Annual Report 2020

London Internet Exchange

linx

Message from the Board

Looking Ahead to 2021 by Pieter Knook

This concludes my first year as LINX Chairman after my appointment was confirmed by the membership at the EGM held at LINX108 in February 2020.

COVID-19 of course overshadowed the Board's work in 2020 as we oversaw the company's ability to adapt to the new working conditions, and made sure our corporate governance could continue to be effective under the restrictions in force.

In May we held the AGM at LINX109 with the associated Board elections. In preparations for the AGM, the Board identified an issue in that the articles required ten members to be present in person for the meeting to be quorate. At the time of the AGM at LINX109, the government had passed emergency and temporary legislation to allow companies to conduct their general meetings online despite any restrictions in law or in their own corporate rules. The Board recognised that restrictions on public meetings could persist after these short-term assistance measures had expired. We therefore called an EGM in December to propose a change to the company's Articles of Association to allow us to continue to conduct virtual meetings, if the Board deems it necessary. Fortunately, members supported this change because at the time of writing it seems likely we will need to rely on it to conduct the AGM in May 2021.

Preparing for the impact of Brexit, LINX staff and the Board identified a risk that the EU might cease to recognise the UK's implementation of GDPR as compliant with EU requirements. This would prevent LINX members in the European Economic Area from lawfully transferring personal data to LINX in the UK. This mostly concerns data on business contacts, i.e. the individuals who represent our members in dealing with LINX.

Following advice from the UK Information Commissioner, we proposed amending the LINX MoU to incorporate Standard Contractual Clauses approved by the European Commission as enabling data to continue to flow regardless of the outcome of Brexit talks. LINX members approved this change at the LINX108 EGM.

During 2020, the Board held eight board meetings, almost all of which occurred by video conference.

Pieter Knook
LINX Chairman

LINX Board Sub-committees

The Board operates three sub-committees, whose voting members consist of non-executive directors. Executive directors and staff with subject matter knowledge usually attend the meetings.

Finance, Risk and Security Sub-committee

Members: Pieter Knook (Chair), Neil McRae, Steve Wright, Pete Stevens
Executive Directors and staff in attendance: Kurtis Lindqvist (CEO), Malcolm Holt (CFO), Malcolm Hutty (Head of Public Affairs), Lisa Hollywood, Bekki Dube (Company Secretary)

The Finance, Risk and Security Sub-committee reviews the audit, receives the auditor feedback on behalf of the Board, reviews budget assumptions and the budget before the Board decision, as well as conducting a detailed review of the risk register. The committee met four times during 2020.

Governance Sub-committee

Members: Seb Lahtinen (Chair), Mike Blanche, Lee Hetherington, Steve Wright
Executive Directors and staff in attendance: Kurtis Lindqvist (CEO), Malcolm Hutty (Head of Public Affairs), Bekki Dube (Company Secretary)

The Governance Sub-committee prepares matters for consultation with LINX members, including proposed resolutions. It further reviews the governance processes and documents in place for all of LINX and the Board. The committee met four times in 2020.

Remuneration Sub-committee

Members: Mike Blanche (Chair) Lee Hetherington, Pieter Knook, Seb Lahtinen
Executive Directors and staff in attendance: Kurtis Lindqvist (CEO), Neana Singh (HR Manager), Bekki Dube (Company Secretary)

The Remuneration Sub-committee recommends to the Board, remuneration structures and policies that enable LINX to meet its strategic and operational targets. In doing so it reviews and proposes performance measurement mechanisms, pension contributions, pay policy, bonus opportunity, employment terms, etc. It further reviews and approves the specific remuneration, terms and performance of senior staff including the CEO. Senior staff means any member of the Senior Management Team, a key employee, or any employee with a full-time equivalent base salary exceeding £90,000 gross, before any salary sacrifice. The committee held three meetings in 2020.

