NEWSLETTER

Euro-IX Membership Milestone

With three newly affiliated IXPs in as many months Euro-IX now boasts a membership base of 40 Internet Exchange Points.

Two European and one Japanese IXP have joined Euro-IX in the past few months. Below is an introduction to our newest affiliates.

BBIX: In the current Japanese Internet environment, data traffic heavily relies on Tokyo, on the other hand the age of Broadband requires high quality traffic management for IP telephony, streaming contents, online gaming and so on. The Broadband Internet Exchange (BBIX) has started Internet Exchange services for each region in Japan to provide high quality traffic management for ISPs, CSPs and ASPs. BBIX is a carrier free IX and any organisation that owns a global AS number is welcome to participate.

PacketExchange: Their global, private network, offers service users an alternative to the public internet with the ability to bypass the mounting traffic delays and security. PacketExchange can eliminate the complexity of creating and managing individual internet peering relationships whilst establishing International coverage from a single location. Using innovative multipoint-to-multipoint EthernetWAN technologies, the "eXpress" service provides automatic and cost effective access to a wide-area multilateral peering community.

UA-IX: Ukrainian traffic exchange network - is the daughter company of Ukrainian Internet Association with exceptional kind of activity – was established in July 2000. Initiators of establishing of Ukrainian traffic exchange network are the companies, which work on the Internet market. Establishing of Ukrainian traffic exchange network gave the possibility to its participants to minimize their expenses and to expand their business possibilities. Traffic exchange network is the pledge of stability of Internet market of Ukraine; it has two points of traffic exchange.

New Euro-IX Board

At the 11th Euro-IX General Meeting which was held in Frankfurt Germany in October of last year, four members of the Euro-IX Executive Board (Kurtis Lindqvist, Ondrej Filip, Valeria Rossi and Christian Panigl) stood down as their two year terms on the board came to an end.

An election was held to fill the vacated posts and the following candidates were duly elected by the membership:

Simone Arena, Kurtis Lindqvist, Arnold Nipper & Christian Panigl

The current Euro-IX board is as follows:

- Kurtis Lindqvist - Netnod *(Chairman)*
- John Souter - LINX *(Treasurer)*
- Job Witteman - AMS-IX *(Secretary)*
- Ian Robertson - LONAP
- Simone Arena - TOP-IX
- Arnold Nipper - DE-CIX
- Christian Panigl - VIX

EURO-IX HAS A NEW WEB DEVELOPER

After Peter Banik left us in October of 2006, we quickly started looking for a replacement and this came in the form of Martin Lyden who joined us at the start of January this year as our new web developer. Martin is currently finding his way around our web servers and will be getting on track soon and looking to push forward with our plans for new web based tools and the third round of the Benchmarking Club.

Please feel free to make contact with Martin at: webmaster@euro-ix.net

THE 9TH EURO-IX FRANKFURT

The Autumn 2006 Forum was hosted by DE-CIX and took place in Frankfurt Germany with some 71 attendees from 29 IXPs participating, including representatives from two prospective member IXPs BBIX, BroadBand Internet Exchange of Japan (who have now joined Euro-IX) and SWISSIX of Switzerland.

With the introduction of the online rating polls, we managed to get a 77% participation rate and according to the attendees the most popular sessions were the IXP Tools Workshop, Technical Issues Workshop and the Co-location workshop. All in all it seemed (according to the attendee feedback) that the balance between technical & commercial content and social aspects of the forum seemed to be spot on.

Most of the attendees had positive feedback to pass on to us and here are some of the captured comments of what the attendees had to say about the forum in Frankfurt:

"Mike Hughes of LINX told an interesting story about one of his latest maintenance experiences which I found very useful, especially as I am planning on doing some 'disruptive' work in the near future. Simone Arena of TOP-IX presentation showed attendees a more open North American research and engineering organisation when comparing it to that of Europe."

