

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.

HEAnet
IRELAND'S NATIONAL EDUCATION & RESEARCH NETWORK

NEWS

Issue No. 2 - April 2008



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Intro from the CEO



The most important activity we will undertake this year, apart from running the core services, is the development of a new Strategic Plan, in conjunction with the Board of Directors, which will drive the company forward over the next five years.

The strategy document will provide a framework for management decision-making in a range of areas including current and future services development and will address

fundamental issues such as how the company adds value for client organisations and where the networking organisation wants to be in the future. The goal is the delivery of a relevant, practical and integrated strategy for the company and our clients moving forward as well as a roadmap of how to get there. We will be running a series of consultations and stakeholder workshops over the coming months, both centrally and regionally.

One of the activities which we are embarking on as input to the Strategic Plan is an investigation into the options for delivery of nationally ubiquitous broadband wireless access to the campus networks for all HEAnet users. The rollout of Middleware and Eduroam will play key roles in implementing effective solutions and we hope to work closely with you on these developments to ensure a successful delivery.

John Boland, CEO, HEAnet

HEAnet delivers 24x7 Cover

With the internet now a vital tool for teaching and research, including independent self-guided learning and international research across time zones, HEAnet is pleased to announce an increase in the availability of support outside of the traditional nine-to-five thirty. For an initial trial period of 6 months, customers will be able to raise faults by phone 24 hours a day, 7 days a week.

In the case where a total outage to a client site is experienced, it will be possible to raise this fault immediately to a HEAnet on-call engineer, who will ensure the issue is resolved.

It's still possible, of course, to e-mail any queries or problems to us at noc@heanet.ie, but in the case of a total loss of connectivity to your site, please don't hesitate to pick up the

phone and dial 01-6609040 to make us aware of the problem.

The decision to offer a 24 x 7 service is not something HEAnet has entered into lightly. Committed to providing the best possible service to you, our clients, while always ensuring value for money, we listened to extensive feedback when making the decision to increase our level of cover to you.

We would like to thank all the representatives of the various clients who gave willingly of their time to confirm the importance of internet connectivity to their day-to-day business; also to those who detailed the volume of work and services that they provide outside of business hours: research activities, virtual learning environments, part-time student courses and labs, workshops and tutorials and much more. HEAnet

also took an extensive look at the levels of support being provided by commercial service providers and planned that the cover provided by HEAnet would be at least comparable with cover provided elsewhere.

We believe that this extended level of cover, providing 24 x 7 availability of HEAnet's network engineering expertise, will meet the needs detailed to us by our clients.

In the spirit of continuous improvement, we would value any feedback over the coming months. Invitations to a formal review of this 6 month pilot will be distributed to all clients closer to the time.

For more information, please contact the HEAnet Network Operations Centre on 01-6609040, or at noc@heanet.ie

Virtualisation Service

At the end of 2007, HEAnet deployed a virtualisation infrastructure based around a VMWare ESX server. It is intended as a means of quickly provisioning new servers that do not require any specialised hardware or perform intensive processing tasks. Virtualisation of certain services also eliminates the need to purchase dedicated hardware and power/space that is consumed as a result. The basic architecture consists of two Dell Poweredge machines running ESX Server with an EMC fibre-channel SAN providing the backend storage. Since this storage is shared between the two ESX hosts, virtual machines can be easily and quickly migrated from one host to another.

At the present time, most of the virtual machines are being used for testing purposes however some production services, such as Listserv, have been successfully migrated to the VMWare platform. In February 2008, ESX server was upgraded to version 3.5. This new version provides performance improvements for recent versions of Linux and support for 10-Gigabit ethernet, which is currently being rolled out across the HEAnet services network.

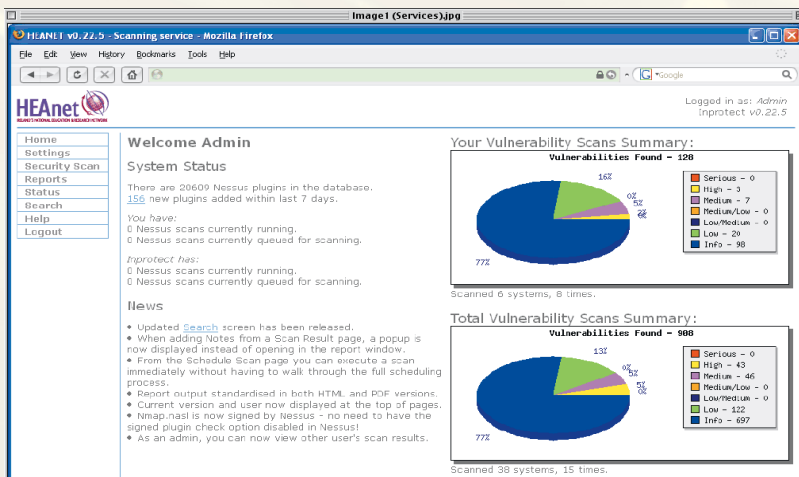
For further information on virtualisation please see the presentations on our 2007 conference programme:

<http://www.heanet.ie/conferences/2007/programme.php>

Security Auditing Service

The HEAnet "Security Auditing Service" combines a comprehensive security audit with detailed documentation, recommendations and ongoing scheduled vulnerability scanning to help our clients manage the security of their systems and resources.

