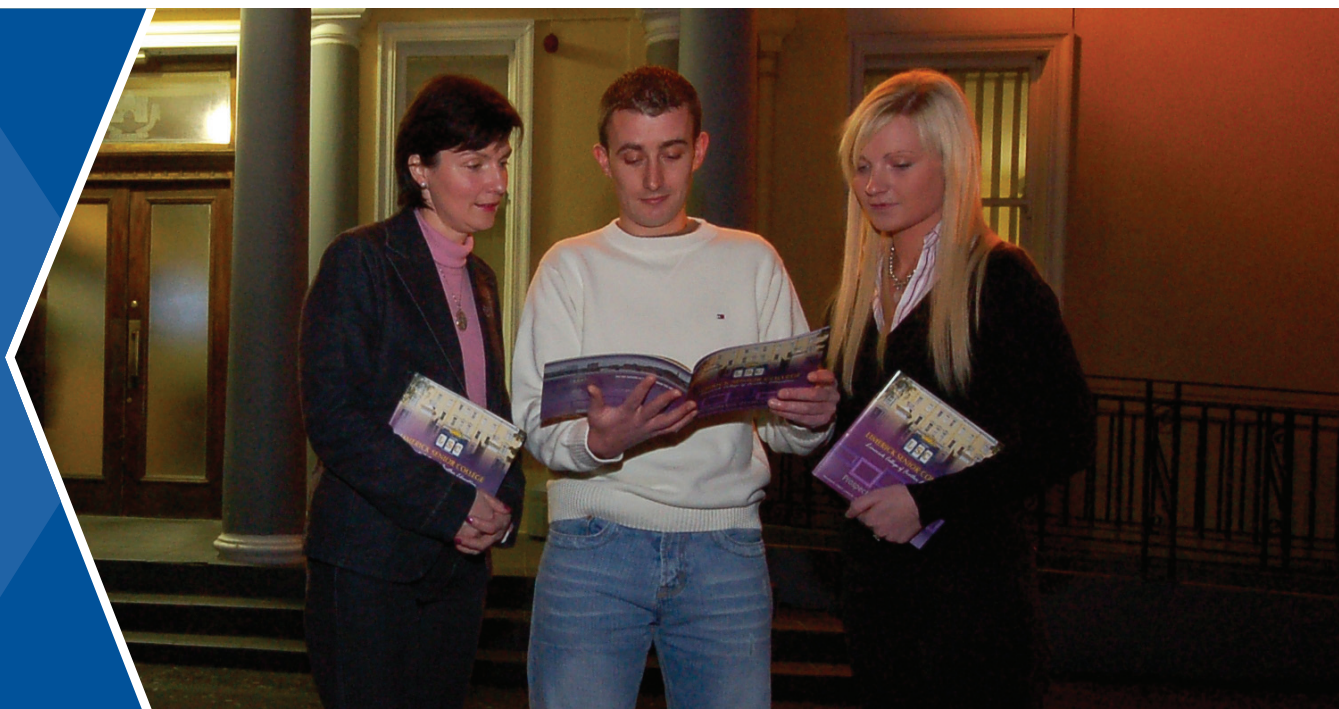


Limerick Senior College

Limerick College Achieves High-speed
Campus Connectivity with ZyXEL



Summary

Limerick College of Further Education (LCFE) caters for over 800 full-time and 2950 part-time learners. With more than 500 computers, a huge number of peripherals, and the use of increasingly bandwidth-hungry applications for delivery of computer and media courses, the college's legacy network was no longer able to meet current user demand. Critically, it was also unable to support the planned virtual learning environment (VLE).

To resolve this situation, LCFE replaced its entire network backbone with a ZyXEL-supplied Gigabit Ethernet infrastructure, together with a centralised management platform and wireless LAN. Supporting Gigabit connectivity to the desktop, seamless wireless access for laptop users and an IP CCTV (Closed Circuit Television) system, the new network forms the bedrock for the College's growing business. The new system enables flexible management of end users and network resources, ensures effective provision of multimedia applications, and delivers the capability to meet further expansion plans vital to securing future funding.

Challenge

- Replace legacy backbone infrastructure with Gigabit Ethernet network to support bandwidth-hungry applications and Virtual Learning Environment (VLE)
- Ensure secure, flexible and robust communications infrastructure with capability to scale to future demand
- Deliver cost-effective, yet feature-rich networking infrastructure

Solution

Gigabit Layer 3+ (L3+) Core and Layer 2 (L2) Edge Ethernet infrastructure comprising:

- 2 x 12-port Managed L3+ Gigabit Ethernet Switches (GS-4012F)
 - 21 x 24-port Managed L2 Gigabit Ethernet Switches (GS-2024A)
 - 40 x Small Form-factor Pluggable 100Base Bi-directional Transceivers (SFP-SX)
 - NetAtlas Enterprise – Centralised Network Management Platform
- Wireless LAN
- 1 x 8-port Wireless LAN Controller (NXC-8160)
 - 8 x Ultra-thin Access Points with zero delay handover (NWA-8500s)

