MEMBERSHIP AT NEW RECORD LEVELS

Membership of LINX has now reached a total of 120 ISPs following the existing membership's approval of recent applications.

Among the new entrants are ISPs from Belgium, Germany, Italy, Korea, Spain and The Netherlands. LINX director of public policy Roland Perry said: "ISPs which are serious players in the UK or wider European market join LINX because we provide unrivalled connectivity, allowing them to peer their networks directly to those of other market leaders. This enables the ISPs to handle traffic in the most efficient and cost-effective manner, providing a high level of service to their customers."

"We expect both the level of traffic which we are handling and the number of members to continue growing. LINX is becoming increasingly international as more and more overseas members connect their networks through our facilities."

LINX APPOINTS NEW CHIEF EXECUTIVE

John Souter, UK managing director of German-owned varetis Communications, has been appointed chief executive of LINX.

Mr Souter, a mathematics graduate, had a 20-year career with the British Standards Institution before taking up senior appointments with several companies that provide software solutions for mobile telecommunications, Internet and computer-based business operations.

He said: "LINX is leading the Internet industry in technological excellence and I am determined that it continues its successful development of new support services to the benefit of its members and their customers. With its strong membership LINX has a pivotal role to play in the UK's e-commerce revolution and I am grateful to have been chosen to implement an exciting strategy for the organisation's future."

Mr Souter takes up his new appointment in March. LINX's regulatory expert Roland Perry has been interim chief executive and will return to his former role but encompassing a wider remit consistent with his senior position in the organisation.

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LINX Traffic Starts 2001 At New Record Level

Internet traffic passing through LINX’s facilities burst through the level of 5 gigabits per second — said to equate to 300,000 average e-mail messages per second — early in January.

This is more than three times the level at which it started last year. Traffic passed the 3 Gbit/second level in June 2000 and 4 Gbit/second in October.

Mike Hughes, head of network architecture at LINX, said: “A good rule of thumb through the late 1990s was that traffic doubled every 100 days. We have seen a slight slowing down in growth over the past twelve months by that standard — but we are still adding 1Gbit/second every three months or so.

“We are anticipating this growth trend to continue, as the Internet continues to play an increasing part in more and more lives daily. The growth of unmetered and broadband Internet access is encouraging home use, while at work more mature and established companies are adding e-commerce and Internet-based applications to their existing operations.”

LINX Invests In New Infrastructure To Handle Traffic Growth

LINX is installing Foundry Network’s BigIron 15000 and 8000 switches at our exchanges in London in order to handle the growing level of Internet traffic.

The £100,000 installation supplements similar purchases of Foundry BigIron 8000 and 4000 units made in June of last year to replace Alcatel (formerly Packet Engines) PowerRail and equip LINX’s additional expansion sites.

“We need to invest regularly in new hardware in order to keep up with the rapid growth in Internet traffic and we have established an excellent relationship with Foundry,” said Mike Hughes, head of network architecture at LINX.

“Foundry Networks BigIron switches suit our needs ideally. They have a compact design and are 10 Gbit Ethernet ready, which means we can utilise this bandwidth once the standard is agreed.”

The BigIron 15000 is a 15-slot Layer 2/3 switching router that scales routing performance to 178 million packets per second in a single chassis. BigIron 15000 extends the performance and port density of the BigIron 8000 and BigIron 4000 yet maintains complete module and feature compatibility. The chassis scales up to 120 Gbit Ethernet ports and can deliver 480 Gbits per second of total switching capacity.

Andy Palmer of Foundry Networks said: “LINX is a very high profile customer and to secure this contract is a tremendous endorsement of our technical capabilities and quality. We look forward to providing LINX with the high level of service and technical reliability that they have come to expect from Foundry equipment.”

