

SOUTH AMERICA
HEAnet is Ireland's National Education and Research Network, providing high quality Internet Services to Irish Universities, Institutes of Technology and the research and educational community, including all Irish primary and secondary schools.



NEWS

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Intro from the CEO



WELCOME TO THE FIRST EDITION OF HEANET NEWS.

The aim of this publication is to provide periodic updates on major activities and give news of other projects and developments which we are working on in the Higher Education and Research networking area. The idea for providing this hard copy newsletter arose from client feedback around communication of

networking activities and services. It is designed to be complimentary to our annual conference as a way of sharing information within our community.

We would welcome any articles or topical experience which our users would like to publicise.

Your feedback, comments and suggestions on this new initiative would be very welcome.

Contact: newsletter@heanet.ie

*John Boland,
Chief Executive*

HEAnet's NATIONAL NETWORKING CONFERENCE 2007
Networking Advances for Education & Research
Lyrath Estate Hotel, Kilkenny, 15th - 16th November 2007
www.heanet.ie/conferences

Massive Upgrade to National Network

This year, HEAnet has started work on a massive upgrade to its IP network, the infrastructure that underpins our core service to clients. Now that the National Backbone Extension is present at many client sites, we are able to take advantage of the opportunities that this gives us to radically rethink our network architecture.

Our original network architecture had the task of bringing the network to clients at the major cities, by means of deployment in selected PoPs around the country, with a trunk capacity of 34Mbit/s.



Since that time, various upgrades in line capacity have taken place, and our existing equipment is being used to its full ability.

Now that the National Backbone Extension has taken on the task, not just of connecting clients at the major cities, but of bringing the Dark Fibre network to the client's door, it's time not just to perform another round of upgrades, but to look to current and future requirements and to ensure that there is adequate capacity, on secure and stable platforms, to meet the needs of the HEAnet community.

Massive Upgrade to National Network (continued)

Based on responses to a notice in the Official Journal of the EU, we were able both to gauge interest in the industry, and gather information on a suitable architecture for the future network. On foot of this, and based also on the experience of other NRENs in Europe, our procurement - now in the contract negotiations stage - specified a network that would aggregate client connections at two locations to ensure resilience, and taking full advantage of the existing and growing Dark Fibre network. Features that are expected to be present immediately or shortly after commissioning include scalability to 10Gbit/s connections, IPv6 multicast and 32-bit AS numbers as well as existing production services such as IPv4/6 unicast. Over its lifetime, the equipment is expected to scale to allow connections at up to 40 or 100Gbit/s.

A preferred supplier has been chosen, and contract negotiations are well advanced. We hope to announce the winning tenderer shortly, with deployment of the new equipment in the fourth quarter of 2007. We will be in touch with each client individually to consult on the phased migration to the new equipment and to ensure that the impact on production traffic is minimal.

National Backbone Extension

The National Backbone Extension programme is a major initiative designed to extend the core national backbone infrastructure out to the client institutions, using fibre-optic based connections.

HEAnet operates a national or wide area network (WAN). In addition, it has been able to provide connectivity at regional and metro scales. This translates into quality connections between clients and their off-campus sites and affiliates, and to new trunks for enhanced resilience.

A new phase of the NBE (National Backbone Extension) programme started in Q2 2007. The programme has been made possible by support from the HEA, and already over 100 new circuits have been commissioned, delivering high-speed and resilient connectivity to client institutions, some on multiple sites.



The third and current phase has attracted applications for an additional 80 new circuits, in respect of 27 client institutions. As well as providing physical details of the desired connection, applicants were asked to provide a rationale, under six separate criteria, for each circuit they required.

To help with the selection and prioritisation of applications, we have had access to two independent experts; Dave Fegan, Science Secretary of the RIA, and John Howard, consultant with Norcontel, who have provided insight and guidance in their recommendations on circuits to be provided.

As a result of their evaluation of the 80 applications, we now have a schedule of 53 circuits to install over the next year and a half. Where possible, we are seeking to acquire Dark Fibre to provide the circuits, as this allows us huge scope for bandwidth and service scalability in the future.

