

DUBLIN INSITUTE FOR ADVANCED STUDIES DATARCH AND NEXSAN BRING HIGH-CAPACITY STORAGE TO NATIONAL E-INFRASTRUCTURE PROJECT

DIAS chose Datarch and Nexsan to offer the most cost-competitive and efficient high-capacity storage system possible. Using Nexsan as a key storage partner, Datarch was well-positioned to meet the customer's needs.

“What we’ve achieved is a storage infrastructure that enables us to focus on our goal of developing value added services to support data driven research. We need to be able to focus on building a data management service for the research community rather than on the technical details of how we are going to provide a storage area large enough to cope with the raw volume.”

DR. KEITH ROCHFORD

E-INIS PROJECT

CO-ORDINATOR AND OUTREACH

DATARCH



Dublin Institute for
Advanced Studies



BACKGROUND

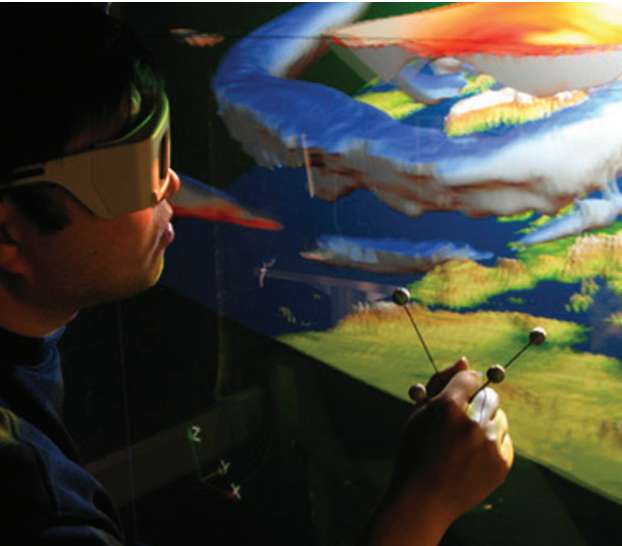
e-INIS is a federation of core electronic infrastructure providers dedicated to the provision of a sustainable national e-infrastructure for the support of advanced research activities in Ireland. By coordinating the activities of research ICT providers, e-INIS aims to provide a cohesive e-infrastructure on a scale that enables internationally competitive research. The project is funded under the Irish Higher Education Authority’s Programme for Research in Third-Level Institutions (PRTL), co-financed by the European Regional Development Fund and the National Development Plan.

Many fields of research are becoming increasingly dependent on the availability of advanced information, communications and technology resources. High performance computing is now seen as a key enabling factor in many fields such as simulations and numerical modelling, materials science and bioinformatics. It is also a growing area in disciplines such as social science and the humanities. In addition to computation, a capacity for managing and working with very large volumes of information, or indeed smaller volumes in a shared context, is becoming crucial to ensuring capability and competitiveness in the emerging fields of data-driven research.

Ireland’s capacity for such areas of research, often termed ‘e-Science’, has been significantly advanced in recent years through initiatives such as the National Capability Computing Service (NCCS) and the Irish National e-Infrastructure (e-INIS) project. These initiatives have led to considerable investment in areas such as high performance computing, advanced computer networking and improved access and support. The national research infrastructure is being further developed and integrated under the e-INIS Federated National Data Store activity. This data storage and management service is an essential component of the overall e-Infrastructure being developed under e-INIS and will enable data-intensive research and facilitate re-use of shared data resources among national and international collaborations. In this case study we review one of the storage nodes that make up the federated data store, operated by the Dublin Institute for Advanced Studies (DIAS).

CHALLENGE

All data is valuable, but arguably never more so than when that data represents the input from a number of international research collaborations and institutions. Recognizing this, the partners of the e-INIS consortium evaluated a number of storage solutions and architectures from multiple vendors in order to ensure the selected solutions would meet demanding criteria in areas such as security, reliability and availability.



Computational scientist at e-INIS partner ICHEC (www.ichec.ie) using immersive visualisation to study temperature and relative humidity surfaces.

Keith Rochford, project coordinator at DIAS, said; “We were clear from the outset that the project would require an enterprise-grade storage solution. The strategy offered by Datarch and Nexsan has fulfilled all of our essential requirements. It has given us a reliable high capacity storage environment, which has all the embedded features to give us full data protection in a redundant SAN environment at a cost-effective price. The solution has been particularly effective in meeting our environmental specifications in terms of storage density and power consumption.”

THE NEXSAN/DATARCH SOLUTION

Datarch and Nexsan were chosen through an open tender evaluation process. Datarch is one of Ireland’s leading strategic data management providers and was the company that offered the most cost competitive and effective solution. There is a strong existing business partnership between Datarch and Nexsan. Nexsan is a storage manufacturer which produces a large range of high capacity storage solutions that are ideal for a broad range of applications including fixed content storage and archiving, email, medical imaging, compliance and litigation support, disk-based backup, digital video security and rich media, as well as tier-1 database applications. Using Nexsan as a key storage partner Datarch was well positioned to meet and fulfill the storage solution specifications required by DIAS.

