



# CEO Update



**Kurt Erik Lindqvist**  
CEO

Wednesday 20<sup>th</sup> November 2024  
LINX123



**Update since last**

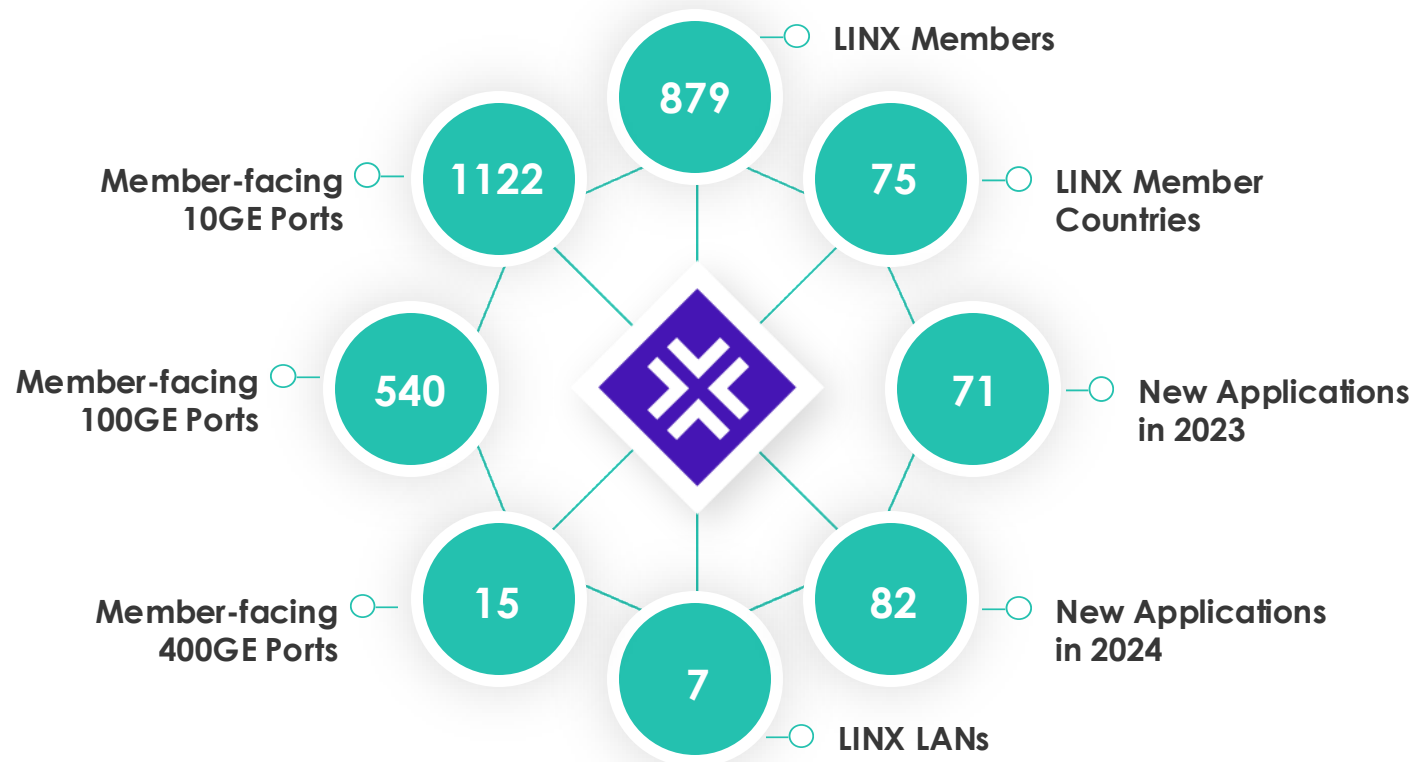


# LINX Statistics

6th November 2024

**1767**  
Connected Member Ports

**10.841Tbps**  
Peak Traffic



**889**  
Member ASNs

**71.31Tb**  
Connected Capacity





## Updates since May 2024

- Continued growth in Nairobi
- ~100% increase in peak traffic at NoVA
- ISO27001 recertification
- MAPS, Private VLANs and Closed User Groups launched in Nairobi
- Co-Organised NetUK
- Riyadh IX Live
  