The LINX Board

Non-Executive Directors

Pieter Knook
LINX Chairman

Mike Blanche
Google

Lee Hetherington
Ori Industries

Seb Lahtinen
NetConnex

Neil McRae
BT

Steve Wright
4D Data Centres

Pete Stevens
Mythic Beasts

Executive Directors

Kurtis Lindqvist
LINX Chief Executive
Officer

Richard Petrie
LINX Chief Technical
Officer

Malcolm Hutty
LINX Head of
Public Affairs

Malcolm Holt
LINX Chief Finance
Officer

CEO's Report

Keeping the World Connected

The COVID-19 pandemic was the business challenge that none of us could have forseen

"The defining factor of 2020 will be the COVID-19 pandemic. In the first week of March we prepared the implementation of our pandemic response plan. The LINX Senior Management Team began meeting every 48 hours to manage the pandemic response and most staff started home working. As of 20th March all staff worked from home including the NOC."

Kurtis Lindqvist
LINX Chief Executive Officer

With the exception of a short period between the lockdowns where we allowed a very limited number of staff to return to each office, staff continued to work from home for the rest of the year and at the time of writing in March 2021 this is still the case. This pattern of work became more established and effective as the year progressed. The use of tools such as Zoom and Microsoft Teams has enabled meetings to be held virtually and be productive, and allowed teams to keep in touch.

During the 2020 financial year LINX has maintained a high level of performance, despite the worldwide effects of COVID-19. Connected capacity, as in the previous year, grew by over 19% to almost 37Tb/s (from 31Tb/s in 2019). Performance results were also high across other operational measurement metrics, with network availability consistently exceeding 99.99% (also exceeding 99.99% in 2019) and member satisfaction statistics remained very positive.

LINX Member Conferences

The LINX member conferences are an integral part of the LINX calendar. Unfortunately, due to the restrictions imposed by the COVID-19 pandemic, we were only able to stage a single in-person event during 2020. This took place at the Park Plaza, Victoria in London in February, a month before lockdown began.

Despite the pandemic and restrictions imposed, LINX made progress on all areas of our strategy. We were able to complete projects for expansion in Manchester and Wales, despite the need for on-site physical presence. We continued to make a lot of progress with internal automation, which will allow us to work on further self-provisioning and self-management in 2021, in line with our ambition to streamline the member experience and allow for growth at scale.

We remain optimistic about the future and have continued the trend of reducing our service prices at the beginning of each year, with price cuts both at the start of 2020, and a further 10% price cut at the beginning of 2021. While the impact on interconnect demand from a return to work and schools is uncertain, we continue to see a demand for growth from existing members and growing interest from new segments. A general threat against public interconnects is the ever-lower thresholds for peeling off traffic to private interconnects.

LINX108 & EGM
Monday 24th February
This event was very well attended with 170 attendees registered from 96 different organisations.
The one day meeting included technical talks on DNS hijacking, 5G and BGP telemetry. There was also an EGM session to formally ratify the appointment of Pieter Knook as LINX Chairman.

From May's AGM until the EGM in December, LINX kept members informed of Exchange activities through condensed online virtual meetings.

LINX109 & AGM - Wednesday 6th May
This was the first ever online only LINX AGM and Board election. Three seats on the Board were being contested and following voting Seb Lahtinen and Lee Hetherington were re-elected for further three year terms. Also appointed was Pete Stevens of Mythic Beasts.

LINX LIVE! - Wednesday 2nd September
Following a consultation with members at the end of 2019 it had been decided to remove the traditional August event. However, with pandemic preventing us meeting the members a bonus meeting was held featuring a keynote talk by Andrew Blum on the Supranet.

LINX110 - Tuesday 3rd November
The key agenda item at the November conference was a consultation session on holding general meetings virtually. The impact of the pandemic had prompted discussions on the need for LINX's MoU to be updated to allow constitutional sessions to be held virtually.

LINX111 & EGM - Tuesday 15th December
The final meeting of 2020 included a vote to approve the 2021 services and fees, a revision of LINX Memorandum and Articles of Association, plus approval of Board remuneration. The non-executive directors collectively proposed to waive an increase in their Board stipend for 2021 in the current economic climate.

The Year Ahead

Automation and Tooling being Deployed to Aid Exchange Growth

"For 2021 we will continue our focus on increased automation and tooling to support the LINX team in managing the growth of our exchanges, but also to streamline our members' experience in dealing with LINX."