"Daniele Arena of NaMeX talk on the public administration showed us a leading example in this sector, it was a very interesting case-study that showed that Italian Public Administration doesn't want to be subjected to ISP's commercial politics. Again, very interesting a case where a (big) customer can force ISPs to peer with the ultimate goal of achieving better performance. We can also see this from the side where a customer actually stopped to be used as an argument for denying peering (i.e. reducing the potential traffic of bigger ISPs, leveling things a bit perhaps)."

"The commercial workshop presentations gave me several insights on how to make an IX grow. Of course, some of the ways are not very easy for all the members (given their type, size and geographical location), but still very, very useful information to make things go forward. The content of what they presented more than met my expectations about getting new ideas to promote/enhance our IXP."

"I though that the co-location workshop gave some good insight. The presentations were also very interesting, it was nice to learn about how the bigger IXPs are also facing some problems. Good insights perhaps for future (& distant) evolution of our IXP."

"For me, the vendor session was probably the most fun part of the whole forum. Nice idea, very well lead by Ian Robertson. Oh, and we got nice input about what is currently going on on vendor's minds."

"Kurtis' presentations were both useful in different senses. The first one on the benefits of co-located services showed me ways forward to enhance IXPs (and that's something I'll probably be putting significant effort soon), the second one titled 'Affect on traffic from the TPB bust' showed us how some events can be spotted in IXP's traffic graphs -- and this shows once again how important IXPs are!"

"I would say Malcolm Hutty's presentation about defending the 'mere conduit' principle was the best of this forum. This topic should be very important to all the members, and my vision is that this effort is something everybody needs to contribute to. I'll also try to convince our lawyers and board we need to strongly support this."

"Elisa Jasinska of AMS-IX presentation on sFlow was a nice glance into the future. We currently don't do sFlow or any kind of flow analysis, nor do we have short-mid term plans to do it. It is also nice to see some focus/reference to IPv6, which is my current most time-consuming topic. 0,2% of AMS-IX's traffic might be somewhat a small proportion, however it's a whole lot of traffic from my perspective in absolute terms -- some small/very small IXPs have that kind of traffic amount in IPv4!"

Please keep in mind that all of the presentations that were made at the 9th Forum in Frankfurt are available as part of the online programme that can be found behind the members pages under the *News & Meetings* section of our website.

EURO-IX PATRONS

With the aim of reducing pressure on Euro-IX secretariat to continually find sponsors for the Euro-IX Forums every six months, the fact that switch vendors and other interested parties wanted to have a longer running and more intimate relationship with Euro-IX and to allow members to have more insight and involvement in the development of future IXP related products and services, it was decided to allow IXP related parties the ability to affiliate themselves with Euro-IX as Patrons. In the six months that we have been offering the Euro-IX Patronage scheme, the following four switch vendors have affiliated themselves with Euro-IX.

The Cisco Catalyst Series offers one of the industry's most comprehensive portfolios of intelligent network switches . These offerings provide a continuously expanding suite of intelligent services and advanced technologies to strengthen, simplify, and extend the value of your network infrastructure, helping deliver the greatest investment protection available.

Cisco network switches integrate intelligent network services with advanced network technologies to strengthen integrity and performance. The Cisco network switch portfolio provides enhanced functionality and intelligence to help organizations simplify and automate complex tasks while supporting new application and business requirements.

As a part of the Cisco switching portfolio, Cisco Catalyst Intelligent Network Services provide unmatched network resilience that strengthens the foundation and service quality of the network by delivering:

* Integrated security

* High availability

* Delivery optimization

* Enhanced manageability

The Force10 E-Series switch/routers provide best-in-class resiliency, unmatched scalability, line-rate performance, and full L2 switching and L3 routing.

Based on revolutionary system architecture that combines fully distributed hardware and modular software, the E-Series switch/routers ensure predictable application performance, increase network availability, and reduce operating costs.

