PRESS RELEASE

Advanced optical network improves national research capability

Dublin & Cork, June 2010 - The first 10 Gbps links on the Irish Research Optical Network (IRON) have gone live and are already supporting advanced medical and climate research. The network, part of the e-INIS project, connects equipment at sites across the country, offering an integrated platform for advanced research and facilitating international collaboration. The e-INIS project partners include: the Dublin Institute for Advanced Studies, University College Cork, NUI Galway, Trinity College Dublin, NUI Maynooth, HEAnet, the Irish Centre for High End Computing and Grid-Ireland.

When complete, the network (provisioned by HEAnet, Ireland's national education and research network) will connect over one Petabyte of shared storage capacity along with the most advanced computing resources available to Irish researchers. These first connections on the optical network link data resources hosted at the Boole Centre for Research Informatics in University College Cork and at the Dublin Institute for Advanced Studies. Additional storage resources and high-performance computing resources hosted in Galway and Dublin are in the process of being connected.

"This is an exciting advance in terms of national research infrastructure. The development of a world class Irish research e-infrastructure depends greatly on the quality and performance of the network fabric used to integrate the shared resources. Factors such as the geographic distribution and the increasing size of data transfers, contribute to making the deployment of an advanced high performance communications layer a critical task in order to underpin the developing e-Infrastructure," commented Keith Rochford, e-INIS Project Coordinator.

One of the primary uses of the new network is a federated national data store also being developed by the e-INIS consortium. The data store, which will combine storage equipment distributed across a number of sites, will extend the Irish capacity for data-driven and data-intensive research.

The southern regional data store at UCC has been in operation for a number of months now and is already providing valuable service to local research projects. One of the primary users is the Neonatal Brain Research Group (NBRG), a multidisciplinary team established in 2003 to investigate brain injury and seizures in newborn babies. Working with the local e-INIS partners, the NBRG has established the BabyLink project which aims to provide a remote teleneurophysiology service to neonatal intensive care units. With the e-INIS data management resources connected to the advanced network, and by extension to the European community, the BCRI has also secured a significant role in the EU-funded NEMO (Treatment of NEonatal Seizures with Medication Off-patent) project which is a pan-European research project into the efficacy and safety of bumetanide, a drug that could potentially be used to treat seizures in neonates. Within NEMO, the southern e-INIS data store will be used to manage data for 13 participating international institutions from across Europe.

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The Irish National e-Infrastructure

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Institiúid Ard-Léinn
Bhaile Átha Cliath

UCC
Coláiste na hOllscoile Corcaigh, Éire
University College Cork, Ireland

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IRELAND'S NATIONAL EDUCATION & RESEARCH NETWORK

Another high-profile use case that will depend on the network and a number of the sites within the storage federation is the Coupled Model Intercomparison Project (Phase 5), a climate modeling activity of which ICHEC and Met Eireann are partners. Again this presents a situation where high-speed access is required not only to persist the output of modelling simulations but also to share that data among the members of the international research community. This data should be considered a public good resource and high-speed reliable access to it by international partners is of utmost importance.

Employing a lambda-switched[1] backbone, the high speed, low latency network will connect shared resources at speeds of up to 10Gbps. In addition, through it's integration with the HEAnet fabric, the IRON network will offer direct connection to international research infrastructures across the GEANT network. With large-scale international collaborations becoming commonplace, advanced networking can increase the competitiveness and capacity for collaboration of Irish researchers.

The core network infrastructure was deployed by HEAnet, who has been a driving force in the implementation and continue to push out the barriers and technical limitations of the communications infrastructure available to Irish researchers.

The e-INIS project is a national collaboration coordinated by the Dublin Institute for Advanced Studies and involves five higher education institutions and a number of infrastructure providers including HEAnet and the Irish Centre for High End Computing. Funded by the Higher Education Authority under its Programme for Research in Third Level Institutions (PRTLI), the overall goal of the project is to develop and enhance the range of ICT resources (e-Infrastructure) available to the Irish research community and to provide increased levels of access, training and support on these shared resources.

The deployment of this network spanning multiple institutions is a complex operation involving a number of stakeholders. The e-INIS project partners wish to thank the Computer service departments of the participating institutions for their assistance in making the network links operational.

End

Technology Reference

Lambda Switched Networking
The back-bone of the e-INIS network employs a technology known as lambda switched networking where fiber optic paths can be switched to form continuous circuits from source to destination. In many conventional networks, even those employing a fiber transmission network, the signal/[data in transit] often need to be converted from light to electrical signals several times so that it may be inspected, switched and routed to its destination. Every time this conversion takes place the performance is affected. In a lambda switched network, the optical route can be established before any data is transmitted thereby eliminating the performance hits typically incurred in switching and routing.

The e–INIS project is funded by the Higher Education Authority's Programme for Research in Third Level Institutions (PRTLI)

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HEAnet is Ireland's National Education and Research Network and is a collaborative endeavour between its member institutions. Dedicated to the education and research communities, HEAnet now has over 50 member institutions. These include Universities, Institutes of Technology, and other Education and Research bodies. In addition, HEAnet provides services to Ireland's 4,000 primary and post-primary schools. With a commitment to research and e-learning, and with proven experience in building and operating world-class e-infrastructure, HEAnet provides high quality, value-for-money Internet services to circa 1,000,000 students and staff across all sectors of the education and research community in Ireland.

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