Kurtis Lindqvist
LINX Chief Executive Officer

An important aspect that will be in the focus for this is the member portal. During 2021 we will refresh the User Interface / User Experience (UI/UX) which allows for easier navigation and new self-service features to be deployed later in the year. The new portal will feature a dashboard providing an easy overview of services and traffic visualisation. Among the self-service features we plan to launch during the year will be improved service order and modification forms that will allow members to easily update and terminate their services. Members will also be able to see the status of existing orders, as well as change allowed MAC addresses on their ports without contacting the LINX NOC.

The portal will further include user management so that members can add, delete and assign the correct roles for each of their users and give the appropriate privileges. As we expose more sensitive functionality on the portal we will also improve security by enabling two factor authentication for all logins.

With this new portal UI/UX we believe we are making it easier for members to do business with LINX and as we increase the fulfilment automation, we are also speeding up service delivery for members.

The new features of the portal will also allow easier use of some of our existing products and enable new ones including private VLANs.

Private VLANs are available as point-to-point links across the exchanges between two members. These can be provisioned on existing ports that have been converted to dot1q tagged ports, or on dedicated ports depending on use case. Pricing is dependent on the bandwidth order and charged to the member ordering the service with the usual 30 day cancellation notice.

Private VLANs can also be provided as a closed user group which allows a closed exchange of traffic between two or more members, with pricing also depending on the bandwidth ordered.

To further support the use cases of the private VLANs in Q2 2021 we will launch an option to remove the MTU size limit which is currently 1500 bytes. We will also bring the Private VLAN functions to platforms other than LON1. We completed testing on LON2 in 2020 and brought LINX NoVA under our automation platform which were both steps needed to launch on these platforms in 2021. With LINX Manchester planned for migration to our disaggregated Edgecore / IP Infusion platform in Q1 2021, this will also allow us to bring private VLAN to Manchester.

We have seen for some years an increase in demand for Cloud services and during 2021 LINX will launch its Cloud Connect product. Initial Cloud providers will be Microsoft ExpressRoute, Azure Peering Service and Amazon AWS DirectConnect.

2021 UPDATE
Coronavirus (COVID-19)
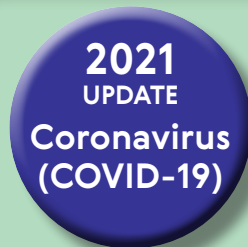
The past year has seen us work and live through the pandemic but at the time of writing in March 2021 we will hopefully start to see the light at end of the tunnel.

LINX managed the risk throughout the year according to our pandemic planning which we initiated in the first week of March 2020. Throughout, the UK Government guidelines have formed the basis of our response which so far have consisted of:

- Ensuring staff felt safe and limiting risk of exposure due to work. In mid-February we postponed further international travel and by 20 March all LINX staff including our NOC started working from home. Prior to this we also pre-provisioned as much as we could to limit the number of site visits we would need in the short term.
- We continued to ensure operational excellence by conducting needed site visits for operational issues and for provisioning when required.
- At the start of July we announced a four phase plan for return to work
  - **Phase 1** allowed staff who wished to work from an office to do so, but in restricted numbers.
  - **Phase 2** we asked staff in functions that are considered critical to return to work from their respective offices, unless they were deemed to be part of a risk group. The number of staff in an office was still limited.
  - **Phase 3** would allow more staff who wished to work from an office to return but still limiting the number of staff to ensure social distancing could be maintained.
  - **Phase 4** A return to a new normal.
- We initiated Phase 1 in early August and our intention to move to Phase 2 on 5th October. Following the change in governance guidelines we cancelled the move to Phase 2 on 24th September, but the offices remained open as per the UK tier system until we closed them following further Government guidelines.

As we look towards an eventual end of the pandemic restrictions, LINX is also looking to what a "new normal" will look like. LINX has always believed in flexibility but the last year has also shown that we can allow an ever-greater level of home and distance working. Exactly how this will look remains to be seen later in the year and will also be guided by the eventual return to work guidance from the Government.

LINX Technology

Building a Robust Network Infrastructure that's Ready for the Unexpected

Richard Petrie
LINX Chief Technical Officer

"Managing traffic expansion at times of uncertainty, with all of us, the challenges of 2020 centred on the COVID-19 pandemic and the impact on the UK, European and international communities our exchange platforms serve."