- I resigned from LINX.....
- We named Jennifer Holmes as the new CEO



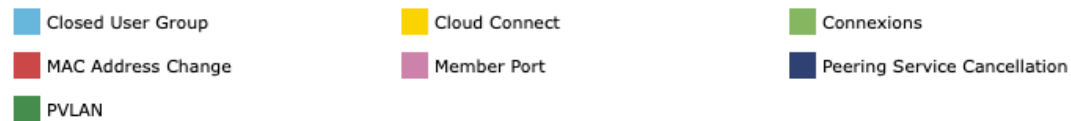
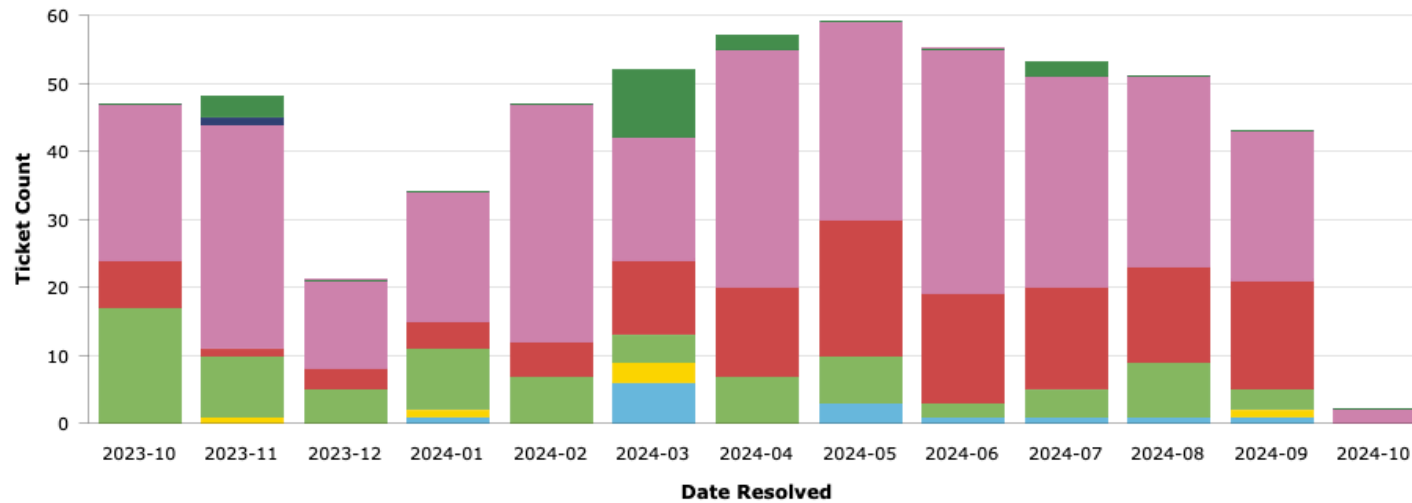


# Fulfilment

Member Self-Service



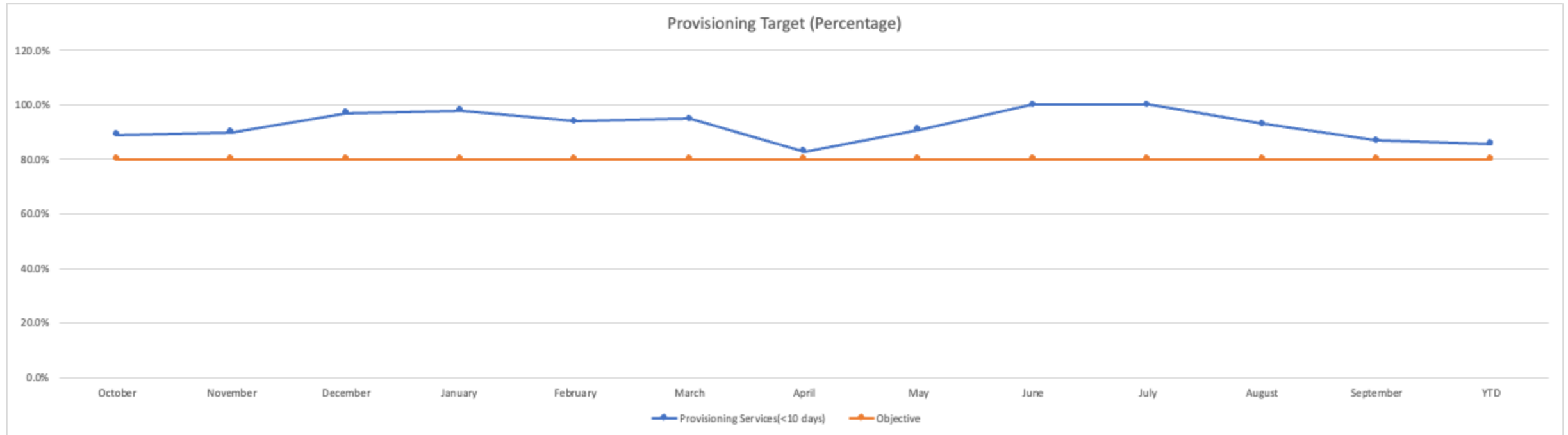
Self Service by Product/Month, Year Rolling





