

University Extends Campus for Broadcaster-Quality Video Production

Customer Case Study



Borderless Network with Medianet capabilities is helping University of Salford realize “IT as a Service” private cloud vision.

EXECUTIVE SUMMARY

Customer Name: University of Salford

Industry: Higher Education

Location: United Kingdom

Number of Employees: 2800 staff serving 20,000 students

Challenge

- Attract students in increasingly competitive climate
- Extend campus to embrace prestigious new site
- Meet students’ desire for new styles of learning

Solution

- Cisco Borderless Network extends campus
- Medianet capabilities to deliver future rich-media experiences, campus-wide
- Cisco Data Center Business Advantage to provide template for centralized services

Results

- TV and radio production facilities mirror best available, worldwide
- Infrastructure supports new ways of learning, anywhere, anytime, over any device
- Network operating costs expected to reduce by 10 percent

Challenge

The University of Salford has earned an enviable reputation for “real-world” teaching and ground-breaking research.

With over 20,000 students and 2800 staff located on a large campus, comprising approximately 30 buildings, it has aspirations to become one of the top ten universities in the United Kingdom for teaching quality. In 2008, the university was ranked in the top third in the United Kingdom for “research power” in the [Government Research Assessment Exercise \(RAE\)](#). Notably, RAE ranked 90 percent of research at the university’s School of Media, Music and Performance as being of “international standing,” of which 15 percent was “world-leading.”

With the U.K. government placing far more of the funding burden for higher education on students themselves, Salford, like all U.K. universities, is confronting the problem of how to attract students. In addition, government policy is limiting the number of foreign students who can enter the country.

Salford’s response includes harnessing information and communications technology (ICT) to meet students’ expectations for a learning environment that can flex beyond the traditional lecture hall, giving them access to content and materials whenever and wherever they need them, and not just on and near the campus, but potentially anywhere in the world through distance learning.

ICT will also help boost the university’s reputation and increase students’ career prospects. In the fall of 2011, the majority of the Media, Music, and Performance faculty, comprising about 1500 students, are moving to Manchester’s new [MediaCityUK](#). The site, some 1.5 miles away from the old campus, puts the university at the heart of a development designed specifically around the media industry, and which is the new home of broadcasters and companies such as the BBC, ITV, and SIS.



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Derek Drury
CIO
University of Salford



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John Kelly
Networks Operations Manager
University of Salford

To achieve its strategy, however, the university would first have to solve infrastructure challenges caused by a project-driven approach that, over the years, had led to the creation of a “organic architecture.” The university relied on a single data center comprising about 300 servers, from a variety of vendors, and supporting a range of isolated and overlapping applications, including six different customer relationship management (CRM) systems and 17 storage area networks (SANs). In serving MediaCityUK, not only would speeds of 1 Gbps to the desktop be needed, the university’s Cisco® [Borderless Network](#) would have to be extended from the main campus to deliver centralized services from the data center and, increasingly, to support rich media.

Solution

In 2009, the university started a transformation project aimed at replacing its single data center with a twin-site, resilient data center infrastructure. Driving this initiative was the realization of the importance of IT to the day-to-day running of the university and a vision of delivering IT as a service.

“We are going for a totally centralized IT model which, as a cost conscious organization, makes a lot of sense,” says Derek Drury, the university’s CIO appointed to lead the transformation. “We are taking a private cloud route, which will even give us opportunities to move to a public or hybrid model in the future if it makes sense. We want to support new ways of teaching and learning by making it possible for people to access the tools and information they need, be it data or video, and which students increasingly expect, anytime from anywhere, over a variety of devices.”

In making real this vision, Drury and his team worked closely with Cisco, their technology trusted advisor. An architectural approach replaced previous reactive, piecemeal initiatives and focused on the data center and the campus network.

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Cisco Data Center Solution

The resulting new two-site data center follows a classic Cisco [Data Center Business Advantage](#) architectural design, makes extensive use of the entire Cisco Nexus® family, and includes MDS storage switches, ACE, and Cisco Catalyst® 6000 Series switches with firewall services modules. This virtualized environment has seen over 300 servers collapsed onto 64 physical servers, with unified fabric supporting two SANs and OTV (Overlay Transport Virtualization) enabling a radically simplified Data Center Interconnect topology.

Cisco Borderless Network Solution

With two high-definition TV studios and two radio studios, both able to support a completely digital workflow, the university’s faculty at MediaCityUK will provide students with the ability to learn in an environment that mirrors the very best used by broadcasters, significantly enhancing their career prospects.

The new, greenfield site at MediaCityUK has become the template for the university’s borderless network and its key features will be extended right across the main campus as budget allows.



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Not only does the new site enjoy digital studios and production facilities able to move very large video files (four times high-definition [HD] quality) around the network, the research environment extends to public spaces. The Living Lab is a microcosm of the university, showcasing students’ work in an interactive and intelligent audiovisual environment. It will also support world-leading research, for example, analysing football in the Living Lab foyer, via motion-sensitive cameras, in real-time and displaying traffic patterns as they happen.

Extending the campus borderless network to MediaCityUK means that, rather than building an “island of excellence,” the university has a routemap to bring the rest of the campus up to the same level of performance and facilities, as budget allows. Fully enabling Medianet will allow the network to intelligently manage video and devices, freeing the IT team to focus on adding value to the university.