By securing and lighting its own fibre, HEAnet can provide services such as:

- *high-capacity access for clients;*
- *intra-institutional links, LAN extension;*
- *dedicated point-to-point links;*
- *hybrid network with variable geometry at layer 3;*
- *prompt and simple upgrades;*
- *user-defined light paths (in development).*

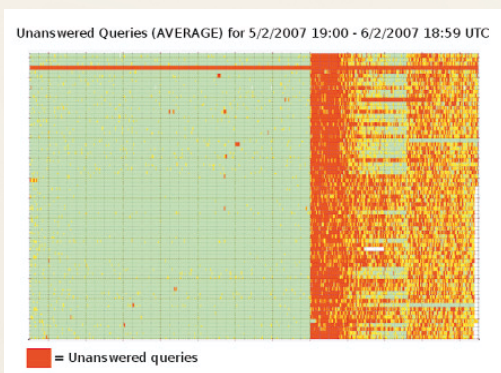
If Dark Fibre is not available, the option space also includes managed services, using Ethernet framing at 10, 100 or 1000Mbps. This maintains the ability to deliver inter-site or intra-site connections, and provides for an integrated monitoring and support functionality.

HEAnet's National Backbone Network is designed to accommodate heterogeneous circuit technologies, while providing clients with a homogeneous presentation.

Recent DDos Attacks

The past eight months saw two high-profile DDoS (Distributed Denial of Service) that grabbed headlines worldwide. On February 6th the 13 root name servers that manage the global DNS system came under sustained attack from compromised machines in the Asia-Pacific region. The reason for the attacks remains unclear, however the DNS remained unaffected. This was largely down to the distributed nature of the system and the use of "Anycast" technology in the majority of the root name servers.

HEAnet employs a similar Anycast setup for DNS servers in our network. In April - government, banking and other websites in Estonia were taken offline in an apparent politically motivated attack. Message board postings indicated that the attack was directed from Russia, however the traffic itself originated from computers around the globe. Experts from NATO and the Finnish Computer Emergency Response Team (CERT) aided Estonia in tracking the attacks.



Security

HEAnet is currently working on a new service called HEAnet D-IDS. The main purpose of the system is an IDS that can detect malicious network attacks on client networks such as worms and viruses. While traditional IDS systems require monitoring of the network and tuning false-positives the D-IDS uses honeypot technology to determine attacks.

The HEAnet system is based on the initial design of the system. This was done by SURFnet with a number of key criteria these included:

- Provide an IDS system for clients that should not generate any false positive alerts;
- The sensor should be completely passive and therefore maintenance free;
- A sensor should be able to run in a standard LAN;
- The sensor should run out-of-the-box;
- Comparison of statistics generated by sensors and groups of client sensors should be possible.

SURFnet currently have over 40+ sensors deployed with their client base and another 20 sensors scheduled for deployment this year.

In HEAnet a test version of the D-IDS system has been up and running for a number of months. The initial deployment has produced some interesting statistics and graphs. The following table shows the number of attacks by port on the honeypot system over the current trial period.

Rank	Port	Description	Total Attacks
1	445	microsoft-ds	178659
2	139	netbios-ssn	164560
3	1433	microsoft-sql	144240
4	135	msrpc	9264
5	1720	Unknown	7445
6	4444	Unknown	4149
7	3306	my-sql	3592
8	80	http	2537
9	21	ftp	1563
10	22	ssh	1302

Figure 1.0 - Overall number of attacks by port

The next graph shows the geographical location of the attacks using google maps for the month of July. Note the coloured pins, the darker the colour the more attacks from that location.

Figure 2.0 - July 2007 attacks by country.



Other key features include:

- Provides a non-intrusive honeypot on any part of the clients network;
- Provides statistics daily/weekly/monthly/yearly connections;
- Provide statistics for/on current attacks and attacked ports seen;
- Provides alerting and reporting based on the clients network addresses;
- Provides information on the type and amount of malicious network traffic within a LAN including network based worms and viruses.

For further information please contact security@heanet.ie

COSMOGRID - During May 2007, the European Grid infrastructure, EGEE, was used to submit over 100,000 jobs per day. The infrastructure comprises over 240 centres with more than 37,000 processors and 13 Petabytes (13,000,000,000,000,000 bytes) of storage.

eduroam (Educational Roaming)

In a world where so many people rely upon Internet access both for work and leisure, the effect of lack of such access can range from minor inconvenience to an inability to carry out some aspects of your job. It is a widespread issue, but one that is of particular significance in the collaborative world of research and education, as people frequently travel far and wide attending meetings and seminars, requiring access to their networked resources from each venue. eduroam (educational roaming) attempts to address this issue by making it simple and convenient for roaming users in the research and education community to avail of wireless LAN access at those sites which participate in the project. The premise is simple - an eduroam site provides you with wireless LAN access if you successfully authenticate yourself to an authentication server at