# Fulfilment

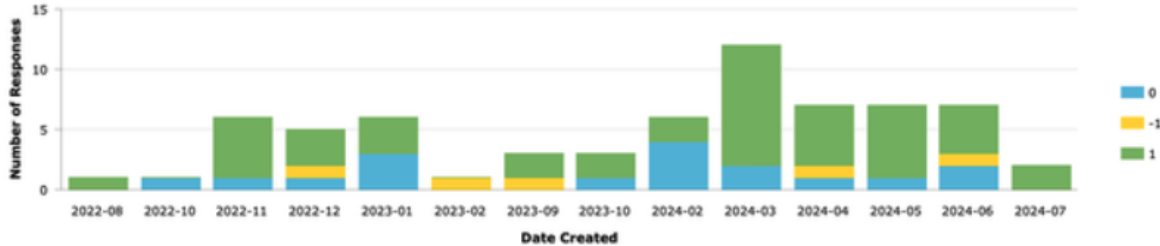
## Provisioning



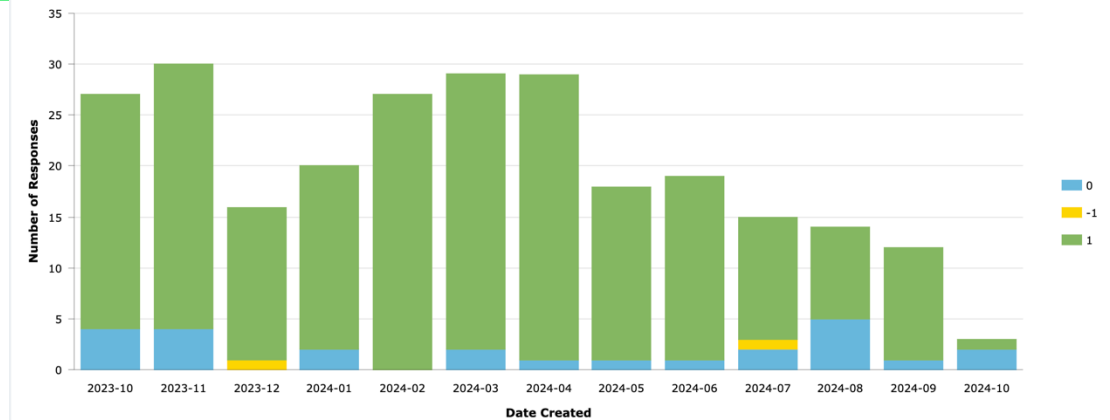


# Feedback

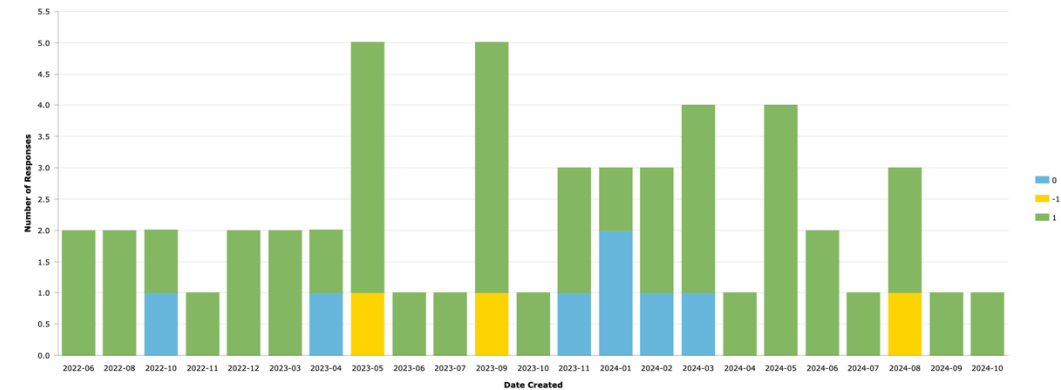
- We track feedback on all our public ticket queues
  - These are reported on monthly
  - Comments are read and published internally



