

CS 004E

Effective Structured Cabling Solution for the University of Birmingham



For its new structured cabling system the University of Birmingham required more than a standards compliant cabling solution. A high performance, tried and tested, sustainable quality product, providing good value for money was needed. Belden® was able to surpass all these requirements in full with the added benefit of piece of mind.

When the University of Birmingham required a major upgrade of both the cabling infrastructure and active network equipment of the University High Speed Campus Network (HSCN), the project was compared to cabling a small town. The financial investment and manpower involved in such a task is colossal. Careful and thorough consideration was required before choosing the correct solution to future proof their network.

A well thought-out and properly engineered structured cabling system should be easy to use, flexible and reliable. Able to adapt to transport tomorrow's technology, the system was to be the University's network backbone for successful integration of several generations of equipment. After all, with such a large and intensive program to undertake, it had to be right the first time, without having to revisit and start again a few years later.

Brian Bracher at the University's Information Services Network Group, is responsible for structured cabling on the campus. Working with Belden's Gigabix solution, a Cross-Connect System was chosen instead of a "traditional" RJ45

system. He explains: "The added advantage was the option of installing both a cross-connect and a RJ45 system which both sit beyond the Category 6 parameters."

"Both systems have their merits but in choosing the Cross-Connect System it has revolutionised the ethos and approach to structured cabling on the campus. Using the system brings significant savings in space and costs without compromising the ability to meet the demands of the network services from both staff and students."

Installing an IDC Cross-Connect System within the University has helped to improve the control of any moves, additions and changes and to provide a more effective way of securing the system. Brian Bracher: "Before the introduction of the Cross-Connect System the patching database for the campus did not always reflect what was physically patched due to staff members patching or disconnecting patch leads without informing Information Services. This made matters difficult in trying to keep up-to-date meaningful records. With the Cross-Connect System only authorised staff members using an IDC tool can carry out changes on a Cross-Connect System. This has increased the amount of control for such changes and moves, making it more efficient to manage. All members of my group responsible for such changes are suitably qualified, having attended an appropriate Belden training course.

"One other positive point about a Cross-Connect System is that it is so easy to manage. Previously

when we had large SCS installations using RJ45 connections, even with all the will in the world and best intentions, the management of the system always ended up in a mess. Everyone tries to make an effort to keep the patching as neat and tidy as possible and you know that six months later it can become very untidy and out of control. With the Cross-Connect System I know it will always be neat and tidy."

Mr. Bracher concludes: "I am confident the correct system has been chosen that will support both existing and emerging applications for the foreseeable future."

Saving Space and Costs

Belden demonstrated that a high specification cabling system does not necessarily require large floor space incorporating elaborate enclosures but can utilise the smallest and sometimes insignificant spaces or rooms.

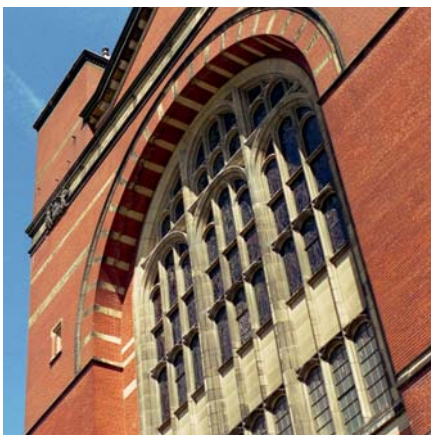
Space saving for telecom rooms will reflect in cost savings. The University's Information Services has to pay rates for every metre of floor space used as a telecom room. By reducing the overall floor space for telecom rooms per building, considerable savings have already been made.

Building managers who welcomed the benefits the HSCN Upgrade Program would bring were not so forthcoming in giving up rooms or floor space for telecom rooms. Floor space is at an absolute premium and every metre must be utilised and accounted for.

An RJ45 system would in most cases have been unacceptable to building managers due to what they perceived to be the unnecessarily large amount of floor space required. Belden's® Cross-Connect System was able to meet the need of the building managers by reducing the required floorspace by some 50%.