Here at LINX we had significant expansion demand, port orders and this resulted in peak traffic increases throughout the year. In the main, this related to the 'work from home' needs placed on many nations and specifically the UK. Cumulative peak traffic exceeded 6Tb/s, the total port capacity exceeded 36Tb/s and LON1 grew from the January levels of 3.4Tb/s peak to 4.95Tb/s peak in December, a 45% increase in overall traffic volumes.

However, even with our movements restricted and focus on member provisioning, looking back over the year we have delivered successfully against many of our strategic objectives. The first was on the evolution of LON1 and 400GE growth, the second was on geographical expansion where appropriate and third was the development of our products and the fulfilment method.

LON1 and 400GE

With the evolution of LON1 and 400GE, 2020 saw the core fully migrate to a Juniper MX10K platform with the legacy PTX5Ks retired. The migration to EVPN from the VPLS architecture was validated in the Juniper labs with migration planned for early 2021. The 400GE technology to support member demand was tested in the LINX labs, due to travel restrictions and we have a number of deployment options tested as and when membership demand comes.

Geographical Expansion

The Geographical expansion focused on our partnership with Saudi Telecoms Company (STC) and the new Jeddah exchange point, growth in Manchester with the addition of a fourth datacentre with Teledata, partnerships with Iron Mountain and QTS in America at our LINX NoVA exchange. This also saw us add a fourth site to the platform. Finally, a second site was added to the LINX Wales exchange platform in Newport through our work with Vantage.

Digital Transformation and Automation

Our drive to service more interconnection products and deliver a digital transformation continued and we saw a number of portal improvements released throughout 2020 - new order forms, contacts management, invoicing, and including inventory tracking through the 'my services' section.

In addition, we have been developing a new portal design with improved user experience that will move into production in 2021. The development of version 2 of the LINX automation tooling (NCA-2.0) has allowed us to complete full network automation workflows for LON2, LINX NoVA and LINX Manchester, as well as adding improved automation on LON1. This significantly improves our operations and the NOC team's ability to meet member needs better.

We have also been working in close collaboration with fellow exchanges AMS-IX, DE-CIX and Netnod across the IX-API development; a new Router Server Support Foundation (RSSF) initiative; and investment in the European GAIA-X project.

The IX-API now sees a version two release, to include E-LAN services (private VLAN product) and cloud connection services. Version three will be developed in 2021. The RSSF initiative will see investment in the OpenBGPD route server as we look to support the build and testing of a credible and complementary router server, to the widely used and capable BIRD route server.

"Customer satisfaction is clearly a priority for the LINX team. The level of care and support we've been shown has exceeded all our expectations which demonstrates that they really have our best interests at heart. They have really helped us implement the best possible technical solutions for our network."

Ernest Muhire
MTN Group

UK Exchanges

Regional Peering Still Key to Network Growth

"Our belief in the importance of keeping traffic local remains strong. All our exchanges experienced significant growth in 2020, and with additional sites coming online, this looks set to continue into 2021."

Jo Fereday
LINX Product Manager

LINX Manchester

LINX Manchester still leads the way in terms of LINX regional exchanges, not only with respect to the steady traffic of growth but attracting content members with significant capacity, in total traffic averages around 90Gb/s with peaks up to 160Gb/s.

Significant changes saw Teledata Data Centre connected as part of the exchange - this datacentre has proved to be attractive. The LINX Manchester steering committee meets regularly and has strong attendance - this continues to affirm the communities of interest the exchange provides.

LINX Wales

LINX Wales traffic is currently peaking at 1.7Gb/s. However, with the Vantage datacentre coming online and the Welsh Government grant taking effect, we expect steady traffic growth going forward. Like LINX Scotland we are initiating a joint marketing campaign with our datacentre partners and while again with the same objective not only to increase visibility of the exchange, but also be used as a platform to ignite the LINX Wales steering committee.

LINX Scotland

LINX Scotland traffic levels continue to be steady, averaging around 1.2Gb/s with peaks of 2.5Gb/s. We are seeing renewed interest in the exchange with new content members connecting. We also see large carriers partnering with our own datacentre partners in the region, this could be an enabler for more traffic.

