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A University Challenge of the highest order

Employing around 3,000 people with a turnover of £120 million, this new, but yet old organisation has invested £60 million in developing its facilities. Contributing £300m to the North West economy, the University of Central Lancashire (UCLan) is the leading UK University in China and Hong Kong for in-country study. The University is not shy when it comes to pushing new boundaries. It has launched a £5.5m School of Dentistry, a School of Pharmacy and Pharmaceutical Sciences, and achieved a UK first by launching a Foundation Degree in Nuclear Decommissioning.

With over 32,000 students, 500 undergraduate and 180 postgraduate courses, UCLan is an organisation with some very large scale needs, especially when it comes to its data and voice communications. Frank Wadmore, Networks and Telecoms Manager at UCLan explains that the University has a vast infrastructure of largely category 5e cabling, although in 2007, they cabled a new building (The Media Factory) using Siemon's category 6A system. This was to prove to be a turning point as they understood more about their requirements.

An organisation like UCLan is always changing, and a departmental merger between Information System Services and Library services established a new focus on what services the new organisation, Library Information Services (LIS), should provide. The new vision required some physical changes to the library building to create a large open plan ground floor for students to meet, work and interact. With a café at one end and both open and cellular space, a much needed facility would be created.

Tony Robinson (RCDD), global account manager at Siemon said, "From the outset, I could see that UCLan was a progressive organisation with clear but challenging requirements. I had no doubt that the unique capabilities of our category 7A/TERA® cabling system – such as pair sharing - would be a major advantage in meeting UCLan's needs.

The pre-existing cabling infrastructure faced very common issues, all of which combined to create an undocumented mixture of potential problems: co-axial cable for CCTV cameras, category 5 and category 5e data points, some previous building (vertical) extensions, access points added ad hoc and three data centres. The library building refurbishment presented an opportunity to address this with a complete overhaul of the cabling plant. Frank Wadmore recalls, "There were some operational problems with failing points, but the largest problem was management. Organic growth had left lots of redundant cable in place and a containment system based on a grid in the floor and dado trunking, had yielded a system that was unwieldy and a growing operational risk."

The first step was to understand the options and Frank and his team considered category 6, category 6a as well as the emerging category 7A standard. Flexibility was seen as a critical factor; there were several hundred PCs in the library - growing annually - and LIS needed to be in a position to manage future capacity needs with much greater efficiency and confidence. Some work on the broader infrastructure had already taken place as the University has installed a 10GB fibre backbone around the campus and so, while cost had to be a factor, it needed to be evaluated across the expected 20 year life of the system, and not just the initial capital outlay.

Although category 7 was not ratified until 2002, Siemon launched their category 7 TERA® system globally in 1999 and Robinson says, “TERA® meets and exceeds the category 7 as well as the pending category 7A standard, and it is backward compatible with category 6A, 6 and 5e solutions.” He continues, “Because each pair is individually shielded, it is possible to support multiple applications through the same cable This cable-sharing capability offers significant flexibility; with TERA, a single outlet and cable can support four pair 10GB or Gigabit Ethernet; two separate 10/100 Ethernet or VoIP connections; up to four single pair application such as analogue voice or video; or a combination of two-pair and 1-pair applications.”

Frank reinforces, “Siemon’s TERA offering was very impressive and seemed to offer a lot of what we needed. That it supports 10GB to the desktop played a large part in its selection.” In evaluating its requirements UCLan was concerned about the amount of infrastructure that might be required and knew that there would be limitations, especially when it came to containment in some of the older buildings. TERA again satisfied the situation as Frank adds, “With the unique cable-sharing features, we knew that we could halve the amount of cable required for a given number of outlets and this was a winner.” So the characteristics fitted very well with UCLan’s requirements but it doesn’t end there; Frank enthuses, “It’s in our nature to take risks and be in the vanguard, especially in IT. TERA® is unique and fits our forward looking approach; while Siemon’s documented commitment to product quality, application performance and support ensured that real risk was limited.”

Through an existing relationship, cabling contractor Hillgate Electrical partnered with Siemon and were awarded the contract to cable the new library facility in June 2008; the first phase went live the following September. Ian Welsby of Hillgate points out, “It was UCLan who took the lead in selecting a cabling system based on their current and long term requirements.”

With Hillgate a Certified Installer, Welsby adds, “Once deciding on category 7, it became a one horse race.” Thinking beyond the technology, Welsby enthusiastically adds that, “The support we received from Siemon was first class and always pro-active. They certified our work according to their own strict standards compliance and application performance criteria and I am sure that this gave increased confidence to the team at UCLan.”

With careful planning and execution the new system delivered further savings. For example, the co-axial cable used for the analogue camera systems was replaced by TERA® channels as an IP service offering improved control and flexibility. Convergence of other IP systems onto the network includes door access and other security services, all over the Siemon structured cabling system.

The installation process needed to be as smooth as possible with containment and the end user a primary consideration. It had to proceed without disruption to users as the library is a 24/7 facility. Welsby adds, “We had to work very closely with the LIS team when adding new cabling, bringing it on line and lastly removing old system cabling. In addition we found that, despite the advance features and performance of TERA®, it posed no unique problems to us or UCLan during the installation process.”