Benefits

- High-speed and future-proof network backbone with centralised management and security
- Flexible allocation and segregation of resources using Virtual LAN (VLAN) technology
- Support for CCTV network and VLE, as well as a planned VoIP (Voice over Internet Protocol) implementation
- Cost reduction by eliminating duplication of infrastructure, with ROI realised via significant improvements in business processes, course delivery and working practices



LIMERICK COLLEGE OF FURTHER EDUCATION
LIMERICK SENIOR COLLEGE
Coláiste Sínearach Luimnigh

"...we were suffering from a lack of bandwidth, with the network becoming increasingly unstable, which was seriously inhibiting our ability to teach... ZyXEL was able to deliver a cost-effective and future-proof approach to Gigabit connectivity that would give us the level of functionality, reliability and scalability to serve a variety of student and staff requirements, both for now and as we continue to expand our offerings."

Paul Patton, Principal, LCFE

Limerick College of Further Education

Limerick College of Further Education (LCFE) based in Ireland, is Internationally recognised, it offers a wide range of courses, including Computer Applications, Business Management, Accounting, Media, Tourism and Marketing, to name but a few. Formerly Limerick Senior College, LCFE is a third-level educational establishment that has grown into a vibrant centre for learning, with a commitment to providing quality-assured and accredited educational programmes - delivered in a modern, dynamic environment by a team of highly qualified tutors - that meet the challenges of an increasingly diverse learner base.

LCFE serves the needs of both school leavers and mature learners. With the College oriented towards delivery of modern disciplines such as media studies and computing, it runs numerous bandwidth-hungry applications over its network, as well as administrative processes including network attached storage.

Historically, LCFE had approached its network build on an ad-hoc basis, using additional hubs to interconnect new locations and increase its bandwidth capacity. However, this had resulted in the duplication of infrastructure, whereby a large volume of cabling was serving two separate networks – one for students, and one for administration staff. There were also several ports in each location, some of which were unidentifiable. Furthermore, as demand for bandwidth increased, the network had become unstable, with outages impacting both the College's ability to deliver existing courses, and introduce new facilities to support the latest disciplines.

"We had a lot of wiring throughout the College and in

some cases, it was difficult to know what some of it was for," says Paul Patton, Principal at LCFE. "We were also suffering from a lack of bandwidth, with the network becoming increasingly unstable. This was seriously inhibiting our ability to teach. These issues only served to reinforce the requirement for a state-of-the-art network... and we knew we would have to start from scratch."

With the decision taken to replace the College's entire legacy infrastructure, a comprehensive specification was drawn up, taking in contributions from the IT and administration departments, teaching staff, and relevant maintenance companies. LCFE's requirements included:

- Advanced Gigabit switching capabilities with fibre connectivity in the backbone
- Blanket Wireless LAN coverage throughout the College
- Centralised and secure network management allowing remote configuration and partitioning of network resources
- Scalability to meet future bandwidth requirements and network expansion

Building a Gigabit Ethernet backbone with ZyXEL

Three leading switch vendors ZyXEL, Cisco and 3Com, were invited to demonstrate their technical solutions as part of the tendering process. *"One vendor was way off the mark in terms of price, while another solution was unable to meet the full requirements of our specification,"* Paul continues. *"ZyXEL was able to deliver a cost-effective and future-proof approach to Gigabit connectivity that would give us the level of functionality, reliability and scalability*

to serve a variety of student and staff requirements, both now and as we continue to expand our offerings."

Dublin-based ZyXEL-distributor Topsec Distribution and local channel partner, Interpoint Technologies Ltd., managed the infrastructure rollout. During the College's summer break, 50/125 multimode fibre and Category 6 (Cat6) cabling with PoE (Power over Ethernet) capability was installed. Housed in an historic building, the cabling and hardware installation at LCFE presented a challenge, but was completed on schedule. All systems were operational by the time staff returned in August, with 528 Gigabit ports installed throughout the building. Nine sub-cabinets each housing two ZyXEL Gigabit Ethernet switches were deployed to cover the entire campus (since Cat6 cabling cannot exceed 90 metres per hop for performance reasons), and each cabinet connects directly to the main comms room housing the managed core switch with n+1 redundancy.

"Although the cheapest way would be to run fibre to every switch and run local switches off that (a cascaded approach), there is a fibre connection to each of the individual 22 switches, which ensures maximum performance and is the ideal way to configure a backbone network such as this," explains Shane Hartigan, Managing Director at Interpoint Technologies. *"This really sets the LCFE network apart from those employed by other colleges – a fact recognised by one of Ireland's accreditation agencies during a recent inspection."*

Furthermore, each switch is capable of providing extra bandwidth in trunk mode, whereby connectivity between the cabinets can be doubled to 2 Gigabit performance if required, while rapid spanning tree capability ensures automatic failover – both key functions identified by the College.