Support and Provisioning Feedback in the Last 12 Months



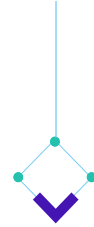
Sales Feedback (1 = Good, 0 = Ok, -1 = Not good)





## Issues with flooding and unknown unicast





## Issues reported and the MoU

- After the initial reports we validated the reports and identified in total six members whose devices were misbehaving
- Having considered the issues raised and the applicable law, our current view is that it is both lawful and technically appropriate to continue to allow unknown unicast frames to be flooded to members.
  - We also believe it is not appropriate for members to accept such traffic and retransmit it as a new broadcast.
- We managed to contact five of these but one initially was unresponsive
- We made the decision to shut down the service for the unresponsive member
- Two members relatively quickly implemented actions that resolved the issue
- Three members continued to work with us and to test resolutions on their platforms until we could confirm the issues were resolved
- The sixth member is now working with us to resolve the issue





## Issues reported and the MoU

- The MoU under clause 5.1 gives us a number of tools to deal with various possible breaches of the MoU
- What tool we use depends on:
  - The nature of the issue
  - The responsiveness of the member
  - The planned mitigation or actions of the member
- The tools range from shutting down services to membership suspension
- Before we use any of the tools, we verify what is reported to, or identified by us and this gets escalated to the SMT and potentially the board
- We generally try and work with members to resolve any issues identified





## Flooding, unknown unicast and data protection

- Following the reports and claims that the situation potentially would be a legal or regulatory breach we investigated and analyzed this.
- Having considered the issues raised and the applicable law, our current view is that it is both lawful and technically appropriate to continue to allow unknown unicast frames to be flooded to members.
- While our analysis is that the current technical setup is lawful and technically appropriate, we still believe bringing clarity to this point is important. We are notifying the Information Commissioner's Office (ICO) about the circumstances and the behaviour of peering LAN as a Ethernet broadcast domain, and inviting them to give us further guidance to ensure we remain fully compliant.





**LINX Nairobi**



## Business case process

- When an opportunity is identified the process to build a business case starts
  - Opportunities can be new DC reach, products, larger tools development or purchase, regional IXPs, partnerships, Managed IXPs etc.
- We identify stakeholders and members that would benefit from this opportunity
  - We sound these out to make sure we understand their “jobs to be done”, and that we can have a successful outcome
  - Once the value proposition is clear we build a business case
  - Including COGS, SG&A CAPEX
  - Calculating NPV, IRR
  - Is this right for LINX and LINX Members?
- Opportunities are then presented to CEO / SMT and depending on type and size, to the Board for approval





## Business case process

- Why isn't this made public?
  - The membership as per the articles have delegated the running and oversight of the company to the Board
  - Many opportunities are commercially sensitive and we would not be able to even enter into preliminary discussions without NDAs
- What member feedback is sought?
  - Many members can't or don't want to make their views public
  - May be listed companies, company policies or processes, competition issues that prevents them from speaking in public
  - Still these members will provide feedback to us in private so we seek views from a mixed set of members who we think would get value out of an opportunity





## Business case process

- If an opportunity fits with LINX's purpose and strategy we will consider it
- ***If an opportunity fits with strategy, creates value for members, has an acceptable risk associated with it, and is financially viable, then the SMT or Board usually approves the business case***
- For example: We have turned down many more requests to build an IXP than we have agreed to even explore, and even fewer have been built.
  - Some of these opportunities have been picked up by others.





