

INTRODUCTION

This annual report covers the period October 2004 to December 2005. It follows a similar style to the last two or three presented to members, that of brief highlights, since quarterly reports are delivered at each member meeting which are more topical and immediately relevant. Once again, it was a successful period for LINX, despite a number of pressures and challenges that I reported on in the last annual report.

MEMBERSHIP: A YEAR OF GROWTH AND CONTINUED INVOLVEMENT

LINX grew strongly in 2004/5, with 48 new members joining. After the impact of member acquisitions, usually leading to network consolidation, this yielded a net gain of 34 (against a budget expectation of 24).

Member participation continued to be strong. All five member meetings were well attended, with the highlight being the record attendance at LINX47 in November of 2004. The inclusion of a peering forum attracted 98 member representatives from 47 organisations.

We successfully introduced the idea of specialist technical meetings to run as workshops alongside LINX meetings, with topics such as multicast and network monitoring. Continuous improvement of our member meetings is now facilitated by attendee surveys after each event, to ensure that they are meeting member needs and expectations.

GOVERNANCE

Steve Wilcox, Neil McRae and Grahame Davies, the three Council members who retired by rotation at the AGM in February 2005, ran for election and were re-elected. Grahame Davies was reappointed as LINX Chairman.

Substantial changes to LINX Memorandum and Articles of Association during this period included the incorporation of those activities previously considered 'non-core' as core activities of the company (more on this below) and a change in Council tenure from 2 years to 3 years. Both of these originated from a substantial strategic review, held mid-term, which also suggested a number of changes in policy and practice to improve the way we do business.

MAINTAINING OUR FAIR PRICING POLICY

In addition to lower fees from the start of the year, continued growth - both in members and number of ports used at the exchange - enabled us to make a welcome mid-term price cut. Our fair pricing policy continues to reflect lower costs - and members also endorsed the use of pricing policy encouragement to maintain peering sessions on the Extreme LAN. The success of these policies, and our strong financial position, enabled us to propose significant cuts in fees for the current financial year.

SALES & BUSINESS DEVELOPMENT

LINX is renowned for the innovative approach taken to new business development, such as:

- working closely with colocation providers and member carrier networks to facilitate remote connections;
- the introduction of a 'single contract' service, enabling networks joining from afar to have a single interface for their European network expansion;

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- a partnership program to forge global strategic alliances with organisations who can bring value to LINX members. The current partner list includes Telehouse Europe and Telehouse USA, Terremark, Tyco, Hibernia Atlantic, Redbus and Telecity;

Marketing events undertaken to support the international growth included participation at CeBIT, and sponsorship of the first ever Peering Cruise - which brought together for the first time on a major scale European and US peering co-ordinators.

LINX members ratified the associate membership of Renesys Corporation - which provides LINX members with use of the Renesys Routing Intelligence Tools at no cost.

PUBLIC RELATIONS

Significant events during this period included:

- our exhibition stand with the Internet Watch Foundation (IWF) inside Parliament, following which our Chairman received an award on LINX's behalf for our contribution over the years;
- our sponsorship of the IWF annual report, which together with a wealth of other activity demonstrates the industry's commitment to fighting Internet misuse to politicians and media, while highlighting LINX's leading role in the industry;
- the donation of LINX switches to the Science Museum;
- LINX participation in the Internet pavilion at World Summit on the Information Society (WSIS).

LINX subsequently embarked on a programme to assist IXPs in developing countries, the outcome of which was the participation of KIXP (an exchange in Kenya) at LINX52 in 2006.

ENGINEERING & IT

Having previously used it exclusively for inter-switch infrastructure, LINX connected members at 10GigE for the first in the middle of the period under review. This was enabled by earlier upgrades of the switches, and building on additional intersite capacity installed in preparation for this. These early connections were all on the Foundry network, because we were simultaneously evaluating our upgrade for the Extreme platform. Eventually, the Extreme BlackDiamond 8800 series platform was selected for our upgrade of the Extreme network in the Autumn. This was slightly later than we had originally anticipated, and meant that the first examples were only delivered in early 2006.