Direct cost savings were also achieved by reducing the overall average length of the horizontal cable run. This was achieved due to the increased number of smaller telecom rooms and by positioning the telecom rooms in a central location on the floor. Further savings were made by utilising a wall board, this negating the need for expensive enclosures, and also using the cost effective method of using jumper wire for cross-connect patching without the need for patch cords.

One of the major cost saving advantages of the Cross-Connect System is the ability to have passive telecom rooms using the Cross-Connect System, this negated the expense of high performance cooling and power requirements, achieving major ecological savings. With careful planning, locating the telecom rooms per floor directly above each other, cross-connect patching between floors is achievable. For example this enabled only one of possible two telecom rooms requiring active equipment and therefore power & cooling solutions.



At the University of Birmingham this feature is now incorporated into the cabling design as part of the HSCN upgrade program.

10 Gigabit Ethernet

Today, 10 Gigabit Ethernet is a viable solution for data centers, server farms, storage area networks (SANs), network access nodes (NANs), campus backbones, metropolitan area networks (MANs) and for short distance backbone connections where there is a high concentration of data traffic. Emerging bandwidth-intensive applications such as uncompressed high resolution digital video, medical imaging, digital animation, CAD/CAM, Network Area Storage and cluster computing also require the quality of service (QoS) inherent within 10 Gigabit Ethernet.

Additionally, as high reliability IP-based services such as VoIP and high-resolution video (MPEG4) become commonplace they require extended bandwidth and reliable, bit error-free transmission. Greater bandwidth is required as voice, data and video networks converge onto a single transmission, as is the case with many of today IP based solutions.

Of course, system configuration choices are based on many criteria such as application requirements, number of users, required levels of security, and investment costs. Based on the combination of these criteria, the IT professional has to select the most suitable solution for the tier of design.

Fibre is particularly well-suited for a number of high security, densely trafficked environments and has always been the defacto choice for high speed applications. However, the cost of installing an optical fiber solution and the photo electronics necessary to take fibre to the desktop may be too high for many applications.

This cost prohibition has spurred the quest for a viable copper solution – since UTP technology offers the greatest overall economies in new installs, the choice of direction for Belden was obvious.

Advanced Structured Cabling System

Belden has invested considerable resources in the development of a proprietary copper UTP solution for 10G applications. Belden's IBDN System 10GX is a complete new system developed around a series of dynamic enabling technologies

to ensure the highest level of alien crosstalk isolation and the best performance margins, resulting in a passivated powersum ACR extending up to 625 MHz.

It provides a complete end-to-end solution for 10 Gigabit Ethernet over augmented Category 6 cabling. Using dramatically different design concepts, the Belden 10GX solution incorporates several innovative enabling and dynamic technologies. These include a modular jack designed for extended high frequency performance and very low ANEXT when inserted side by side in faceplates or patch panels; a flexible patch cord designed to provide the highest levels of crosstalk isolation; and a horizontal cable designed for crosstalk isolation, when installed.

The Belden IBDN System 10GX is the first Category 6A structured cabling system in the marketplace to verify error-free performance for 10GBASE-T during a live, 3rd party demonstration of the performance capabilities for 10GBASE-T technology. With performance so strong shielded solutions could barely compete with this level of guaranteed performance. The stringent validation trials were performed on a 100-metre 10GX channel in a worst-case, 4-connector channel configuration (as specified in the TIA/EIA-568.B-2.10). A real-life example of what this means would be the difference of transmitting high resolution pictures (600 dpi) at 20 per minute at 1 Gb/s, versus 200 per minute at 10 Gb/s.

Make Belden your First Port of Call

A well thought-out and properly engineered structured cabling system will be easy to use, flexible and reliable. Able to adapt to emerging & changing technologies, the system should be the IT professional's network backbone for successful integration of several generations of equipment.

At a time when performance and costs are both key requisites, the Belden IBDN System 10GX offers the IT professional and the facility manager a number of cost-effective cable management and connectivity options, with no compromise in performance and the total mitigation of risk and maximized return on investment; representing the only choice of solution.