There are 3 components to the service.



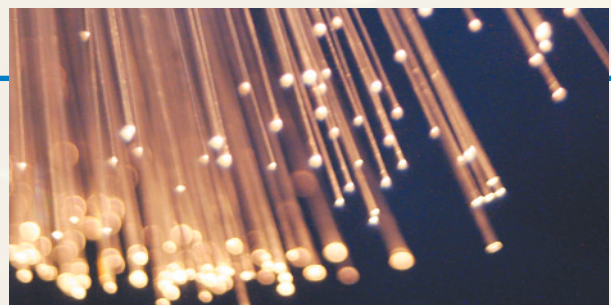
- **SECURITY HEALTH CHECK** - Identify and document our clients security infrastructure. The health-check will provide a snapshot of the current infrastructure, its vulnerabilities, providing and outlining current best practices and recommendations for improvements of the security and functionality of the systems in place.

- **VULNERABILITY ASSESSMENT** - Using the latest technologies to identify major risk areas within your network, applications and environmental infrastructure, HEAnet can provide a vulnerability assessment over the network from our data centre via a site visit to provide vulnerability assessments of our client's internal networks.

- **ONGOING SCANNING** - Security is an on-going process, HEAnet provide ongoing scheduled vulnerability assessment from our data centre. The system allows for a per-client customisation of the scanning process and includes a "Scan now" feature to help with the vulnerability assessment of newly installed servers, applications or devices. **Contact details:** aidan.carty@heanet.ie

Anycast DNS Resolvers

A reliable DNS infrastructure forms one of the most important but often overlooked parts of any network. One of the easiest ways to achieve this reliability is to make use of Anycast routing in the network. Anycast allows an IP address (or addresses) to be assigned to multiple physical machines - the router can then decide to which machine the traffic should be sent, based on a number of factors. This behaviour allows for load-balancing and failover without the need for expensive hardware or software. Several of the root nameservers that provide the global DNS make use of Anycast for increased reliability. Since February 2007, HEAnet have employed Anycast routing to provide resilient DNS resolution across the network. We have deployed two DNS resolvers in our Blanchardstown PoP, with Anycast routing between the resolvers and the services network routers. This configuration has proved extremely robust as we have been able to take one resolver out of service for an extended period with no impact



on the network. Over the next few months, we plan to build on the existing system by adding more DNS resolvers in geographically diverse locations and providing IPv6 Anycast addresses. These resolvers may be used by clients, who do not have access to their own DNS servers, by adding the following addresses to their DNS configuration:

193.1.186.2 193.1.186.3

Please contact noc@heanet.ie with any further queries.

<http://bgphints.ruud.org/articles/anycast.html>

MCU Tender Completed

The multimedia group has completed the tender for a high definition MCU (Multipoint Control Unit). The new MCU, a Codian 4520, has been installed and is available to all HEAnet clients. The MCU gives a large increase to both the capacity and quality of HEAnet's video conferencing service.

The new MCU offers call data rates from 64kbit/s to 5mbit/s allowing conferences between participants using anything from an analogue phone to the latest high definition video conferencing endpoints. The capacity of the MCU is 40 video participants with an additional 40 voice only participants.

Each participant in a call receives the highest quality video and audio possible on their endpoint and can customise the layout of the screen during calls without affecting the experience of other participants.

To avail of the MCU service HEAnet clients can dial into the MCU's main menu using the GDS number 003530110051 or directly into their institution's meeting room by appending their institution number to the end of the GDS. For more information on the service please contact multimedia@heanet.ie.

Expansion of IoT connectivity

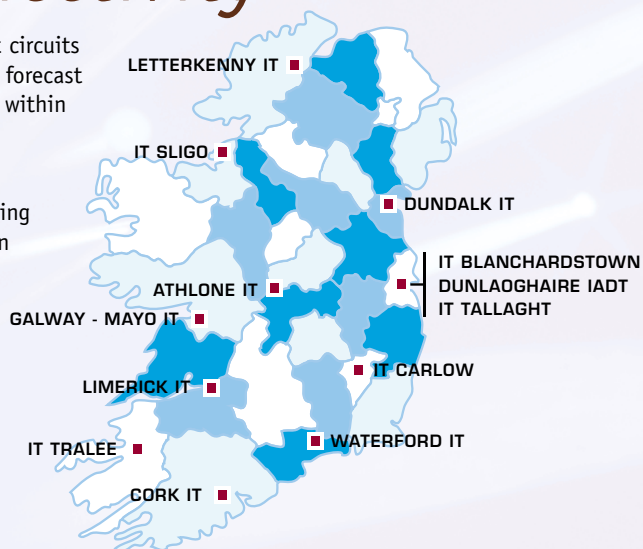
By the end of January 2008, all but one of the thirteen Institutes of Technology had successfully migrated their primary network connections to HEAnet. The migration project delivers a minimum of 1Gbps connectivity to every IoT.