## LINX Nairobi

- Setup and preparation activities for LINX Nairobi project started in late 2022 and business operation went live in November 2023
- Due to delays, shipping, company registrations, etc. the timeline in the business case doesn't exactly match reality
  - All models are wrong, some are useful
  - Over time the actuals should match the business case though
- CAPEX is so far below estimates
- COGS is running below estimates
- Initial SG&A slightly higher than estimated but run-rate lower than estimated







## LINX Nairobi

- Lower peering speeds are ahead of business case while higher speeds are slightly behind
- With the 2025 budget assumptions revenue will be slightly ahead of the business case
- Overall LINX Nairobi is following the business case as planned





## **LINX Mombasa**



## LINX Mombasa

- Target launch early 2025
- Initially available at the two iColo sites in Mombasa
- Building on the LINX Nairobi eco-system, and requests from LINX members
- Available for orders under LINX portal and existing MoU
- Same services as at our other IXPs





**LINX Accra**



## LINX Accra

- Based on member feedback and building on the success in Nairobi we have announced the establishment of LINX Accra
- Initial launch with presence in Onyx and PAIX datacentres
- Cable landings and DC investments is establishing Ghana as a West Africa connectivity hub
- Fast growing eco system and investments





## ESG at LINX



## ESG at LINX

- We are increasingly getting requests from members on ESG policies, statements and reporting
- This is likely driven by existing regulation
- We expect this to increase as more regulation come into force over the next two years





## Current ESG status

Policies

- **Environmental**

?

Reporting

- **Environmental**

None

- **Societal**

- CSR Policy
- Mission and Vision
- Good for the Internet

- **Societal**

None

- **Governance**

- UK Corporate Governance Code
- Board policies
- Authority matrix
- Board reserved powers

- **Governance**

- ~Annual Report
- ~Member meeting presentations







## **LINX Cultural values**

## Staff Cultural Values

- Excellence
- Integrity
- Passion
- Respect
- Rationality
- Transparency
- Empowerment
- Teamwork
- Flexibility



## LINX Core Values

- Excellence
- Neutrality
- Mutuality and mutual ownership
- Open membership and ethical selling
- Transparency to members



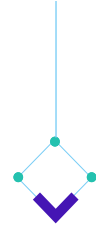


## Core Values vs Cultural Values

The Vision to strategy document outlines that:

*"In many statements of corporate governance, core values combine values that guide **external aspects** of the mission with values that guide **internal behaviour**; for clarity, ..... we have separated these into two groups, "Core Values" and "Staff cultural values", apart from "Excellence", which belongs in both sets."*





## Core values vs Cultural Values

.....this implies that we have **differences** in our **external** and **internal** aspects to culture which risks being confusing and contributing to complexity.

These really ought to be **one set of values**..... (And the vision and mission document actually states that it is normal to have one set)

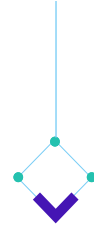




## To be clear.....

- We are not proposing that any of the existing values are wrong or not important anymore....
- We are enhancing them...
  - combining into **one set of values**.....
    - making them **easier to digest**
      - and **easier to relate** to
        - for both staff and LINX members.