An additional node was added in Redbus Memaco House, in response to both member and prospect demand. As the demand wasn't huge, and the new location is in close proximity to an existing LINX site, it was decided to deploy using inexpensive CWDM technology. With the successful member take-up at this site, we feel that the technology has proved itself to be useful addition to our normal approach, and we may use it again in similar circumstances.

There has been a renewed interest in multicast peering, driven by the BBC's desire to distribute high-quality TV streams over broadband. Meanwhile, addresses for native IPv6 peering across LINX are now issued as standard, giving members the choice to deploy them or not.

In day-to-day engineering terms, the year was characterised by a large number of upgrades to 1GigE from 100Mb ports, meaning a significant amount of work organising new cabling. To try and reduce this work, we trialled 1GigE over copper connections in selected locations, which allows members to reuse existing wiring when they upgrade. This proved successful,

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and now forms part of the range of options available to members. Take up of our managed private interconnect service was also strong during the period, and we commenced our first aggregated measurement of this via member-supplied data.

All of this engineering work enabled a huge growth in peak aggregated traffic at LINX. We believe we were one of the first exchanges in the world to exceed a peak of 100Gb/sec, across the combined capacity of our Foundry and Extreme LANs, together with our managed private interconnects.

Earlier in the year, we were suffering from unreliability of the Extreme Black Diamond 6800 platform. This was eventually traced to certain faulty elements in each switch, and a remedial maintenance programme was devised. Extreme's positive response to this issue had a bearing on their being selected, in the face of strong competition, for the upgrade mentioned earlier..

In addition to the London-based engineering department, which is perhaps best known by members; we also have an IT department in our Peterborough office - responsible for the extensive server-based infrastructure supporting the peering LANs. It was a very busy period for them, and in addition to the work they do in response to member support requests, I would single out highlights such as the use of security-hardened kernels in server deployment, the introduction of a dedicated database server and the Marratech video-conferencing system. After a review stimulated by the July 2005 London bombings, we deployed a Jabber-based secure communications server, this also plays a key role in our business continuity plan.

BUDGET & FINANCE

Once again, I am pleased to report that we again managed our finances very closely to the member approved budget for the year.

Since we are reporting on an unusual, one-off period of 15 months, we have done some work to present the accounts in a comparable fashion. The following table shows the 12 month equivalent period for 2005, as well as the actual 2004/5 figures.

Profit & loss	2005 (15m)	2005 (12m)	2004 (12m)	2003 (12m)
Turnover	3,212,646	2,570,117	2,882,091	3,412,036
Administrative expenses	3,808,612	3,046,890	2,929,717	3,033,356
Operating (Loss)/ Profit	(595,966)	(476,773)	(47,626)	378,680
Bank Interest	83,462	66,770	64,431	46,800
Taxation	784	627	15,623	48,623
Net (Loss)/Profit	(513,288)	(410,630)	1,182	376,857
Retained profit	2,182,004	(n/a)	2,695,292	2,694,110

LINX46 endorsed a budget that included provision for £625K to be used from reserves to support continued lower charges. The mid period review agreed a further £148K to be used in

a similar fashion and for charges to be lowered yet again. Therefore a 'loss' of £773K was the modified budget for the period, so LINX has actually traded at £260K better than this in the 15 month period. Capital expenditure for the year amounted to £614,300.

A separate report has been published for the 2006 AGM giving the full audited accounts for 2004/2005.

By the end of 2005, we had doubled the number of members paying by direct debit to 60; this system offers a cash-flow advantage to those members (they are the only ones paying in arrears) and a lower cost of cash collection to LINX.

REGULATORY & PUBLIC AFFAIRS

The pressure from government and other political stakeholders doesn't let up. Recognising the increasing challenge, and as mentioned earlier in this report, members voted to change the LINX Memorandum and Articles to make representing their interests on public policy matters a core part of LINX's mission. This is more than a symbolic change, and paves the way for greater resources to be deployed on this aspect of our work.