A joint marketing campaign has been initiated with our datacentre partners. Our objective is not only raising the visibility of the exchange but also as a platform to reignite the LINX Scotland steering committee. This we hope will build the same strong communities of interest which has evolved in Manchester.

International Exchanges

LINX NoVA

LINX NoVA, our regional exchange in North America, had a fantastic year, with traffic doubling to a max of nearly 80Gb/s in the autumn. Membership at LINX NoVA continues to grow at a steady pace with over 45 members present at the existing sites. Unfortunately, delays due to the Coronavirus pandemic meant that we were not able to launch our two new LINX NoVA sites in 2020, but they were on track to launch very early in 2021.

The expansion into Iron Mountain and QTS will strengthen the regional exchange, with two new and exciting partnerships offering more opportunities for new and existing members to connect and peer traffic with one another.

JEDIX

2020 was a busy year for developments in the peering community in the Middle East and JEDIX was no exception. We have continued to work closely with our partners STC to develop the exchange in Jeddah, welcoming more customers onboard and working hard on a very healthy pipeline of orders.

We were very pleased to see the traffic flowing in 2020 and peaking at an impressive 40Gb/s. Unfortunately we were unable to get to any local events such as MENOG or Capacity Middle East, but we continue to foster relationships with local and global partners generating further interest in the Jeddah exchange.

Membership Statistics

869	LINX Members
965	Member ASNs
83	Member Countries
89	New applications in 2020
5.81	Terabits per second peak traffic on the public exchange
1745	Connected member ports
1002	Member-facing 10GE ports
266	Member-facing 100GE ports
37.097	Terabits of connected capacity
646155	Routes peered at LINX (average)
692206	Global routing table routes (average)
83.32%	Percentage of global routes available at LINX

Exchange Growth

Providing Members with Products and Services to Sustain Growth

"The Coronavirus pandemic had an overwhelming effect of Internet capacity usage across the entire globe. Here at LINX, like many other exchanges, we saw our global traffic increase by 38% across the whole network in just under 12 months, experiencing 40% growth on our LON1 platform in London alone."

Jennifer Holmes
LINX Chief Commercial Officer

This surge in traffic at the beginning of the pandemic saw us receive an unprecedented number of orders for additional capacity, and we were pleased that we were able to assist our members in their growth needs by offering free six connections for six months, for 1GE - 10GE upgrades and to those members who needed to order additional 100GE ports. In March alone we accepted a staggering 54 new orders for 10GE ports across all of the platforms, compared to our expected average of 15 - 20 for a normal March.

We also continued to see growth from new members with 85 new applications for membership, across all of our peering LANs. We were pleased to welcome applications from Australia, North America, Asia, Africa and the Middle East, enhancing our diverse membership base. 38 of these applications started their peering journey with us with 10GE or greater initial connected capacity.

LINX Products and Services

We have increased our focus on developing new products for LINX members. Initially, new products were developed to help new members join the peering exchange, as the focus for LINX and its existing members was to have as many peers at the exchange as possible.

Our membership has changed over the years - members' needs have changed, and networks and interconnectivity has become a critical part of most businesses. The new products at LINX are designed to reflect these changes, to help members achieve more from their membership at LINX and to help them expand and grow their own networks.

"Peering will always remain at the heart of LINX's portfolio but we want members to think of us for other solutions particularly if they need connectivity either directly between themselves and other members, or to other providers of services. LINX will also be looking for new areas where we can provide the service of acting as a neutral host in the UK telecommunications arena."