LINX uses a range of hardware from leading vendors including Foundry, Extreme and Cisco.
LINX Ready For 10 Gbit Ethernet

A new technology to be deployed by LINX later this year offers the potential for a ten-fold increase in the volume of Internet traffic we can handle without requiring massive investment in new infrastructure. Known as 10 Gigabit Ethernet – usually abbreviated to 10 Gbit Ethernet – it will allow vastly more traffic to flow on existing fibre cables.

Ethernet is well established in the Internet industry as a protocol for the transfer of data over fibre or copper. What has become known as Gbit Ethernet is a version of Ethernet that defines how to transmit data at 1 Gbit (1,000 million bits of data – equivalent to about 60,000 average e-mail messages) per second over fibre or copper cables.

10 Gbit Ethernet can be characterised as more of the same. It will allow existing fibre cable to carry ten times as much traffic.

Mike Hughes, LINX’s head of network architecture, said: “All that is currently needed for the widespread adoption of 10 Gbit Ethernet is the finalisation of the international standard which will define exactly how it is to work. The standard has already been through a number of drafts and I would expect it to be published before the end of the year.

“The hardware for handling 10 Gbit Ethernet is already available. The major switch vendors have been supplying hardware capable of supporting 10 Gbit Ethernet for some time. Depending on exactly what is in the standard when it is published, most of the switches now installed at our facilities should be easily upgraded to handle 10 Gbit Ethernet simply by adding the new interfaces to the existing systems.”

Inevitably, different switch manufacturers have been adopting differing technologies to try to satisfy the demand for higher capacity before the 10 Gbit Ethernet standard is agreed upon. One leading vendor is using a form of wave division multiplexing to take eight 1 Gbit channels and combine them into a single pair of fibres. Using existing trunking protocols, this produces a virtual 8 Gbit system.

Another vendor is converting the Ethernet data into other protocol formats (such as Packet-over-SONET) which already have well-defined higher speed rates.

Mike Hughes said: “Once the standard is defined the vendors will be able to develop optical interfaces purpose-designed for 10 Gbit Ethernet. Some current hardware will be able to support the 10 Gbit speeds – for others, this will be in the next generation of switches.”

Going hand-in-hand with development of the switching technology for 10 Gbit Ethernet will be the increasing use of this protocol over longer distances. At present, Ethernet is largely confined to local area networks (LANs) but wide area networks (WANS) and metropolitan area networks (MANs) can be expected to make use of it in future, reducing the need to translate data between protocols and thus speeding transmissions.

Andre Joins LINX

Andre Els has joined LINX as a network engineer. Having previously worked at TeleCity he already has experience in helping to ensure the smooth and reliable running of a network infrastructure, along with configuration and support.

Andre is from South Africa and while working there he supported hardware and software for the government and police.

Ethernet is the world’s most widely installed LAN technology. More than 300 million switched Ethernet ports have been installed worldwide and almost all network traffic today starts out as Ethernet and Internet protocol (IP) data.

10 Gbit Ethernet is widely seen as the next major step for scaling the performance and functionality of networks. It will permit LANs, WANs and MANs to be built using Ethernet as the end-to-end data transport protocol, maintaining the same management tools and architecture throughout. It will enable network managers to take advantage of their investments in installed equipment, network management and analysis tools, and IT staff expertise.

The adoption of the 10 Gbps standard will enable Ethernet to match the speed of the fastest technology on the WAN backbone, OC-192, which runs at approximately 9.5 Gbps.

Worldwide standards for Ethernet are essential to ensure that equipment from different manufacturers can be interconnected. The Institute of Electrical and Electronics Engineers (IEEE) is currently developing the standard for 10 Gbit Ethernet which will use the IEEE 802.3 Ethernet media access control (MAC) protocol and the IEEE 802.3 Ethernet frame format. It will include methods for passing standard Ethernet frames over telephone company OC-192/STM64 circuits, helping to remove the need for dark fibre, and increasing the reach (both in terms of distance and penetration) of Ethernet technology.

