



Northern Ireland builds knowledge industry with converged network.

Once a world capital of shipbuilding, Queen's Island in Belfast is becoming the berth of an industry that will enable Northern Ireland to export prowess of a different sort: its intellectual capital.

Rising in the island's former shipyard is the futuristic, 24-acre Northern Ireland Science Park (NISP). The campus is purpose-built to attract forward-looking occupants that will turn high-technology research into globally successful products.

Overlooking the River Lagan, the science park is just steps away from downtown Belfast, the capital of a province with the fastest-growing regional economy in the UK.

"Translating dreams into commercial reality" is the motto of the NISP Foundation, funded by UK economic initiatives following the 1998 Good Friday Agreement as well as grants from the Department of Enterprise, Trade and Investment and the International Fund for Northern Ireland.

Grounding these dreams is the solid knowledge base of Northern Ireland, including the renowned R&D resources of the University of Ulster and Queen's University Belfast as well as a young and well-educated population. But 30 percent of the province's computer-science graduates take jobs outside the province.

"Northern Ireland's principal export over the last 30 years has been its talent," says Michael Graham, director of Corporate Real Estate and Facilities of the NISP Foundation, a not-for-profit university, private sector and government consortium. "Our goal is to retain this intellectual capital and create economic value for the province."

The first building on the NISP campus is its 56,000-square-foot Innovation Centre, designed ground-up to help startups commercialize pioneering products and build global markets. An integral part of the infrastructure that NISP provides to its occupants is an HP Intelligent Office solution based on the Cisco Architecture for Voice Video and Integrated Data (AVVID) framework.

Close encounters of a creative kind

Designed, integrated, built and now managed by HP Services, the open-standard Internet Protocol (IP) infrastructure provides high-speed broadband Internet access, IP telephony, wireless LAN services and unified messaging within a single, converged voice-and-data network.

NISP evaluated proposals from 13 companies. "The choice of the HP solution using Cisco products was an easy decision," says Graham. "The combination plays to both parties' strengths. Cisco equipment is well out in front with its compliance to IP Version 6 standards. HP brought expertise in both IT and communications, came up with great new ideas, and managed the entire process extraordinarily well. We've thoroughly enjoyed working with our HP Services team."

Key innovations include a robust, dual-firewall configuration that brings enterprise-grade security to both wireless and fibre-based components of the network. While building in the security to protect intellectual capital, the HP solution enables NISP occupants to freely share knowledge with colleagues in the next office or a continent away.

Network as innovation engine

Using the HP Services global project management methodology, the HP Services team led the five-month project to design and build the converged network.

“HP provided us with a state-of-the-art converged infrastructure that delivers enterprise-class services at SME rates, supports services from any carrier and easily incorporates new developments in technology,” says Graham.

The HP team comprised a project manager, solution architect and consultants in security and networking, including HP’s own CCIE (Cisco Certified Internetwork Expert) engineers.

They held a design workshop to prioritize NISP preferences; reviewed network requirements and developed a detailed network architecture; and then designed and deployed the integrated infrastructure. An on-site HP Services engineer now manages the network.

Configured with no single point of failure, the fault-tolerant infrastructure employs dual Cisco Catalyst 4500 core switches housed in redundant computer rooms. The intelligent switches support converged Internet solutions and provide the Gigabyte Ethernet backbone that connects the 20 logically separate networks serving the Innovation Centre units. A Cisco Aironet 1200 Access Point connects each unit to a building-wide wireless network.

A high-availability cluster of HP ProLiant DL380 servers runs the infrastructure applications, which include Cisco CallManager, an IP telephony system; Cisco Unity, a unified messaging system; and a third-party metered billing system.

This integrated environment enables users to access voice, video, e-mail or fax services through their preferred IP-enabled clients, from PCs to smart phones.

HP’s end-to-end solution includes Cisco IP phones as well as HP desktop, notebook, iPAQ and Tablet PCs running Cisco IP SoftPhone, a state-of-the-art voice-over-IP (VoIP) application.

Designed to support any standards-based service, the network can readily adopt new technologies and innovative applications. For example, the NISP environment is the first European test site for iBurst, a wireless broadband service pioneered by Silicon Valley-based ArrayComm, Inc. that provides personal, wire-free broadband access of up to two megabytes per second.

Not just a campus—a community

The network enables NISP to transform its campus into a community.

Now serving the Innovation Centre, the scalable and modular infrastructure can easily expand campus-wide as more buildings go up on the Queen’s Island site.