Jo Fereday
LINX Product Manager

Products and Services by end of 2020

LINX Products

- **Public Peering**
  Network traffic exchange over a shared network

- **Private Interconnect**
  Member point-to-point connections

- **ConneXions Partners**
  LINX connection via vLAN

- **ConneXions Access Points**
  - Datacentres with a LINX PoP
  - Datacentres with LINX transmission equipment
  - Datacentres with access to LINX via an approved Layer 2 carrier

- **Member Rack space**
  Rack space at PoPs available directly through LINX

- **IXP Reseller**
  LINX connection from an existing (mutual or non-profit) Internet exchange

- **Bi-Directional Optical Transceivers**
  Bi-Di transceivers allow the transmitting and receiving of data on a single fibre

- **Private VLAN**
  Allows members to connect to other members from LINX over a single port

LINX Local Exchanges

- **LINX Manchester**
  Peering LAN in North West England

- **LINX NoVA**
  Peering LAN in Northern Virginia, USA

- **LINX Scotland**
  Peering LAN in Edinburgh and Glasgow in central Scotland

- **LINX Cardiff**
  Peering LAN in Cardiff, Wales

- **JEDIX**
  Peering LAN in Jeddah, Saudi Arabia

LINX Services

- **Public Affairs**
  Membership representation on matters of public policy

- **Route Servers**
  Free peering service of member advertised routes

- **Time Servers**
  LINX time servers distribute high accuracy time

Financial Report

Statement of Income and Retained Earnings	2020 (£)	2019 (£)
Turnover	14,882,143	15,185,614
Direct and distribution costs	(3,437,706)	(4,073,402)
Administrative expenses	(10,216,615)	(11,732,975)
Other operating income	36,984	104,151
Operating surplus	1,264,806	(516,612)
Net interest receivable	23,107	48,805
Surplus / (deficit) before taxation	1,287,913	(467,807)
Tax on surplus from non-core activities	(15,456)	(16,529)
Surplus / (deficit) after taxation	1,272,457	(484,336)
Retained earnings at beginning of year	11,487,455	11,971,791
Retained earnings at end of year	12,759,912	11,487,455

Balance Sheet	2020 (£)	2019 (£)
Fixed assets	3,434,376	3,594,692
Current assets	10,955,445	9,571,682
Current liabilities	(1,617,951)	(1,674,935)
Net assets	12,771,870	11,491,439

Income and Retained Earnings Overview

Following the cuts to service prices, approved by the membership, at the start of the year our income dropped and, with our normal selling activities constrained by the pandemic, it took longer than expected to recover revenue levels. However, by the end of the year our total income per month was within 1% of planned amounts. The net financial result showed that cost savings from restricted operations more than offset the shortfall in our expected revenues, and an overall net surplus of £1.2M was achieved. This excellent result was more than 50% higher than our pre-pandemic projections.

Additionally, the company has maintained a high level of operational performance, despite the worldwide effects of COVID-19. Connected capacity, as in the previous year, grew by over 19% to almost 37Tb/s. Performance results were also high across other operational measurement metrics, with network availability consistently exceeding 99.99% and member satisfaction statistics remained very positive. Much better than planned financial results, supported by good operational performance, reinforce our confidence in future business prospects, and back our actions in passing back those benefits to our members by further reductions to the prices for our services.

Balance Sheet Summary

We increased our investment in network assets to sustain the excellent reliability for the increased volumes of traffic passing through our exchanges. At this level of investment the additions to fixed assets were close to the depreciation charges related to past years' expenditure.

This results in the net book value of fixed assets being close to the previous year. The better than expected performance during 2020 increased the value of our current assets, including our liquid funds which will support our future operations. Our overall net assets have increased by almost £1.3m, and we are in a strong financial position to face future challenges.

Cash Flow

	2020 (£)	2019 (£)
Cash and equivalents at beginning of year	7,772,806	6,103,989
Operating surplus / (deficit) for the year	1,287,913	(467,807)
Add-back depreciation charge	2,287,716	2,863,194
Add-back movement in debtors / creditors	(1,209,270)	1,036,046
Taxation	(7,482)	(16,703)
Cash flow from operating activities	2,358,877	3,414,730
Purchase of fixed assets	(2,127,400)	(1,745,913)
Overall cash flow for the year	231,477	1,668,817
Cash and equivalents at end of year	8,004,283	7,772,806

Cash Flow Analysis

Whereas last year depreciation on previous years' higher levels of past capital expenditure resulted in a significant positive cash flow effect, for this year the effect is much smaller. However, this year's operating surplus, compared with a deficit last year, contributed to our liquid funds increasing by £0.2M.