The final phase went live at the end of November 2008 following a series of phased handovers. The ultimate solution moved from three communications rooms (cleaner’s cupboards!) to a single data facility containing ten

42U cabinets with around two thousand outlets. Not uncommonly UCLan works on a three year contract – currently Hillgate – to deal with moves adds and changes. In the past this has produced disparate labelling conventions; this re-wire has allowed UCLan to extend its single system which will deliver future benefit.

In rolling out this new service, UCLan have not increased bandwidth to the desk top initially. Currently from the 10GB fibre ring that circles the campus, there is a 1GB drop to each of the buildings, and from there 100 MB to the desk top. Even adding additional cabling is now a feasible option should the user demand require it.

A question of economy and foresight

All too often promises of future savings fail to materialise. Frank Wadmore of UCLan shares the back of his envelope approach to the problem, based on analysing the life cost per outlet.

"As a rough approximation and example, an installation (excluding the comms room and containment) could be a capital cost to UCLAN of say around £200k, providing 1,250 1GB outlets. Including patch leads this brings the cost of ownership over the 20 year life cycle of the TERA® category 7 to approximately £7.60 per outlet (TERA® channel).

To extrapolate this calculation to category 5e, and as a guess we would have to increase the number of outlets to 2,500 at an approximated capital cost of £168,500. Adding the patch leads, the cost of ownership works out at around £3.37 per outlet.

So, when considering that this is not comparing comparable systems in terms of performance and management, we thought the difference to be easily justified over the life of the installation. However, as iterations of active equipment and applications are factored in, we felt that a category 5e installation would need replacing well before 10 years, thus adding significantly to the overall cost of ownership and skewing the analysis clearly in favour of TERA®. There are other TERA® related cost savings not factored in so far. For example, we are now able to double our cabinet capacity coupled by using low energy HP switches, saving on the size and therefore number of our comms rooms."

Just in August 2008, 700 data points needed to be patched to deal with a transitory need; it had to be straightforward and efficient. Frank remembers, “When investing in TERA® we knew we would have to spend more for this premium solution when compared to our original category 5e network, we can see the extra capacity; the standard user profile is to provide four category 5e data outlets (e.g. telephone, PC, printer and a spare port). With TERA® this reduces to two ports for the same services. Because the connector is unique, it makes random connection less likely and only requested outlets are patched, all adding to enhanced security.”

It is very clear that partnership has been a huge and active component of this project. With the needs of UCLan at the centre, the innovative technology and ubiquitous support of Siemon, and Hillgate’s extensive installation expertise and experience driving both design and implementation, you would have every right to consider this the ideal approach. However for Siemon, UCLan and Hillgate, this was not a one off project. UCLan expects to undertake further deployments and the next one is already planned. UCLan needed to be certain that beyond this very important project, that a secure UK based supply chain could meet its needs now and in the future. To complete this winning triumvirate, Swale Components (already a supplier to Hillgate) and a distributor for Siemon (at 16 years the longest serving UK distributor), moved in to fill this strategic gap.

In keeping with a litany of unique aspects, Swale did not simply fill the role of a distributor. Eric Spratling at Swale points out that, “For complete effectiveness, a wide involvement was required – from initial planning right through to on-going supply for the life of the installation.” He adds, “This meant keeping in touch with the installers as work progressed, anticipating and responding to unscheduled requirements to keep things on track.”

As a distributor, it was all about service – what the customer wants and actively supporting the installer in meeting their needs and overcoming normal installation challenges. Warranty fulfilment in terms of product replacement is also undertaken by Swale. Their ISO 9001 certification means that there is full product supply traceability in conjunction with Siemon. Additionally Swale has a large stock holding, dependant on demand and items. But

Spratling eagerly points out, “The quality of Siemon products is very, very high and this gives us confidence when we distribute their products to UK installers.”

Concluding, Spratling says, “Siemon are very good at working at all levels in the supply chain and this brings substantial benefits. The huge R&D spend that the company consistently makes is critical to the success of their products. They make us feel like part of the family. They are a very loyal company.”

The very final word goes to Frank. “For this institution, category 5 has had its day. Unless something goes wrong, we will push for TERA® installations throughout. There are no benefits to support the extra cost of category 6 over category 5.”

About University of Central Lancashire

The University of Central Lancashire is now one of the largest universities in the UK with more than 32,000 students, 500 undergraduate courses and 180 postgraduate courses - and it is still growing.
UCLan was only created in 1992 but its roots go way back to 1828 and the humble beginnings of the founding of the 'Institution for the Diffusion of Knowledge'. From this small acorn, the university has propelled itself into becoming a major player, both at home and across the world.
Around 70 per cent of UCLan's students come from the North West and the University is proving to be a vital heartbeat to the region's booming regeneration. It employs 3,000 people, has a turnover of £120m a year and contributes £300m to the regional economy.
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The Siemon Company
Siemon Business Park
101 Siemon Company Drive
Watertown, CT 06795-0400 USA
Phone: (1) 860.945.4200
Fax: (1) 860.945.4225