your home site, via the eduroam infrastructure. Strong security is built into the architecture, by the use of an encrypted (TLS) tunnel from the wireless client direct to the home authentication server, this prevents disclosure of users' credentials to the visited site or any other third parties. Currently, research and education institutions in at least 29 European countries and 6 Asia Pacific countries participate in eduroam, forming a considerable community that is actively benefiting from the convenience of roaming Internet access. Since July 2006 Ireland has been a formal member of the eduroam community, thereby extending its benefits to any clients of HEAnet that wish to make use of the service. The take up of the eduroam service within the academic community in Ireland is progressing, with 4 client sites

currently capable of offering the service to their own roaming users and to visiting guests. An additional 8 institutions are either planning rollout or in the process of rolling it out locally. The current list of participants, and their implementation status, is visible on www.eduroam.ie. We strongly encourage clients to consider the benefits of joining the eduroam community and availing of all that it has to offer. The implementation is not onerous, and in fact we have found that some sites are already at a stage with their own wireless networking services that only a simple configuration change is required to allow them to reap the benefits of eduroam.

Should you require further information, or wish to join, details are available on www.eduroam.ie or noc@heanet.ie

Webhosting

HEAnet provides virtual web hosting services to interest groups belonging to the Higher Education and Research Communities. We have recently upgraded and expanded our web hosting packages to facilitate the changing needs of our Hosting customers.

There are now 3 hosting packages available to suit a variety of website sizes and needs; Static (html), Dynamic (database), and Advanced (application).

A full breakdown of all that is offered under each package is available on our Website at

<http://www.heanet.ie/services/services.php>

The newest addition to these is the Advanced package which allows clients to develop websites using plugin modules provided on our server to build sites which have blogging facilities (Wordpress), content management (Drupal), Web Forums (Vanilla), Wikis (Mediawiki), or course management (Moodle).

For any additional information or to discuss your own special needs please contact noc@heanet.ie

NDLR

The National Digital Learning Repository (NDLR) is a HEA funded pilot project between Irish Universities, the Institutes of Technology and their affiliated colleges. The project is investigating a framework to enable and support the collaboration, sharing and development of digital learning and teaching resources between these institutes. The project is managed by Catherine Bruen who is based in the Centre for Learning Technology in Trinity College Dublin.

The NDLR has also formed several subject or discipline based communities in the various higher education institutes. These communities, called Communities of Practice, comprise of different academic disciplines and include areas such as Nursing and Midwifery, Mechanical Engineering, Computer Science, Biotechnology and Modern Languages. The NDLR have recently been trialling a helpdesk to handle the various technical, legal and cataloging queries that they receive. This is staffed by Ann Marcus Quinn from the University of Limerick. HEAnet participates in this project by hosting the two servers which run the repository application and a variety of collaborative tools for each of the individual Communities of Practice.

Further information on the NDLR project is available on their website at <http://www.ndlr.ie>



HEAnet's NATIONAL NETWORKING CONFERENCE 2007

The HEAnet Conference will take place on the 15th and 16th of November 2007. It will attract IT managers and technical staff from our client organisations. It is a great opportunity to network and to keep up to date with our services.

*For further information contact:
Rose Turner or email: conference@heanet.ie*

Video Conferencing

HEAnet are currently running a tender for a high definition multipoint controller. The new MCU will allow up to 40 concurrent high definition and standard definition video conferencing endpoints to join virtual meeting rooms. An Endpoint can join the meeting at any speed from 128kbit/s to 4mbit/s. The MCU can handle different combinations of data rates and resolution in a meeting room, offering the best quality possible to each participant. HEAnet have purchased a Tandberg Content Server to allow the recording and playback of video conferences. We are currently configuring and testing this service and hope to have it ready for client use shortly. To use the service simply add the Content Server as an additional participant in a video conferencing call.

HEAnet Schools Network



More than 95% of Ireland's 4,000 primary and secondary schools are now connected to HEAnet's Schools Network. The network is a centrally managed backbone that connects schools to the Internet and other educational networks. HEAnet provide schools with a portfolio of network services including: managed Internet access; proactive network monitoring; webmail; web-hosting; network security and content filtering.

HEAnet's content filtering solution aims to protect teachers and students from accessing inappropriate content as well as preventing viruses from reaching schools from the Internet. A HEAnet survey of over 100 schools has found that approximately 75% of those schools surveyed stated that they would be more inclined to incorporate the Internet in classroom activity than before the filtering service was in place. This will no doubt help provide future generations gain a wider knowledge of IT skills.

Prior to connecting to the Schools Network, each school must sign up to a specific level of content filtering as prescribed by the Department of Education & Science, which defines the filtering policy for all schools. Since the introduction of this service into Irish schools, HEAnet have observed that schools are being protected from accessing inappropriate content and the incidence of viruses on the Schools Network has reduced significantly.

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If you have any news that you would like to submit for our next issue please contact newsletter@heanet.ie