For more information visit:
IEEE 802.3ae (10 GigE) Task Force home page: http://grouper.ieee.org/groups/802/3ae/index.html
10 Gigabit Ethernet Alliance: http://www.10gea.com/
LINX In Forefront Of Cyber-crime Fight

LINX is involved in a variety of ways in the fight against 'cyber-crime' and Internet abuse, representing the interests of industry and users to governments and law enforcement agencies and briefing our members on the latest developments in legislation and related matters.

"We are primarily a technical organisation," said director of public policy Roland Perry. "But our members need to operate within the framework of the law, both in the UK and worldwide. Today, that framework is at an evolutionary stage where we can have an important influence upon the outcome."

Roland sees that influence acting at a variety of levels - starting with a need to develop and maintain confidence in the Internet. He said:

"There is a lot of media hype about cyber-crime and the risks of doing business on the Internet. In fact the risks are very small - for example, you are ten times more likely to be the victim of credit card fraud offline than online.

"Clearly, however, criminal forces use the Internet as a tool, and law enforcement is increasingly seeking to patrol cyberspace. It is also in our interest to tackle criminal activity directed at the Internet and stop the media having the basis for sensational stories which discourage its use. We want to work with governments to create a strong and confident 'economy'.

"ISPs, like all businesses, need to be able to operate in a commercial and legal framework where criminal activity is minimised. The Internet industry is therefore keen to play its part in tackling crime. However, we are equally keen to ensure that the industry is not burdened with excessive regulation and costs which are out of all proportion to the benefits which may be achieved."

It is in this context that we are able to draw on our technical expertise, advising law-makers and regulators on the practical feasibility and implications of plans, for example, to monitor or intercept e-mail traffic.

"Many of the people writing the laws are at a very early stage in their appreciation of the nature and operation of the Internet," said Roland. "As an industry, we need to educate them about what can be achieved - and what cannot."

LINX is therefore involved at national, European and international levels in consultations between the Internet industry, legislators and law enforcement agencies. Roland, for example, leads the UK delegation to the ongoing discussions regarding security and confidence in cyberspace organised by the governments of the G8 group of nations.

The education process is not only one-way. A representative from the UK's newly-formed High Tech Crime Unit spoke at the recent LINX members' meeting and there are plans for similar opportunities for exchanges of views with other crime-fighting organisations at future meetings.

Meanwhile, LINX continues to initiate dialogue and meetings with civil servants, politicians and ministers. Roland said:

"It is no good industry waiting for legislation to appear, before studying it to see what impact it will have on our businesses. We need to take the initiative and put forward our own ideas - as well as helping to kill off some of the more ridiculous proposals before they gain political credibility."

At the same time, LINX is talking to our members about what the industry could itself be doing to help tackle cyber-crime and the related topic of Internet abuse.

LINX has a crucial co-ordination role, for example preparing a manual on dealing with abuse, which could form the basis for each member's own policy and procedure documents, and has produced a best practice guide on dealing with spam. We are also working with law enforcers to produce advice on how to comply with the requirements for lawful interception of traffic on our own networks when this is needed to fight abuse.

We are planning to hold a conference later this year which will bring together ISPs' abuse and security teams. It will focus on the relationship between these two different aspects of what could be perceived as the same problem but which have historically been dealt with separately.

Of course you can let me in without a warrant - I'm supposed to be speaking on police/ISP co-operation at the meeting.
Although the URL will remain the same, LINX is to have a new website. The new-look www.linx.net is to be unveiled at the end of February, just ahead of the LINX 32 meeting.

"The existing website has grown in an often haphazard fashion over the past few years," said Rob Holland, appointed as LINX webmaster last year. "We have taken a fresh look at the information we should put on the site and the way in which it should be arranged."

The new site will have a more clearly defined structure than the existing one, making navigation and the location of information far easier. There will also be a new search facility which will further facilitate use of the site.

Some information which is on the password-protected members' pages on the existing site is to be moved to the public area.

Rob said: "Some of the NCAP material - on training and legislation, for example - should be in the public domain as we are trying to influence opinion.

