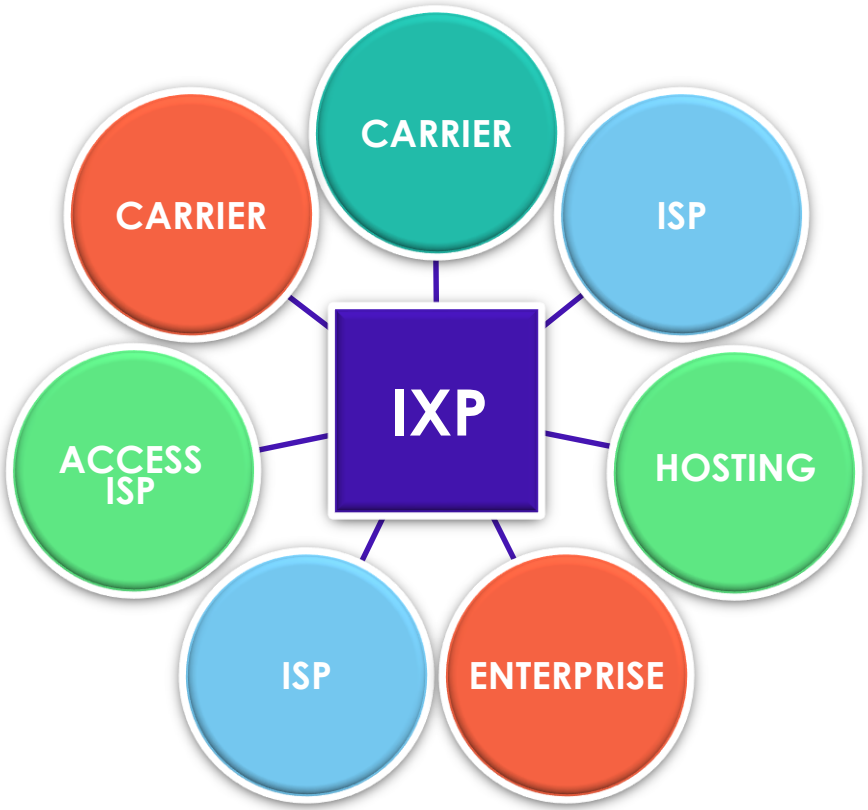
What Can LINX Bring to Kenya?

What Can LINX Bring to Kenya?

- Over 25 years of running state-of-the-art IXPs
  - Fully automated, secure
  - Portal that allows networks to order ports by the click of a button
  - IX-API
- Top class product and service portfolio
  - Peering
  - Private Interconnect
  - Cloud Connect
  - Closed User Group
  - Private VLAN
- LINX is well placed to serve the entire interconnection ecosystem in the region with a multi site IXP

IXP Ecosystem



Diversity at the IXP is **key**

- IXPs create value to its members by offering a **broad variety** of networks present
- Create **competitive edge** by offering international hyper-scalers **unique, national access networks** (and vice versa)

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Project Partner:
IXAfrica invited LINX to partner with them to help build an IXP in Kenya

IXAfrica

- Launched Q1 2022, IXAfrica has built a large hyperscale data centre in Nairobi
- Claimed to be the largest and technologically advanced digital habitat for cloud, colocation, and connectivity in East Africa
  - The facility is designed to assemble hypercloud and Internet customers
- From day one the campus featured 2 x 11 KV electrical feeders delivering 2 x 4 MVA
  - A 66 KV substation planned to deliver 2X40MVA

IXAfrica

- The IXAfrica ambition is to become the largest data centre in East Africa, offering power and space beyond any other in Kenya, and the wider region
  - Target customers are large, international and Chinese hypercloud companies
  - large international players into Nairobi and grow the market significantly in Kenya and beyond
  - Executive team's experience with IXPs in past ventures, means they are well placed to attract, as well as retain customers, at their data centre

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Technical Solution and Services