DIAS had specified a high-density storage solution requirement, starting at 140TB with scalability to over 500TB, in a high-availability, redundant SAN environment. Datarch had no hesitation deploying Nexsan to deliver the storage infrastructure. The Nexsan SATABeast offers a high-capacity solution utilising up to 42 2TB drives in a single 4U enclosure. The dual controller active/active configuration offers reliable connectivity for up to 4 8GB native fibre connections and 4 1GB i-SCSI connections. The SATABeast can be expanded further by the SAS connection of the Nexsan E60X chassis, giving an additional capacity of 180TB per Nexsan array without the need for additional controllers.

The storage solution hosted at DIAS and dedicated to the Climate research project solution, consists of two Nexsan SATABeasts. The high-density Nexsan SATABeast storage technology allows for the deployment of 144TB of useable storage in only 8U of rack space, and the dual active/active RAID controllers offer full industry standard RAID levels of 0,1,5,6, and 10, while the dual fibre paths on each of the SAN switches allow total data protection and availability at all times. Deployment of a fully redundant SAN also allows DIAS to integrate existing servers and storage into a fully redundant open 8GB native fibre environment incorporating Linear Tape-Open (LTO) backup.

IT ENVIRONMENT

- Multiple Unix Based servers
- iRODS Data Grid Middleware
- 10Gb connectivity to the National Research and Education Network (NREN) operated by HEAnet
- 144TB of fibre SAN connected storage for production data
- 144TB of iSCSI connected storage

CHALLENGES

- Deliver production-grade storage capabilities in an academic environment and within constrained budgets
- Ensure compatibility with a broader server virtualization project

NEXSAN SOLUTION

- Nexsan SATABeast provided two 8GB Fiber Channel SAN connected storage units with a total useable capacity of 144TB and two iSCSI connected units providing 144TB via clustered storage virtualization appliances

BENEFITS

- Lower cost per TB for both capital and operational expenditure
- High capacity in a small footprint
- Industry leading energy saving
- Enterprise-class reliability

As a National research data management service, the protection of all data managed by e-INIS is paramount as it is aggregated from, and distributed among, numerous research collaborations who rely on e-INIS to maintain its validity and integrity.

One of the other key aspects of the project was the delivery of the required capabilities within a specific, all-inclusive budget. Dr Keith Rochford from DIAS explains; "Total Cost of Ownership was a key element of our request for tender and Datarch along with the Nexsan-based solution was found to be the most technical and economically advantageous proposal we received."

BUSINESS BENEFITS

Brian Montgomery, technical director of Datarch, said; "Our approach as a storage solution provider is to provide high capacity, reliable storage that is simple to deploy and easy-to-use. This gives our customers peace of mind and ensures easy integration. That is exactly what DIAS was looking for and is precisely what Nexsan storage arrays delivered for them."

Dr. Keith Rochford, e-INIS project coordinator at DIAS agrees; "It is about peace of mind. Under the e-INIS project we have a mandate to advance all aspects of the shared ICT research infrastructure in Ireland and a key component of this is large-scale data management. The Irish research community, along with their international collaborators and industrial partners, carry out some exceptional research and find some inspired applications of that research. They shouldn't need to worry about how the storage requirements of their work will be met or about the security and availability of the data. The reliability of the Nexsan solution meant that we could concentrate on the management of the data with increased levels of confidence in its security and availability. We have to consider that much of this data is generated by publicly funded research so we have a responsibility to manage and curate it in a manner which encourages sharing and re-use in order to extract the maximum benefit and value for money. In areas with such strong public appeal as the Humanities, Life-Sciences and Climate Science, there is an even greater impetus to consider the data and the information derived from it as a public-good resource and to put in place portals to the data around which to foster research collaborations and promote science in society. The development of a national research data service is an important step in developing Ireland Inc.'s capability in the areas of data-driven and data-intensive research."

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ABOUT NEXSAN

Nexsan® is a leading independent provider of disk-based storage systems purpose-built and priced for the mid-market, offering industry-leading reliability, space and power efficiency. Nexsan storage systems provide scalability, integrity and security for growing volumes of unstructured data and are ideal for virtual storage, data protection, secure online archiving, bulk and cloud storage applications. Overcoming the challenges of traditional storage, Nexsan delivers a different kind of storage experience with easy-to-use, efficient and enterprise-class solutions that reduce the complexity and cost of storage. Nexsan delivers its storage systems through a select global partner ecosystem of solution providers, OEMs and system integrators. Nexsan is based in Thousand Oaks, Calif. For more information, visit the company's website at www.nexsan.com.

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