"Some other information, such as membership procedures, may be of limited interest to people who are not members but, for the sake of transparency, will be moved to the public side of the site so that anyone who is interested can find out more about how we operate."

The website will also have a new 'look and feel', with a consistent use of templates for page layouts throughout the site.

Of benefit to both LINX staff and members will be the much improved ease of maintenance.

There will be a central repository of data from which the website will draw, so that information will only need to be amended once and will then be consistent throughout the site. On the existing site, the same data often appears in several places, all of which need to be amended separately.

Member information on the new site will be based on a new unique membership number, rather than on the current alpha-numeric handle - a shortened form of the member's name.

Steve Harrison, LINX systems administrator, said: "The idea of handles was a good one because it enabled staff to identify the member easily - the handle was instantly recognisable as an abbreviation of the name. As companies merged or changed their names, however, the handles became less useful and sometimes actually confusing.

"The new system may appear less personal but will make life easier. Company names may change but the membership number will remain the same."

Above: The new LINX home page which supersedes the one shown left.
NEW PRIVACY CODE PROTECTS INTERNET USERS

A new privacy code that protects Internet users from unjustifiable surveillance by law enforcement agencies is expected to be ratified at LINX 32.

The code of best common current practice (BCP) was formulated over the past year by a LINX initiated Internet User Privacy Forum consisting of representatives of the Internet industry and a wide range of anti-censorship and civil liberties organisations.

LINX chairman Grahame Davies said: "This new privacy code reinforces important freedoms for Internet users. It also clarifies procedures to be followed by ISPs when they come under pressure to divulge information to law enforcement agencies such as the police, Customs & Excise and trading standards departments.

"Personal privacy rights are already protected under existing legislation but the speed of development in Internet communications means that new situations are continually arising that have not been anticipated by law-makers. ISPs now have clear guidelines on how to react to new developments without waiting for issues to be decided by the courts."

The code will quell concerns among civil liberties organisations over the potential for misuse of investigatory powers and it will help ensure that correct procedures are followed when law enforcement agencies request searches by ISPs to identify specific Internet users.

Among the code's recommendations is that invoices should be issued for the cost of searches because - whether or not payment was actually demanded - it would establish an audit trail that would identify the law officers who were conducting the investigation.

Malcolm Hutty, director of the Campaign Against Censorship of the Internet in Britain, said: "Creating an audit trail will help protect Internet users from frivolous or unjustified searches. I welcome this LINX initiative and urge all LINX members to review their practices and systems of business so as to enhance user privacy in line with these recommendations."

The code was also welcomed by Nicholas Bohm, a member of the Law Society's Electronic Commerce Working Party who is also a trustee and a member of the advisory council of the Foundation for Information Policy Research and an e-commerce policy adviser to Cyber-Rights and Cyber-Liberties (UK).

He said: "The code is particularly important for its recognition of the confidential nature of the relationship between ISPs and users of the Internet, and of the resulting duties of ISPs to respect the privacy of Internet users.

"The Internet User Privacy Forum has successfully produced a coherent response to concerns voiced by civil liberties groups that ISPs have been engaged in discussions with law enforcement agencies on how to control abuse of the Internet."

Grahame Davies added: "By working in partnership with civil liberties organisations on the development of this code of best common current practice, the Internet industry has demonstrated how seriously it views the personal privacy of its customers.

"The right to privacy is enshrined in particular by Article 8 of the Human Rights Act 1998. This BCP code extends the legal provisions by advising ISPs to inform Internet users about encryption software and educating their staff about how to handle unauthorised requests for information."

A copy of the BCP privacy code can be viewed at http://www.iupf.org.uk.

LINX ENDORSES GLOBAL IP CARRIERS

LINX has become the endorsing body for the Global IP Carriers 2001 conference and exhibition in London in February. This has given us the opportunity to use the event as a marketing platform and has given LINX members a discount on standard prices to attend the event.