Technical Solution

- LINX will be providing a modern IXP solution, based on the LON2 design in London
  - Fully redundant, well-tested
- A multi-site IXP enabling high performance interconnection in Nairobi
- A Nokia solution currently in proof-of-concept final tests for Nairobi
  - Nokia has been a strong partner in LINX's 400GE roll-out
    - https://www.linx.net/news/the-road-to-400ge/

Services & Products Provided

- LINX are looking to offer its full range of peering and interconnection services from launch including:
  - Reseller programme targeting customers who want to peer in Kenya building and expanding on LINX's existing ConneXions programme
- Creating an East African hub
  - LINX will serve the entire Kenyan ecosystem, and build an East African hub
  - Building on LINX's well developed ConneXions partner programme
  - Supporting interconnection in the entire East Africa
  - Work with partner IXPs in the East Africa
- A state-of-the-art, modern, high capacity multi-site IXP
  - Interconnecting data centres in Nairobi
  - Full range of interconnection services

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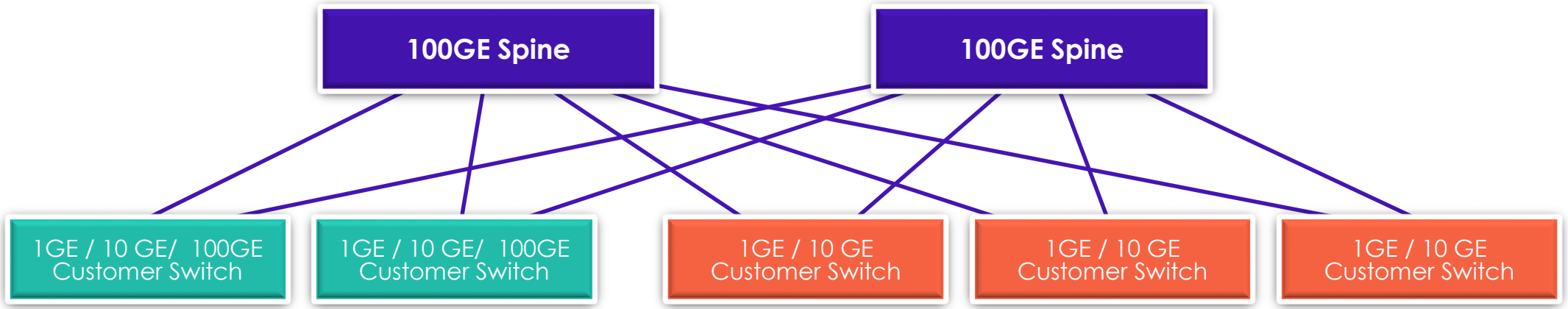
Network Design

Network Design

- The proposed design will be based on a Leaf and Spine architecture
- In this architecture the customers connect to the leaf switches with the spine switches providing the interconnect between the leaf switches
  - The advantage with this architecture over a traditional ring based or mesh architecture is that it scales better and at a lower cost
  - The architecture also makes the cost of adding additional datacentres in the future lower

Network Design

- Customer switches are split into two classes, one for 100GE customers and one for 1/10GE customers



Ability to Offer Diverse Customer Connections

Example Leaf and Spine Architecture

Network Design

- The proposed architecture also includes an option for providing redundant connections to the IXP which protects against switch failures and maintenances
  - This is often a requirement for larger networks and content providers to connect to an IXP
- The 1/10GE customer speeds enabled on 100GE capable switches
  - Future-proofing and flexibility
  - 100GE ports broken out to 4 x 10 GE
  - Rate limited ports to enable 1 – 5 GE connections on each 10GE
  - The switches will not support 100Mbps connections

Coming Q4 2022

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Work With Us!

Work With Us

LINX has a range of interconnection partner initatives

- ConneXions Reseller Partner Programme
- Network Build Model
  - **LINX Nairobi, NoVA**
- Managed IXP Service
  - **JEDIX** (**Riyadh-IX** & **Dammam-IX**) and **ManxIX**
- IXP Reseller Programme
  - **NYIIX**, **JPIX** and **Namex**

“Please talk to us! Let’s ways to cooperate!”

linx

Questions

Thank You

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