* Patented multi-processor design delivers best-in-class resiliency & security

* Up to 1260 Gigabit Ethernet ports or 224 Ten Gigabit Ethernet ports per chassis, enabling unprecedented network scalability

* Innovative Force10 ASICs and E-Series architecture deliver non-blocking, line-rate forwarding with Access Control Lists (ACLs) across all line cards

* Fault-tolerance simplifies maintenance and maximizes system availability

* Robust Force10 FTOS™ software delivers full functionality Layer 2 (L2) switching and Layer 3 (L3) routing for applications spanning the LAN, MAN, and WAN.

Foundry Networks provides a broad range of products that are ideal for an IXP's needs. These products provide several unique benefits for IXPs that include:

* Industry-leading 1-GbE and 10-GbE port density

* Uncompromised wire-speed performance on all ports for any packet size

* Compact solutions

* Ultra-low deterministic latency of just a few microseconds

* Lowest power consumption and heat dissipation among available products in the market

* High availability software capabilities including Hitless Failover and

Hitless software upgrade for non-stop operation

* Advanced security features in the system to prevent attacks such as

Man-in-the-Middle and Denial-of-Service attacks

* Leadership in 10-GbE solutions

* Powered by Multi-Service IronWare®, which enables a rich set of capabilities in Layer 2, advanced Layer 2 and MPLS in the underlying

hardware

* Future-proof investment with 40-G and 100-G readiness TODAY!

Glimmerglass manufactures an intelligent optical switch that establishes all-optical layer 1 (L1) connections between input and output fibers, eliminating manual patching or optical fibers. Glimmerglass products manage physical-layer fiber connections that carry IP over DWDM, 10 Gigabit Ethernet, 40 Gigabit SONET/SDH, FTTx, video, RF over fiber and more.

* Unique, scalable optical switch in a wide range of non-blocking configurations that connect single-mode fiber at any line-rate (1GigE, 10GigE, 40GigE and beyond) with no upgrades required

* Build fault-tolerance networks protected against unplanned outages using Glimmerglass to switch Layer 1 (L1) fibers to alternative network interfaces of L2 or L3 switching equipment

* Save money by sharing expensive 10GigE testing and monitoring equipment across all of the fibers in your network by tapping and connecting light signals using Glimmerglass

* Use Glimmerglass L1 switching to switch network equipment off-line for maintenance and system upgrades, maximizing network availability.

## 2006 REPORT ON EUROPEAN INTERNET EXCHANGE POINTS

After receiving many requests from both inside and outside the IXP community for further statistics on the exchanges present in Europe. I have compiled a report which looks at the number of IXPs in Europe in 2006, where they are, the (publicly viewable) traffic being exchanged, the number of participants and other relevant information.

The report covers almost 100 known IXPs from 66 cities in 33 different European countries. The report showed that France had 13 IXPs with 9 of them being located in Paris, Germany had 12 IXPs with 4 of them being located in Frankfurt and the United Kingdom had 12 IXPs with 8 of them being located in London.

Other statistics showed that between 2001 and 2003 38 new IXPs were established (20 being non-for-profit and 18 being for profit) which makes of almost 40% of today's IXPs. Today it is estimated that approximately 65% of IXPs are of a non for profit nature.

Further details on both city and country aggregated traffic statistics as well as connected ASNs can be found in the report which is available to the membership and the public in general at:

http://www.euro-ix.net/resources/2006/
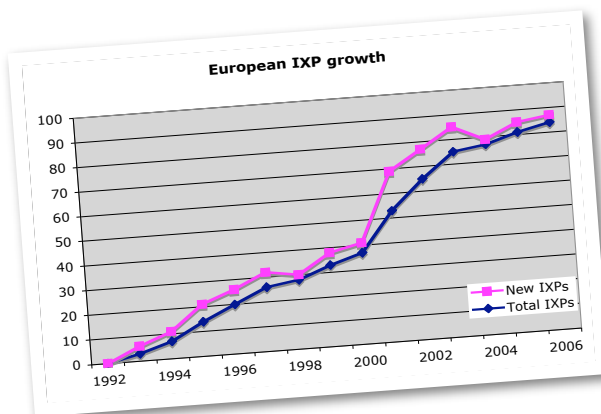
Growth of European IXPs since 1992

OVERVIEW OF THE EURO-IX SWITCH DATABASE ENTRIES (AS OF 16/01/2007)

The Euro-IX Switch Database contains some 174 separate entries that have been updated by 31 of the 40 affiliated IXPs. For this data to be even more accurate I would implore all affiliated IXPs to please keep their Switch DB information up to date.