Global IP Carriers 2001 is the world's largest dedicated event for ISPs and IP Carriers. It is the only dedicated IP strategy conference for businesses competing in the global IP marketplace and has become the annual meeting place for the most senior players in the IP market.

Now in its third year, Global IP Carriers 2001 will take place from 26 to 28 February 2001 at the London Novotel Exhibition Centre. LINX members could combine a visit to the event with attendance at LINX 32 which takes place, also in London, on 26 and 27 February.

**TIME TEAM GIVES FINANCIAL WORLD MICRO-SECOND ACCURACY**

Through our support for the Greenwich Electronic Time (GeT) project LINX is contributing to a worldwide infrastructure that provides e-commerce time-tools to Internet users.

Since being launched by UK Prime Minister Tony Blair just over a year ago, the GeT initiative has worked with the Network Time Protocol (NTP) community and other interested organisations to establish a global network of reliable timeservers that can be used by business and individuals. While most of us are happy if our count of time is accurate to within a minute or two, the speed and timing of major financial transactions across different time zones requires much greater precision. LINX is working in conjunction with IMRG (Interactive Media in Retail Group) to provide a universal time standard for the digital age.

GeT sponsor, Datum - the world’s largest supplier of atomic clocks - has produced for GeT a multi-time zone desktop clock that synchronises the user’s PC with a local NTP source giving an accuracy of a few thousands of a second. Combined with the most comprehensive database of time zones and daylight saving times this application is invaluable for anyone who needs to know what time it is around the world.

After months of research and discussions with Microsoft about the security restrictions of Internet Explorer, GeT sponsor Grey Interactive UK has created the world’s first accurate website clock. By simply copying a few lines of code, websites can display the time in their location with micro-second accuracy without the need for extra hardware or complex software.

To download either of these tools visit http://www.get-time.org.

To continue to build on our success GeT requires more NTP servers to manage the growing traffic. We invite you to join the GeT Network and help create the key building block for the long-term development of global e-commerce and community.

For further information on working with the GeT Network or developing time tools please contact Vanessa Evans at LINX - email vanessa@linx.net or telephone 01733 207700.

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**MULTICAST CONFERENCE SUCCESS**

The conference on multicast technology which LINX organised towards the end of last year proved to be a great success. An overwhelming 94 per cent of delegates who filled in post-event evaluation forms felt that the event had been useful to them.

More than half (53 per cent) of those who attended were ISPs. 12 per cent were content providers and the rest were a mixture of exchange points, media production companies and others. A pleasing 86 per cent of respondents felt they had learned something about multicast technology which they had not previously known and 64 per cent felt they had learned new things about the business applications of multicast.

More importantly, 64 per cent of respondents felt the conference had given them new ideas about the way in which their organisation could use multicast technology and 48 per cent felt their organisation may use multicast at an earlier date than would otherwise have happened.

Almost half (47 per cent) felt their attendance would result in their organisation making use of multicast in a different way than would otherwise have happened.

LINX will continue to facilitate discussion of multicast and its applications. To help in this process Cisco Systems Inc, which sponsored our conference, has opened one of its customer support websites to LINX members. The URL http://ftpeng.cisco.com/ftpmulticast.html gives access to a wealth of information on multicast technology, including a link to a mailing list for general multicast discussion.

The top level speakers from politics and the Internet industry at our conference endorsed the potential of multicast technology as the way to deliver new Internet services. Many of them, though, stressed that technology development must be driven by commercial considerations.

Chris Fletcher, head of technology development at LINX, said: "The conference brought together ISPs – many of which say they will offer multicast capabilities when there is demand from content providers – and content providers, which are generally reluctant to get involved until the technology is in place and there is a reliable method of audience measurement."

“During the course of the day we were able to show content providers what the technology is already capable of delivering and ISPs were able to engage them in dialogue about their future plans.”

The presentations given at the conference are on the LINX website at http://www.linx.net/multicast/programme.html.
LINX WORKING GROUP TACKLES INTERNET SKILLS CRISIS

A working group of LINX members is aiming to help solve a critical shortage of skilled Internet engineers that is threatening the development of e-commerce in the UK and the rest of Europe.