IT Tralee remains to be connected and is dependent upon agreement between Kerry County Council and the contracting Telco regarding civil works. However, we anticipate that IT Tralee will be connected to HEAnet within the next quarter. Building on the success of the migration project, HEAnet's National Broadband Extension (NBE) programme continues to deliver path-resilient circuits to the IoTs. Six of the IoTs now

have dual 1Gbps path resilient circuits with three further institutions forecast for path resilience completion within the next three months.

Athlone IT will soon house a strategic HEAnet PoP terminating a 10Gig backbone link between Dublin and Galway.

The migration project also established an interconnect with the Government Network for the delivery of a commodity internet service to the IoTs over the HEAnet network.



New IP Network

The latest, most exciting upgrade to HEAnet's infrastructure, has been installed and client connections are now transitioning to new routers. The new network, based on Cisco CRS-1s, was physically installed in November 2007 and started routing production traffic in early December.

By April 1st, 18 University and IoT client connections have been transitioned to the New IP Network. Seventeen of these are connected at 1 Gbit/s and 1 client, HEAnet Managed Network Services is connected at 10 Gbit/s. All fully migrated clients have resilient connections on the routers at Citywest and Kilcarbery. During the month of April we will begin terminating connections to the older network, contingent on agreement with the client and satisfactory performance of the new connections, as the testing and acceptance phase will have been

completed for each client transition. Twenty clients are targeted to migrate during the month of April and interactive planning is taking place on an ongoing basis.

By May 1st, 70% of HEAnet clients will have transitioned to the new network, with some of the remaining clients requiring connection updates from old ATM and serial connections. Two of our strategic peering connections, GÉANT and INEX, are also now present on our new equipment at 10Gbit/s.

The major advantage of centralising is to minimise client downtime due to software upgrades. The new network only has two devices that will require a reboot in the event of an emergency or required maintenance, rather than a dozen. The new design also improves the aggregation of connections and so takes advantage of further economies of scale.

Large File Transfer Service

Following interest from our clients, we have now developed a large file transfer service. This service allows the user to upload files to a central storage point, where they can then distribute a unique URL to allow the download of their file.

So far, testing has confirmed the ability to upload files of up to 6 Gbytes and potentially greater, and there is of course no limitation on how small the files can be. All file transfers are done over HTTP, meaning there is no need to open additional ports on your firewall.

Right now we are looking for parties who are interested in beta testing. They will be given a personal logon to the service allowing them to upload files and also be subscribed to a mailing list where they can discuss issues with the system and make feature requests.

If you are interested in participating please contact: noc@heanet.ie

Ireland's Most Powerful Supercomputer

HEAnet have sourced a facility capable of providing power and cooling suitable to the needs of the most demanding applications with over 200 KW of power on demand, and air conditioning systems capable of handling the associated heat output. Throughout 2006 we migrated the HEAnet services and hosting infrastructure to this facility.



In December 2007, HEAnet procured and facilitated, on behalf of ICHEC, the installation of a BlueGene/L followed by a BlueGene/P Supercomputer, which together, place Ireland in the top 100 Supercomputing facilities in the world.

The front-end networking cabinet will be directly connected at gigabit speeds through the HEAnet backbone to researchers in Ireland.

There is now a Top 500 Green Computer list which measures performance per watt of electricity and due to the extraordinarily dense CPU/memory architecture of the 'P' and hence relatively low power consumption - we now have the No.1 Green Computer Model in the world.

e-Inis - HEAnet joins partners in underpinning Irish Research

Through its Programme for Research in Third-Level Institutions (PRTLII), the HEA continues to support Irish research across a range of thematic areas. e-Inis is designed to develop and enhance the existing high-performance computing infrastructure in the country through the integration of the three main Irish High Performance Computing (HPC) infrastructure providers - HEAnet, Irish Centre for High-End Computing (ICHEC) and Grid-Ireland.

e-Inis should be regarded as more than just infrastructure, it is also a commitment by the participating academic institutions to collaborate on developing HPC as natural tool for Irish science and engineering. Each of the partners will bring to e-Inis their expertise in particular aspects of HPC that combined will establish Irish HPC as research strength for national and EU projects.

e-INIS has been successful in the fourth phase of PRTLII. It is led by Professor Luke Drury of the Dublin Institute for Advanced Studies (DIAS), and will sustain scientific research in a number of higher education institutes. HEAnet by virtue of its experience in successfully managing complex national infrastructural projects, will manage the e-INIS project. We will provide research networking infrastructure and specialist networking support to e-INIS (including lambda switching), and develop, together with its member Institutions and with Grid-Ireland, a federated national identity service.



HEAnet WILL BE RUNNING WORKSHOPS LATER THIS YEAR

*If you have any ideas on topics for a workshop please contact:
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