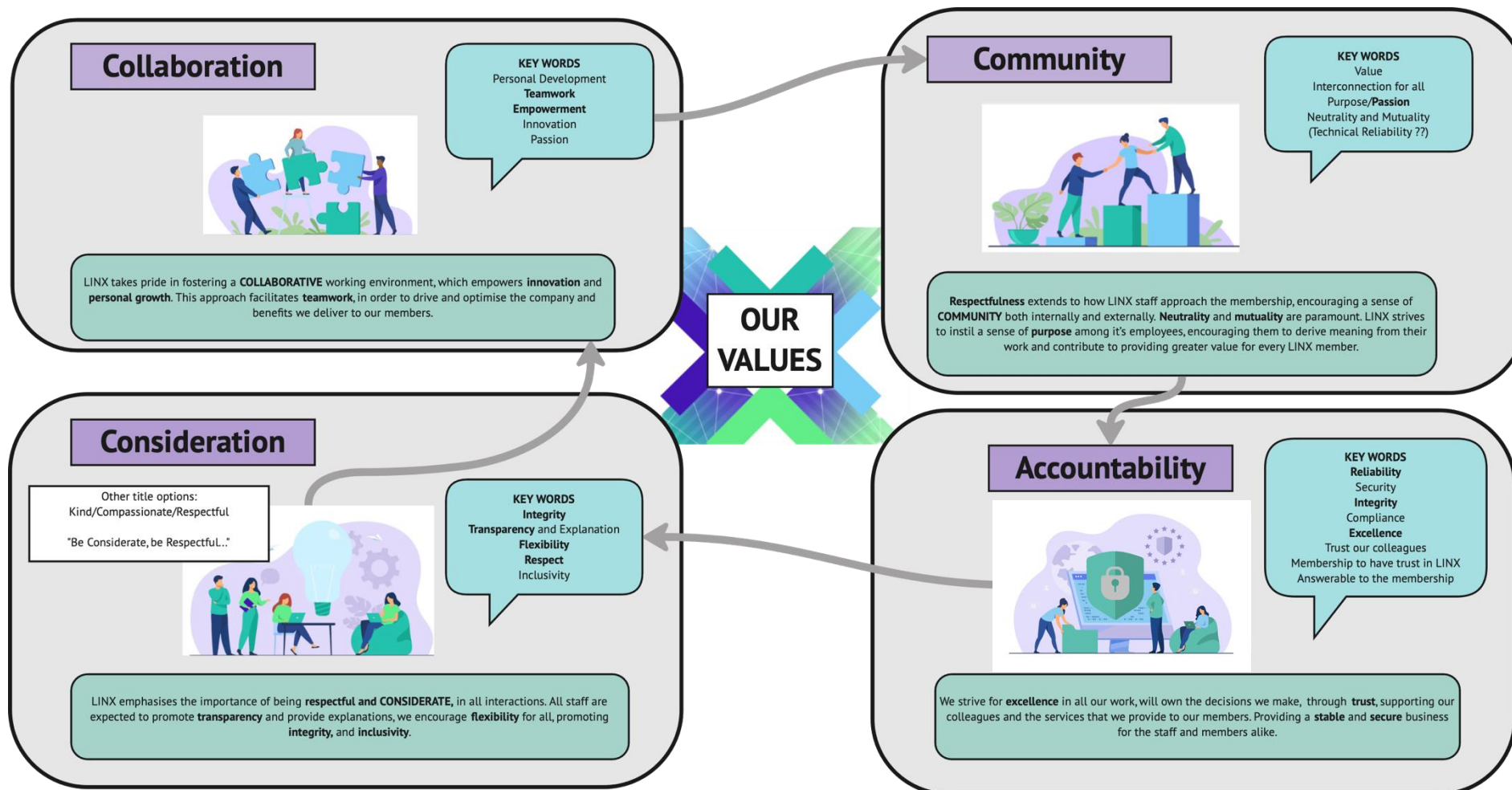


## Messages for the culture

*“As a wider management team, we want to concentrate on **cultivating a valued company culture** that staff can relate to, to serve as the **foundations of our strategic ambitions.**”*

The strategic pillars are underpinned by cultural values of working **COLLABORATIVELY**, with **CONSIDERATION**, respect and **ACCOUNTABILITY**, for the overall value of the wider LINX **COMMUNITY**







## **Future of the LINX Meetings**





## LINX – 2025

We will be hosting two member meetings in 2025



The event card for LINX124 features the LINX logo on the left and a teal circle on the right containing the text "NEW 2025 LOCATION". Below the logo, the text "LINX124" is displayed, followed by the dates "Monday 2nd June - Tuesday 3rd June 2025" and the location "Convene 133 Houndsditch London".

 **linx**

**LINX124**

Monday 2nd June - Tuesday 3rd June 2025  
Convene 133 Houndsditch  
London



The event card for LINX125 features the LINX logo on the left and a teal circle on the right containing the text "NEW 2025 LOCATION". Below the logo, the text "LINX125" is displayed, followed by the dates "Wednesday 19th - Thursday 20th November 2025" and the location "Convene 133 Houndsditch London".

 **linx**

**LINX125**

Wednesday 19th - Thursday 20th November 2025  
Convene 133 Houndsditch  
London

But a whole lot more to come...





**30, 8, 5 years later....**

LINUX was created based  
on 2 principles;



Photo shows a group shot from the member meeting at the University of London Computer Centre in 1995.

The first traffic  
passed through  
LINX at Telehouse  
(8th November  
1994)





# November 2004 – 10 years of LINX

## 10 Years of LINX History

### LINX - Central to the History and Future of the Internet

The story of LINX parallels the development of the Internet in the UK. Back in 1994 the World Wide Web was in its infancy and Internet exchange points were a novelty with only a handful in the entire world.