The network and data center will also support the university in investigating the introduction of virtual desktops. Drury expects to replace over 3000 of the 5200 physical desktops that the university currently provides. Not only will this dramatically reduce capital costs by approximately £0.5 million each year, it will enable greater access to the full range of centralized university resources, applications, and information, on and off the campus.

“I can see lectures and tutorials increasingly being conducted remotely, say over two-way video,” says Drury. “I’m not saying to my academic colleagues that is how they should teach, but my job is to give them that option.” A shift from an exclusively physical learning environment to an increasingly virtual, video-based one seems inevitable, however. It is being driven by several converging factors, ranging from students’ desire to access information whenever and however they wish, to the desire to reduce travel costs and carbon footprints. Limited parking at MediaCityUK is also likely to have an effect. Lecturers will no longer be able to use their vehicles to transport paper-based handouts and books, and are, therefore, likely to rely more and more on electronic visual aids and access to information over the network.

The architectural approach also promises significant cost savings while improving business agility. The borderless network will also make possible the introduction of Cisco EnergyWise software on the IOS systems of compatible Cisco switches, which enables the measurement, reporting and management of power usage. This will help the university strengthen its balance sheet with savings on energy costs while reducing its carbon footprint. Overall, reduced management complexity and energy saving are expected to reduce network operating costs by at least 10 percent.

Consolidating and virtualizing data center resources are expected to reduce total cost of ownership by 5 to 10%. The time necessary to provide compute resources, a server for a research project, for example, will shrink from months to hours as a virtual machine is made available.

Next steps

The university intends to make full use of the video capabilities that the network will support. This will include installing digital signage to support lectures and display students’ audiovisual projects. Videoconferencing will also improve collaboration around the campus and beyond, to partner academic institutions and commercial companies. The university also plans to evaluate Cisco’s Unified Computing System to provide new levels of performance and agility in the data center.



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“Not only did we have to extend the campus, we had to ensure it could scale to meet future needs, especially for supporting rich media,” says Drury. “That’s why we chose a Cisco Borderless Network architecture with Medianet capabilities. It enables us to deliver the quality of user experience we demand, provides the tools to best manage and monitor the network, and gives us a flexible foundation to build on.”

Technical Implementation

Meeting the business and technical challenges of today’s organizations requires an architectural approach. The Cisco Borderless Network Architecture is the technical architecture that allows organizations to connect anyone, anywhere, anytime, and on any device—securely, reliably, and seamlessly.

The new campus uses a two-tier model, comprising a collapsed core and distribution layer built by a pair of Cisco Catalyst 6500-Virtual Switching Systems (VSS). The access layer comprises Cisco Catalyst 3750-X Series Switches. These Medianet-capable switches have become the university’s *de facto* standard.

Unlike conventional IP networks, Cisco Medianet can detect and recognize the types of rich media traveling over fixed and wireless networks, and, if required, re-format these video streams to ensure that they are properly transmitted to end devices in the most optimal way possible. Medianet not only delivers enhanced video performance, but also simplifies installation and management of video endpoints, and enables faster troubleshooting for voice, data and video applications.

The use of VSS and StackWise Plus, with the Cisco Catalyst 3750-X Switches, greatly simplifies management by enabling stacks to be seen as single IP addresses on the network. VSS is also being used to eliminate problems with spanning tree protocol, enabling effectively a doubling in bandwidth availability. 1 Gbps to the desktop will help ensure users have the ability to make use of sophisticated media-based applications, with the core able to scale from 10 to 40 Gbps and beyond as required.

The borderless network also smoothly extends Cisco IP Telephony to MediaCityUK, which benefits from Cisco Unified Survivable Remote Site Telephony (SRST). Mobility is also supported by Cisco Wireless Services Modules, integrated into switches, which enable students to access the university’s virtual learning environment from anywhere on the main campus.

Perimeter security, including firewalling and the Intrusion Prevention System, is managed by Cisco ASA-5585-X Adaptive Security Appliances. “The ASA-5585-X, in combination with the Security Services Processor SSP-60 IPS module, gives us 20 Gbps ‘real-world’ intrusion prevention and firewalling in a single box,” says Kelly. “This level of throughput is critical to the success of MediaCityUK, because building a rich-media capable network needs security solutions that match.”

For More Information

To find out more about Cisco Borderless Networks, please click [here](#)

To find out more about Cisco Medianet, please click [here](#)

To find out more about Cisco EnergyWise, please click [here](#)



Product List

Routing and Switching

- Cisco Catalyst 6500-VSS Series Switches
- Cisco Catalyst 3750-X Series Switches
- Cisco Nexus 7000, 5000, 2000, and 1000V Series Switches
- Cisco MDS 9506 SAN Director
- Cisco StackWisePlus

Network Management

- Cisco Security Manager

Security and VPN

- Cisco ASA 5585 Series Adaptive Security Appliances

Voice and IP Communications

- Cisco Unified Communications Manager
- Cisco Unified IP Phones 7965
- Cisco Unified IP Conference Station 7937

Wireless

- Cisco Wireless Services Module, within Cisco Catalyst 6500 Series Switches
- Cisco Unified WLAN Controller
- Cisco Aironet 1140 Series Access Point



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