Within five years, NISP is expected to be a 12-building campus, according to Graham. The 40,000-square foot Institute for Electronics, Communications and IT (ECIT) of Queen’s University, Belfast, is nearing completion. Next, NISP plans to construct a 40,000-square-foot building to house larger companies and a 26,000-square-foot facility for light manufacturing.

“Our strategy is to provide occupants with a choice of properties that can suit each stage of their development,” says Graham.

Designed to accommodate startups, the Innovation Centre provides occupants with easily customized quarters. Complementing the centre’s 20 units, which are available in multiples of 2,000 square feet, are social areas that include a café, seminar rooms and conference space.

Outside their units, Innovation Centre users can connect wirelessly to their own LANs and, while meeting with colleagues, they can securely share on-line work at campus hot spots or fully equipped hot desks.

Building a Belfast-based virtual science park, according to Graham, the NISP Foundation plans to extend the network to the venture-capital and R&D units of the University of Ulster, which has the largest business faculty in Europe and the UK's largest informatics faculty; and Queen's University Belfast, a noted UK teaching and research institution in engineering and information sciences.

Integrating real estate, IT and communications

"Young technology companies have difficulty getting property to cater to them," says Graham. "A ten-to-twenty-year lease doesn't fit the business model of start-ups. The HP network enables us to offer a package of services that are not readily available elsewhere. And we provide this package through one of the most dynamic occupancy agreements in the industry."

The HP Services team devised a single infrastructure that can easily adapt to the preferences and budgets of the Innovation Centre's 20 occupants.

"The design combines a high degree of individual customization with the cost advantages of a shared and fully managed infrastructure," says Graham.

The occupant pays one bill that includes rent, energy and connectivity charges. Economy-minded ventures can eliminate telecom charges by making phone calls via the IP network. HP's metered billing component feeds real-time usage and fee information to the NISP central billing system, and also offers occupants intranet access to this data.

Occupants choose their preferred carriers and select from the Innovation Centre's menu of managed services, which offer multiple bandwidth, contention and latency options.

"Working with HP, we are integrating real estate, communications and IT," says Graham, who regards the network as an efficient medium for providing services to an expanding, innovation-driven community.

"HP Intelligent Building models and processes are way, way out front of the industry," says Graham. "HP is very creative in its use of IT and communications to enhance the competitiveness of its own sites and keep pace with rapid change. We look forward to using new HP Intelligent Building tools to integrate facilities management."

Crossing oceans with services instead of ships

Among the first Innovation Centre occupants is Clearpower Technology, which is commercializing a system that generates electricity by harnessing the motion of ocean waves—a plentiful resource along the Irish coast. Using the NISP networking infrastructure, Clearpower plans to manage wave farms throughout the world, according to Graham.

Other companies applying for units in the Innovation Centre are in such technology-driven fields as biopharmaceuticals, digital-chip design and molecular sensing.

"Scientists and engineers are a skeptical lot and HP is a name they trust," concludes Norman Apsley, Ph.D., chief executive officer of NISP. "Working with HP, we're providing the physical campus and connectivity to help startups move through their incubation stage and evolve into mature companies that advance the knowledge economy of Northern Ireland."

Challenges

- Attract and serve innovative, bandwidth-intensive technology startups
- Provide enterprise-class services at SME rates

- Support global and local collaboration with equal ease and economy
- Cost-effectively adapt to 20 different companies' preferences
- Deliver economy and flexibility of a shared, managed-service environment

Solution Components:

HP Services

Designed, built, integrated HP Intelligent Building solution with converged voice/data services based on Cisco AVVID framework, including

- Joint review of network requirements and development of detailed network architecture
- Infrastructure design, integration and project management
- Deployment of network, security, IP telephony and IP phones, Internet connectivity, voice-mail and unified messaging
- Managed services provide on-site network support

Hardware

- Cisco Media Convergence Server systems (3) based on HP ProLiant servers
- Cisco Catalyst switches (models 3550 and 4507)
- Cisco routers (models 2651 and 3725)
- Cisco PIX Firewalls and security solutions
- 22 Cisco Aironet wireless access points
- 250 Cisco IP phones (models 7960, 7940 and 7910)
- HP desktop and notebook PCs
- HP iPAQ pocket PCs and HP Tablet PCs

Software

- Cisco CallManager and Cisco Unity unified messaging system
- Third-party metered billing system
- CiscoWorks Web-based network management software
- Cisco IP SoftPhone

Results/benefits

- Enterprise-class services at SME rates
- Enterprise-grade security in both wireless and wired networks
- Single network adaptable to 20 companies' preferences
- Economy and flexibility of a shared, managed-service environment
- Custom packages integrating real estate, IT, communications services
- Proven, standards-compliant backbone open to emerging technologies

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