Here is a vendor and model summary of the current entries in Euro-IX Switch database:

Cisco Systems (77 Switch DB entries)
• DB entries by 19 Euro-IX IXPs
• 14 models in DB
• Most popular model: Catalyst 6509 (*23*)

Foundry Networks (56 Switch DB entries)
• DB entries by 10 Euro-IX IXPs
• 8 models in DB
• Most popular: BigIron 800 (*12*) & MG8 (*12*)

Extreme Networks (16 Switch DB entries)
• DB entries by 4 Euro-IX IXPs
• 3 models in DB
• Most popular: BlackDiamond 8810 (*8*)

Force10 Networks (9 Switch DB entries)
• DB entries by 3 Euro-IX IXPs
• 3 models in DB
• Most popular model: E1200 (*5*)

Glimmerglass (9 Switch DB entries)
• DB entries by 1 Euro-IX IXP
• 1 model in DB
• System 300

Allied Telesyn (4 Switch DB entries)
• DB entries by 1 Euro-IX IXP
• 1 model in DB
• Rapier24i

Enterasys (2 Switch DB entries)
• DB entries by 1 Euro-IX IXP
• 2 models in DB
• X-Pedition 8000 & Matrix N7

Dell (1 Switch DB entry)
• DB entry by 1 Euro-IX IXP
• 1 model in DB
• Dell 6024

EURO-IX MISSION STATEMENT

With Euro-IX being established for more than 5 years and the fact that Euro-IX now includes IXPs from outside of the European region, the Board believed that it was a logical time to renew the Euro-IX mission statement to read as follows.

Euro-IX is an association of European Internet Exchanges, promoting an open interchange of ideas and experiences, gained to mutual advantage of the membership, by offering fora, meetings, mailing lists and on-line resources. Euro-IX also gathers information on regulatory issues affecting member exchanges within the region and where appropriate from other jurisdictions that could potentially impact on the membership.

General meetings and fora will be held within the Euro-IX area but membership from other exchanges outside the region is encouraged and such members are welcome to attend our meetings; contribute to and benefit from our shared expertise and experiences. Euro-IX welcomes contact with other regional associations and pledges to liaise and cooperate with those that emerge.

SUMMARY OF THE EURO-IX MEMBER IXP SERVICE COMPARISON MATRIX

Many of the ISPs that visit the Euro-IX website looking for a potential place to peer often take into account the information that has been placed on the Euro-IX IXP services matrix as this gives then a quick overview of who offers what services. Below is a summary of the information contained in the IXP service matrix.

- Non-for-profit - 75% Yes and 25% No
- Private peering - 70% Yes and 30% No
- IPV6 Peering - 83% Yes and 17% No
- Multicast - 47% Yes and 53% No
- VLAN service - 55% Yes and 45% No
- Out of band access - 52% Yes and 48% No
- 24x7 services - 82% Yes and 18% No
- 24x7 access - 82% Yes and 18% No
- 10Mb ports - 72% Yes and 28% No
- 100Mb ports - 92% Yes and 8% No
- 1Gb ports - 97% Yes and 3% No
- 10Gb ports - 65% Yes and 35% No
- An Euro-IX affiliated IXP has an average of five housing locations
- and an average of 68 listed customers

FUTURE EURO-IX FORUM

10th Euro-IX Forum - Amsterdam NL

The spring 2007 forum is to be held in Amsterdam on the 16th & 17th of April and our hosts for the event will naturally be AMS-IX. The Dutch Chamber of Commerce (KvK) office in Amsterdam that overlooks the River Ij, which is the main river that separates Central Amsterdam from Northern Amsterdam, will be kindly donating their meeting facilities to us for the two days of the forum. This venue is only five minute walk from the central train station which has regular trains to Schiphol International Airport.