LINX training officer Hugh Spencer favours a three-track approach to tackling the problem, he will tell the first meeting of the LINX Accredited Internet Engineer working group, which meets at the London offices of InterXion on 15 March.

He suggested setting up a clearing channel that would assist engineering students to find work placements with ISPs and provide guidance on drawing up work contracts. He also wants vendors such as Extreme and Foundry to assist in running open days to give students and lecturers hands-on experience of working with real equipment that is used by ISPs. The equipment could be held in a central laboratory and open days could be held around the country, duplicating for students and lecturers the ‘real-life’ experience of engineers who configure the equipment from remote locations.

The biggest hurdle, though, is to set up a scheme that closes the gap between what is currently taught in engineering degree courses and the skills that are required by ISPs. Hugh is in the process of preparing a questionnaire to identify the specific needs of ISPs and how current training modules are falling to match the requirements.

Although this may result in the creation of a LINX accreditation scheme, Hugh recognises that it will require considerable effort to meet the high expectations of academics. In addition, government policy is committed to reducing the number of qualification awards in the IT industry from the current level—estimated at 800-plus—to around 50.

Hugh also believes the Internet industry is losing a large number of potential recruits by failing to make engineering attractive to women graduates. He said: “Non-IT women graduates tend to score very highly in aptitude tests when compared to their male counterparts from the same background.”

“However, only a small percentage of those candidates take jobs in IT companies. It seems there are plenty of capable people out there if only the industry looks in the right places.”

Under its non-core activity programme 006 LINX is working with universities to introduce training modules specifically tailored to the needs of the Internet industry. It is also working on plans to co-ordinate student work experience placements with its members.

LINX STRENGTHENS PR

Two new public relations consultancies have been appointed to help LINX with two very different aspects of our activities.

Smyne Holland Associates — based in Peterborough, just a few metres from our own headquarters — is to help us handle media relations and other aspects of public relations related to our core business. The account team will be headed by the firm’s managing director, Michael Holland, and will report to sales and marketing manager Vanessa Evans.

London-based Political Intelligence has been appointed to assist with our non-core activities, particularly those which involve political lobbying. The account team will be headed by Nicholas Lansman and will report directly to the director of public policy Roland Perry. Political Intelligence already undertakes similar work for the Internet Service Providers Association and the arrangement will assist co-ordination between ISPA and LINX.

Vanessa Evans said: “As LINX has developed, our public relations needs have changed. By appointing two specialist firms we can obtain the best possible results.”

PACKED AGENDA FOR LINX 32 — AND LINX 33 IN PARIS

The next meeting of LINX members — LINX 32 — takes place in the Tara Cophorne Hotel in London on Monday 26 and Tuesday 27 February 2001. It will include our 2001 annual general meeting which starts at 14:00 on the second day.

Agenda items for the first day include a progress report on the development of our infrastructure (see article on page 2), the latest news on our training initiative for network engineers, and presentations from Cisco Systems — one on dynamic packet transport and one on multicasting as a follow-up to our very successful conference on this topic at the end of last year (see article on page 7). There will also be a report from the North American Network Operators Group (NANOG), which holds its conference just a couple of weeks ahead of LINX 32, and a discussion on various peering and other procedural matters.

The morning of the second day will concentrate on our non-core activities, including recent legislative developments such as the proposed banning of tobacco advertisements in the UK and the attempt by the UK’s Department of Health to enforce the law banning the ‘advertising’ of children available for adoption.

The AGM in the afternoon will include ratification of the reapportionment of council members and a series of resolutions to amend the Memorandum and Articles of Association.

Details are on the LINX website at http://www.linx.net/members/meetings/linx32.

Thanks to generous sponsorship from Extreme, LINX 33 is to be held in Paris in May 2001. More details will be published shortly on the LINX website and in the next issue of HotLINX.