Purchase of Fixed Assets

	2020 (£)	2019 (£)
Network assets	2,092,593	1,648,544
Leasehold property improvements	0	21,057
Computer equipment	34,807	76,312
Total fixed assets purchased	2,127,400	1,745,913

Summary of Fixed Assets

Our capital expenditure increased by 21% as we continue to invest in the future and our ability to support the growing traffic passing through our exchanges. The accumulated costs of the fixed assets deployed in supporting the business has risen to £25.7M.

"Despite the worldwide economic and social disruption caused by the COVID-19 pandemic, the demand for our services was resilient. With staff predominantly working from home, and our normal activities being restricted, we managed to significantly reduce our expenditure levels. We have confidence in the future allowing us to continue our trend of annual price reductions."

Malcolm Holt
LINX Chief Finance Officer

Public Policy

Regulatory Challenges in a Pandemic and Post-Brexit World

Malcolm Hutty
LINX Head of Public Affairs

On the 31st January 2020 the United Kingdom left the European Union.

Since June 2016, British politics had been utterly dominated by the battle between Brexiteers and Remainers. Now that battle was finally over: for better or for worse, the Brexiteer position had won. Whichever side you were on, there was a sense of relief it was finally over. The country as a whole yearned for a return to normality in national politics.

It need hardly be said that "a return to normality" does not accurately describe how 2020 turned out.

When COVID-19 reached Italy, and Italy responded with a Chinese-style lockdown unprecedented in the West, it became clear that we needed to review our business continuity planning urgently. Our plan assumed we could continue to operate substantially as normal even if our staff were sequestered at home: our priority was to closely examine our processes to verify that this would indeed be true when it was imminently put to the test.

Government inquiries began slowly, focussed on supply chain questions born in the civil service's anxiety over Brexit. Once the Prime Minister sent the country home, the civil service organised twice-weekly updates with major network operators to seek reassurance that the network would not be overwhelmed. Operators consistently reported that while daytime traffic was up steeply, it was only to a level commensurate with ordinary evening Internet traffic levels; the latter had also increased, but by no means by enough to justify emergency controls on Internet use.

Datacentre Access Concern

When the army built an emergency overflow 'Nightingale' hospital on the main access route for critical London datacentres, we were briefly worried about the possibility of physical access to those datacentres being closed off completely. By the time the civil service was able to provide reassurance, it was apparent these hospitals would never be needed. Gradually, the industry as a whole accommodated itself to the "new normal".

EU and UK Policy Developments

In the EU the policy-making process proceeded largely as normal, with the European Commission reviewing the E-Commerce Directive and, at the end of the year, unveiling proposed replacement legislation. LINX had been very active, through EuroISPA, seeking to influence the new framework, and our efforts were rewarded: we were very pleased that the Commission proposed to retain the Internet intermediaries' protection from liability for the content they carry, which was certainly not the expected outcome just two years previously.

As expected, this came at the cost of a wide-ranging set of new regulatory obligations for Internet intermediaries that will be debated as the proposed Regulation advances through the legislative process in 2021.

By contrast, in the UK the government made no visible steps to launch the competing "Online Harms" framework for content regulation announced by the previous Prime Minister, Theresa May. Instead, the major legislative initiative was focussed on security: specifically, a Telecoms Security Bill introduced tough powers to restrict the use of so-called "High Risk Vendors", as well as highly prescriptive new regulation known as the "Telecoms Security Requirements". This programme will continue to take centre stage in 2021.

"The exceptional Public Affairs engagement work is something LINX champions above others, and can justifiably be proud of. What makes LINX stand out is its transparency and integrity in handling its affairs on the membership list and other fora."

Niall Donaghy
GEANT

LINX in the Wider World
Partners, Associates and Supporting Organisations

LINX has enjoyed a supportive and collaborative relationship with its community partners over many years.

It is through these relationships within the Internet community that LINX is able to provide members representation at a global level, the opportunity to benchmark performance, and offer a role in helping make the Internet a safer and more trusted space. There is also the opportunity for members to influence policies and procedures in the UK and overseas.