In an effort to bring attendees to Amsterdam a little earlier than the start of the meeting, we will be inviting attendees to join in an ISP go-kart competition which will take place on Saturday the 14th of April and of course we will have a Euro-IX Sunday Social event on the evening before the commencement of the forum, so come early to Amsterdam!!

Registration is now open, please go ahead and register your intention to attend the forum and your planned hotel requirements via the Euro-IX website, just log in and follow the "*10th Euro-IX Forum*" pointers.

11th Euro-IX Forum - Vienna Austria

After carefully considering all the IXP proposal that were received for hosting this event, the Euro-IX board decided to award the event to the Vienna Internet Exchange (VIX). Thus the autumn 2007 forum will be taking place in Vienna Austria on the 12th & 13th of November this year.

12th Euro-IX Forum - TBD

The call for hosting this event has now been sent out. Contact Serge for more information.

REPORT OF THE 67TH IETF: SAN DIEGO

Kurtis Lindqvist of Netnod attended the meeting and was kind enough to share the following report with us -

The 67th IETF was held in San Diego from November 5th to November 10th. An area of focus this time was future scaling of the routing system. The IAB had held a workshop earlier in October in Amsterdam on Routing and Addressing (called RAWS) for invited participants. The conclusions from the workshop was that while there is no hard date when routing will run into a wall, the cost of operating will become increasingly higher and hardware upgrade cycles will become shorter and shorter. The outcome of the workshop was a presentation at the technical plenary as well as a BOF session where various solutions was discussed. This will result in another BOF at the next IETF in Prague. The report of the RAWS can be found in http://www.ietf.org/internet-drafts/draft-iab-raws-report-00.txt

There was also other discussions related to future routing scaling in the V6OPS (http://www.ietf.org/html.charters/v6ops-charter.html) working group where proposals for route filtering guidelines was discussed. The discussion centered around a document submitted to the NRO (http://www.nro.org/documents/nro42.html) that recommends that IPv6 routes should be filtered at a /48 boundary in order to allow the form of 'PA multihoming' or 'more specific multihoming' that is also done for IPv4 today. This technique is based on the fact that a customer of provider A gets allocated a PA address space block and then from it's own AS number announces this prefix to both provider A and provider B. This more specific route will then let the customer multi-home. Today most providers that operate prefix filers for IPv6 will filter out routes that are more specific than the current RIR initial allocation size of /32.

Related to the question of scaling the routing system and the routing filtering guidelines is the work of the SHIM6 (http://www.ietf.org/html.charters/shim6-charter.html) working group that have been working on a protocol that would allow end-systems to make use of multiple address prefixes from different providers and allow for session persistence even at fail-over to a different address pair used for the communication. The SHIM& WG have completed all it's base documents and are now waiting for the first implementations and implementation reports.

There are at least 4 groups working on implementations for Linux and FreeBSD.

Also at the technical plenary was a short summary of another earlier workshop that the IAB had organised around 'Unwanted traffic', i.e spam, DDoS attacks etc. A major focus at the workshop was the elements of underground economy that fuels the actual sources of the unwanted traffic. These are of course very had to combat with just technology, but a few areas for action was identified and can be found in http://www.ietf.org/internet-drafts/draft-iab-iwout-report-01.txt. Further that can be of interest to IXPs is the work of the OPSEC working group that are trying to document Best (Common) practices for operational security and other operational practices that can help protect your networks and infrastructure. While the group did not actually meet in San Diego they did http://www.ietf.org/html.charters/opsec-charter.html

Other working groups that might be of interest to the IXP community is the SPEERMINT (http://www.ietf.org/html.charters/speermint-charter.html) WG that are working on an architecture for VOIP peering across the Internet. This is mostly done in a NGN environment where the idea is that every service needs to be covered by a separate peering agreement as opposed today where an agreement will cover all forms of services. SPEERMINT are working on documents to clarify the terminology and on associated signalling and establishment protocols for the NGN model. The other working group that might be of interest is the TRILL WG (http://www.ietf.org/html.charters/trill-charter.html) met and tried to finalise their applicability and routing requirement documents. They made quite some progress and several deployment scenarios where discussed.