Even the concept that Internet Service Providers (ISPs) should co-operate and share infrastructure to their mutual benefit was novel. In this environment, representatives from the UK's five domestic ISPs - PIPEX, BT Internet Services, Demon Internet, EUnet GB and UKERNA/JANET - agreed to create LINX based on two guiding principles:

- LINX should be neutral to its members
- LINX should be independent of any one provider

Less than two months after the concept was agreed - and with a total absence of contracts, lawyers and paperwork - LINX became operative when the first Internet traffic was transmitted through its switches on 8 November 1994.

In the decade that followed, the growth of LINX has reflected the phenomenal growth in volume and importance of Internet traffic, as more people have

gained access to more data from more sources than could have been imagined at the dawn of the Internet Age.

By 2004, 52 per cent of households in the UK (12.8 million) could access the Internet from home, compared with just nine per cent (2.2 million) in mid-1998. In addition, e-commerce is now seen as vitally important to economic growth. In recognition of its significance in the future performance of the economy, the UK government set itself the target of making the UK 'the best environment in the world to do e-commerce.'

New peaks in volume of Internet traffic crossing LINX switches have been succeeded so rapidly that previous records appear puny when compared with today's figures. Just five years ago traffic was peaking at 2.5 gigabits per second - more than 250 times its original total capacity. Two years later it had quadrupled to 10 Gbit/second.

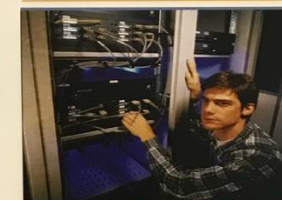
In order to keep pace with such phenomenal growth LINX has pioneered the introduction of new technologies.

LINX adopted one-gigabit Ethernet standards ahead of even the large US exchanges and in 2002 it was the first exchange to introduce 10-gigabit Ethernet standards.

Today the LINX membership numbers more than 170 leading Internet Service Providers (ISPs) and content delivery service providers from the UK, mainland Europe, USA, Africa and the Far East. Its facilities at eight London-based co-location 'tele-hotels' carry 90 per cent of UK Internet traffic and its members' networks provide access to more than 50 per cent of global Internet routes.

It is not difficult to predict that Internet traffic will continue its rapid growth. Clearly, LINX will play an equally vital role in the future of the Internet as it has done in its history.

#### Science Museum to Exhibit LINX Switches

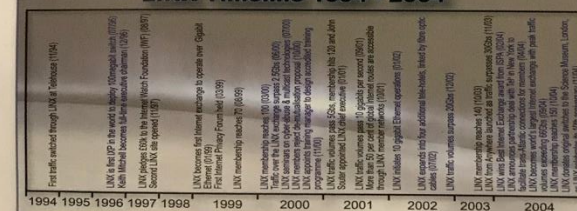


This is LINX's very first switch - a Cisco Catalyst 1200 (serial number 62007011) which is soon to become an exhibit in the Science Museum in London (see front page).

Switch No 1 has eight 10 megabit ports and was connected on a ring with another Catalyst 1200 (Switch 2) and a Cisco 1100. It was given to LINX by PIPEX and installed by PIPEX engineers.

Less than two years later LINX was also using a Catalyst 5000 (serial number: 66024714) which was the first 100 megabit-capable switch deployed at any Internet exchange anywhere in the world.

#### LINX Timeline 1994 - 2004



# The new CMO!

Kurtis Lindqvist

## Back when I started....

- I first discovered BBS:es and UUCP mail in 1988
  - With something called a modem, no, not a router
  - The closest useful one was in Oslo...
- Networking was something mythical
- Programming was what was interesting
  - And cool! Well....



# Growth



- 84 New applications 2019 YTD
- 20 in the quarter since LINX106



- 838 Members, up 3 in the last quarter
- 896 ASNs, up 5 in the last quarter
- Members are from 82 countries, up 1 in the last quarter



- 187 100GE ports, up 21 in the quarter with 20 in provisioning
- We have for the first time exceeded 1000 10GE ports!
- Over 29.1Tbps of edge capacity





## 30, 8, 5 years later....

- The interconnection market has evolved greatly over the past 30 years
- ....and will continue to. Perhaps even evolution will pick up pace.
- Maybe as opposed to the last 30 years, tomorrow won't look a lot like today?
- The UK, European and worldwide eco-system is also a strong community, but even this has changed. Perhaps more so than many other aspects.
- It has been a great privilege to be part of this community for almost 30 years (29)!
- Thank you!
  - .....but I don't think I will go that far away....





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