Euro-IX

Euro-IX, the European Internet Exchange Association, currently has 80 member IXPs from around the world. LINX is a founding member of Euro-IX. LINX CEO Kurtis Lindqvist served as the Chairman of the Board until October 2019. LINX regularly meets with the IXP community at Euro-IX conferences to discuss and share ideas and experiences for the mutual advantage of the membership. This is done via technical meetings, mailing lists and online resources. Euro-IX also gathers information on regulatory issues affecting member exchanges that could potentially impact the membership from within the European region, and other jurisdictions, in the future.
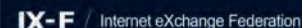
EuroISPA

A key partner for LINX is EuroISPA, the pan-European association for organisations representing the ISP industry. Working with EuroISPA allows us to influence policy and legislation at the EU level, which it has done efficiently and effectively for many years. Malcolm Hutty, LINX's Head of Public Affairs, served as President of the association for five years. He is currently chair of the Intermediary Liability Committee.

Internet Exchange Federation

IX-F, the Internet Exchange Federation, is a global platform for associated Internet Exchange Point Associations, including Euro-IX. Its goal is for exchanges to collaborate "to build a global IXP community and help the development of IXPs throughout the world".

Internet Watch Foundation

LINX played a pivotal role in the creation and start-up of the Internet Watch Foundation (IWF). One of the roles of the organisation is to assist hosting providers identify and remove child abuse images hosted on their servers. When the IWF was founded in 1996, the UK hosted 18% of the world's known online child sexual abuse material. Today, it hosts just 0.2%.

Internet Society

The policy and international engagement activities of the Internet Society (ISOC) are rooted in the organisation's fundamental belief that the Internet is for everyone and should be available to people everywhere. ISOC works with governments, national and international bodies, civil society organisations, the private sector, and other stakeholders to reach decisions about the Internet that conform to its core values.

ISOC's mission to preserve and protect the open, collaborative, distributed, multi stakeholder model is strongly supported by LINX and its stance has defined the successful development of the Internet for many years. As an "Organisational Member" of the Internet Society, membership enables LINX to influence Internet policy on a global stage, through international forums such as the IGF, the ITU and ICANN.
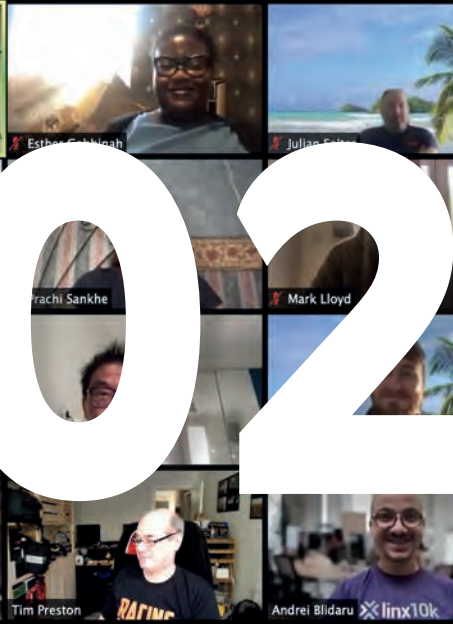
"LINX is a key element in the functioning of the ITGate network. In fact, it represents an essential pillar in the development of our ecosystem triggering more business innovation and opportunities, thus improving our competitiveness. This development is helping us to prepare our infrastructure for the future."
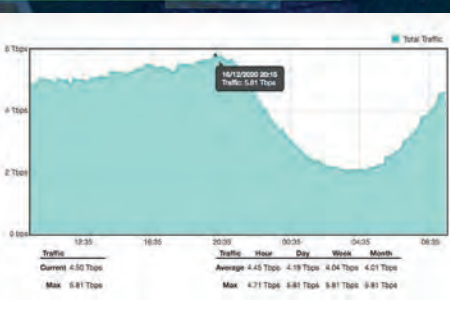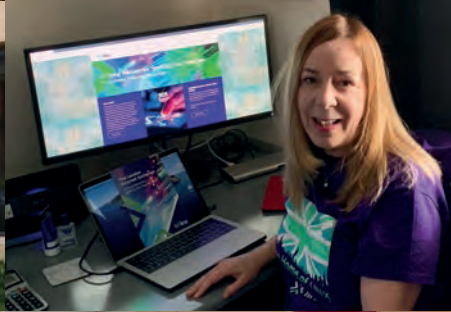
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