There is also currently some work being put into NTP. The current NTP (http://www.ietf.org/html.charters/ntp-charter.html) working group is focusing on documenting the NTPv4 protocol as is currently deployed and in use. They are making progress on understanding and documenting the timing algorithms. One blocking factor have long been that fact that normative IETF standards are published as ASCII text, which is unsuitable for documenting the very complex algorithms involved in NTP. This has now been solved as the IETF is experimenting with publishing normative standards as PDF files. In addition to the NTP

WGs work on standardising the existing protocol, work has started on NTPv5. In San Diego a 'bar BOF' was held and discussed some of the requirements for this. More exact time transfer (wall clock) as well as distribution of frequency for use in for example clock recovery of SDH emulated circuits over IP and frequency distribution to next generation of mobile cell stations. A real BOF is planned for the next IETF in Prague on this topic.

Last, at the administrative plenary, an IAB document (http:// www.ietf.org/internet-drafts/draft-iab-rfc-editor-03.txt) describing the role of the RFC Editor and in particularly handling of 'independent submissions' was discussed. The reason for this discussion is that the IETF Administrative Support Activity (IASA) for the first time held an open bidding process for the RFC Editor function. This has so far been performed by the Information Sciences Institute (ISI) at University of Southern California in Marina del Rey. In order for IASA to properly issue an RFI/RFP the IETF for the first time had to describe the various RFC processes and expectations on the copy editing and auditing functions that have so far been provided bu ISI.

- Kurtis Lindqvist of Netnod

UPDATE ON IEEE HSSG

The third meeting of the IEEE Higher Speed Study Group (HSSG) took place in Monterey, CA, in January of this year.

The purpose of the IEEE HSSG is to create a so called Project Authorization Request (PAR). This PAR will eventually describe the project to be undertaken by an IEEE 802.3 working group to create a standard for a higher speed Ethernet.

A PAR typically describes a number of aspects concerning the new standard:

• Objectives: what's be accomplished in the new standard
• The so called 5 criteria.
1. Broad market potential
  • There should be a broad set of applications
  • Be supported by multiple vendors and numerous users
  • Cost should be balanced
2. Compatibility
  • The new standard should be compatible with existing
  • IEEE 802 standards

3. Distinct identity
  • The new standard should be substantially different from other existing standards
4. Technical Feasibility
  • It should be demonstrated that the proposed new standard is technical feasible.
5. Economic feasibility
  • Reasonable cost for performance
  • Known cost factors based on reliable data.

After this last meeting the current state of affairs is that there are a number of objectives defined and a start has been made with describing the 5 criteria and the PAR.

The current objectives are:

• Preserve the 802.3 Ethernet frame format at the MAC client service interface
• Support full-duplex operation only
• Preserve the minimum and maximum Framesize of the current 802.3 standard
• Support a speed of 100 Gb/s at the MAC/PLS interface
• Support at least 100 meters on OM3 MMF.
• Support at least 10 km on SMF
• Support at least 40 km on SMF
• Support a BER better than or equal to 10EXP-12 at the MAC/PLS service interface.

The last two objectives were added to the list at this last meeting.

Timelines: For those of you anxious to get there hands on faster Ethernet (like I am), you better have some patience. The current schedule aims at finishing the workgroup work around July. Approval of the PAR by the IEEE standards Board around September and start of official task force in November 2007. It is estimated that it will than take another 2 years to complete the standards work, which will be Q4 2009.

For further information on the IEEE HSSG please have a look at the website:

http://www.ieee802.org/3/hssg/index.html

- Henk Steenman of AMS-IX