Boosting Business Performance

To meet demand from an increasing number of laptop using students, LCFE had specified a wireless LAN that would provide students with seamless connectivity throughout the campus. Rather than flooding the ground floor with access points, the College opted for ZyXEL's Wireless Channel Blanket Controller (NXC-8160) and Ultra-thin Access Points (NWA-8500s), which provide blanket wireless coverage across campus while more than halving the number of access points required.

"There is no channel overlap using the ZyXEL Wireless LAN, since the central controller coordinates the transmitters to ensure they do not interfere with each other," Hartigan continues, *"and configuration is possible from the central console, enabling the College to deploy an enterprise-*

wide security policy immediately."

Similarly, ZyXEL's Gigabit Ethernet switching platform avoids duplication of infrastructure. The volume of cabling and ports has been reduced by some 15%, while Virtual LAN (VLAN) capabilities allow network resources to be segregated between administrative and student users, and even individual laboratories – removing the need for additional switches and ensuring efficient allocation of bandwidth. With every single port in the college mapped via the centralised NetAtlas management application, each port can be allocated on-the-fly. Since no patching or re-cabling is required, all cabinets can remain locked and secure.

LCFE has also enhanced its campus security with the installation of an IP CCTV network. The previous system used its own co-ax cabling, but the new IP-based solution simply bolts onto the Gigabit network as an additional VLAN. *"With IP systems it is easy and low-cost to add new systems, allocate network resources and make changes,"* confirms LCFE's Paul Patton. *"Following the success of the IP CCTV system, we now intend to replace our analogue voice system with VoIP. Working with Interpoint and Topsec proved a great success and will be of great benefit going forward."*

Most importantly for LCFE, the Gigabit network has delivered significant improvements in work practices. It has enabled the introduction of the Moodle virtual learning environment (VLE), whereby all students have access to online resources, while a web-based email system serves the entire College. In addition, server backup to network attached storage (NAS) can be achieved within just a few minutes, rather than taking all night (as it used to). Meanwhile, Gigabit to the desk connectivity means that all College PCs can now support advanced peripherals such as MP3-based language learning systems.

"The ROI so far has been impressive if you consider the impact of network downtime on course delivery. Similarly, since we no longer need to have separate networks for students and staff, we have saved a huge amount on infrastructure. But the most essential aspect is the fact we can move forward with our expansion plans, which will ensure we continue to receive the levels of funding necessary to improve LCFE further," Paul Patton concludes.



About InterPoint Technologies

Interpoint Technologies Ltd is a computer services company who bring to each of its clients the strength and support of an established reputable IT partner while retaining the flexibility, responsiveness and loyalty of a close working team.

Since Interpoint Technologies Ltd was formed in 1998 it has secured an unsurpassed portfolio of products, services and personnel which has earned it a reputation for results based on creativity, expertise and good working relations.

This can be attributed to the full service approach adopted by the company and ability of the team to

co-ordinate to all aspects of a project from bare site to completed solution.

Interpoint's company philosophy rests upon the premise that as your Technology Partner, it is Interpoint's business to understand your business, effectively, "first business then technology". This business ethic has served Interpoint well as over 95% of new clients are referred by existing clients. The solutions provided are consistent, innovative and individually designed to meet their specific requirements.

For more information please visit: www.interpoint.ie

About TopSec



Established in 1988, Systemhouse Technology Group was acquired by Ireland's largest indigenous security company, Top Security. Rebranded in November 2004 as Topsec Distribution, currently Topsec is Ireland's leading Communications and Security Specialist. Topsec distribute ZyXEL products and solutions, supported by a team of certified engineers who also provide Reseller training and support.

From Wireless CPE to high end high capacity COE Topsec and ZyXEL can cater for any businesses broadband communications requirements. Topsec solutions also cover anti-virus, end point encryption, anti-spam, firewalling, SSL and DLP with the aim is to deliver a service second to none with a support structure upon which its customers can build their business.

For more information please visit www.topsecdistribution.com

About ZyXEL



ZyXEL Communications UK Ltd is the UK subsidiary of a market leading end-to-end designer and manufacturer of xDSL, Security, VoIP, IP DSLAMS, Wireless, routing and IP switching equipment. The company offers comprehensive technical support and customer service to the ISP, Telco and IT distribution channel.

ZyXEL was founded in 1989 as a modem developer with the mission to create Internet access solutions that accelerate information exchange and improve effectiveness of people and organisations.

ZyXEL is one of the world's leading broadband access solutions specialists. With headquarters located in Taiwan, ZyXEL maintains offices in the United States, Europe and Asia, ZyXEL has more than 2000 employees globally, with distributors in more than seventy countries, and products marketed in more than 150 countries on five continents.

For more information please visit www.zyxel.co.uk