This year's most notable new legislation was a new European Directive imposing mandatory data retention, and the Terrorism Act which comes with its own statutory notice-and-takedown regime. On a global level the WSIS (mentioned earlier) concluded after two years, with a global political platform for Internet public policy-making agreed by UN members in the form of the "Tunis Agenda for the Information Society".

Political pressure from Ministers for ISPs to block illegal content at a network level was stepped up. This year it mainly focussed on suppressing child pornography, but in the wake of the July 2005 London bombings, the Home Office raised this prospect of extending this to other material.

LINX's main successes include extracting a written commitment from the Department of Trade and Industry to extend the protections for ISPs in the E-Commerce Directive to the new Terrorism Act, persuading the Home Office to remove provisions that would have made ISP Directors criminally liable for unintended mistakes in the removal process in that Act; and softening the Data Retention Directive so that it (probably) does not require ISPs to capture and retain e-mail data passed over their networks by mail servers that they don't control.

Looking forward, the European Union looks increasingly dominant over policy, with reviews of the Telecommunications Framework and the E-Commerce Directive under way, and initial plans for new policies to extend television content regulation to the Internet and to co-ordinate critical infrastructure protection. LINX will be working with Euro-IX and EuroISPA colleagues to represent ISP and IXP interests on the European stage.

We continue to work closely with government and the nation's largest networks in the Telecoms Industry Emergency Planning Forum (TI-EPF), and are now core participants in exercises of the national emergency plan, known as Empex. This engagement helps to ensure that LINX, and the infrastructure that supports us, continues to meet the highest achievable levels of resilience. Empex 1 was in the period under review, and despite our best efforts at engineering a destructive set of 'virtual outages' in Docklands, our simulation showed our engineers on the day to have managed LINX traffic with little or no disruption. Although the London bombings in July 2005 showed up some issues with our own emergency plans, these plans were exercised and worked. The identified issues have since been resolved.

STAFF, OFFICES AND ADMINISTRATION

It was another year of stability on the staff front, with only one change to report. Andy Furnell, one of our Senior Network Engineers, left to join one of our members, and was replaced by Paul Vlaar.

The Peterborough office continues to be our headquarters, and quite a few members have now taken the opportunity to visit us at our London office in Tooley Street. We'd like to extend a welcome for all members to do so - either to meet the staff or to take advantage of our guest WaveLAN, printers, and meeting room; but please let us know in advance if you intend to take-up this offer.

We have been investigating the use of the EFQM excellence model to assess our business, and some of our staff have undertaken associated training.

EURO-IX AND OTHER INDUSTRY FORA

We continued with our membership of and strong support for Euro-IX, the association of European Internet exchanges, which again grew strongly and prospered during the period. Our staff continue their active involvement in other relevant industry fora, such as RIPE, NANOG and the newly established UKNOF.

LOOKING FORWARDS

As for the last four years, I will end the 2004/2005 report, written in May 2006, with a brief look forwards.

We are in a strong position, financially sound, with a highly competent staff and benefiting from low staff turnover. I see the following challenges ahead:

- maintaining critical mass and continuing to provide value
- continuing efforts to reduce the price of LINX services, and maintain our fair pricing system
- attracting and securing new members, who will offer new peering opportunities, as well as assisting with the achievement of further economies of scale
- completion of the deployment of the high capacity switch technology already purchased, for both of our public peering networks, and to satisfy the identified demand for 10GigE ports
- striving for continuous improvement, which also means finishing the many and varied projects already underway

Traffic and the demand for ports continues to rise, and we are well placed to deal with this for the foreseeable future.

Overall, we aim to maintain LINX's position as the Internet exchange point not only of choice in Europe, but at which network service providers feel they must be present.

Finally, I would like to thank LINX members for their continued support of, and contributions to, the organisation. Through this participation LINX can continue to govern itself in a manner which is transparent, democratic and neutral.

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