IBM

Hertford Regional College saves £300,000 by consolidating on IBM BladeCenter and Microsoft Hyper-V

Andy Forbes, Principal

Peter Dutton, Director of IT

Dr Daniel Hidlebaugh, Director of Network Services

Overview

■ **The Challenge**

As part of its £63 million redevelopment programme, Hertford Regional College wanted to replace 130 ageing, under-utilised servers with a compact, energy-efficient virtualised server and storage infrastructure.

■ **The Solution**

Working with IBM and Microsoft, the College implemented an IBM BladeCenter and IBM System Storage DS3300 at each of its two new data centres, and began consolidating all 130 physical servers into virtualised Microsoft Hyper-V partitions, running on just 28 IBM HS21 blades. The blades are clustered for high availability, and the storage systems are mirrored between sites to provide a rapid disaster recovery capability.

■ **Key Benefits**

• Energy-efficient BladeCenter solution reduces power and cooling requirements by 60 percent

• Reduced hardware and energy costs are predicted to cut TCO by £300,000 over three years

• Compact solution frees up data centre floor-space that can be used to host private cloud services for other institutions

Hertford Regional College is one of the largest higher and further education colleges in Hertfordshire, with 900 staff and more than 12,000 students. The College has two campuses, at Broxborne and Ware, and offers a broad portfolio of academic and vocational courses, in disciplines ranging from business and computing to hair and beauty.

Smarter buildings

Both campuses have recently been part of a £63 million redevelopment programme, involving the construction of new buildings with state-of-the-art facilities for staff and students alike. The new building at Ware houses hair-and-beauty salons and IT suites, while the Broxborne campus has specialist resources for performing arts, catering, science, business and computing, as well as an 18-seat air cabin simulator for students training to work in the airline industry. Each building is fully integrated with the College's high-speed IT network.

Commenting on the overall project, Andy Forbes, Principal of Hertford Regional College, says: "We have a responsibility to provide the highest quality service to our students and we believe this programme delivers on that promise. We are very excited that we will be offering the fastest-in-class network for any college in Europe, which will enable the continued introduction of dynamic services for learners and lecturers. Students will enjoy increased network speeds of ten gigabits per second so they can watch high quality video content; and the network supports CCTV, making the environment a safer place for students and staff. The new solution will enable the College to excel in providing pioneering services to students. This is particularly important as their requirements and use of IT will continue to grow for the foreseeable future."

Dr Daniel Hidlebaugh, Director of Network Services, adds: "We're very focused on the idea of smarter buildings – we have implemented smartcard access for all staff and students, as well as centrally managed webcams and intelligent GSM telephone systems. To support the IT infrastructure that manages these technologies, and to improve the energy efficiency of our existing IT systems, we decided to build two new data centres, one at each campus."

The space challenge

The new data centres each house six server racks – four fewer than the previous facilities – so it was important for the college to make the best possible use of the available space.

"We had around 130 IBM, Dell and HP servers running various Microsoft Windows applications, including critical systems like our Microsoft Exchange email servers and Virtual Learning Environment," explains Dr Hidlebaugh. "Most of these boxes were reaching the end of their useful lives, and their average utilisation rate was just five percent – effectively, they were wasting 95 percent of the electricity they consumed. We realised that if we could virtualise these servers, we could significantly consolidate the physical infrastructure."

A leading-edge solution

The college evaluated hardware from IBM and HP, and virtualisation technologies from VMware and Microsoft, before deciding on a solution based around IBM BladeCenter and System Storage DS3300 technologies and Microsoft Hyper-V.

"We want to be at the leading edge of the education sector in terms of technology adoption, and in our opinion, that means IBM," says Peter Dutton, Director of IT. "We have a very fast network infrastructure, and the IBM BladeCenter and storage technologies give us the performance to get the most out of it. We were also impressed with the quality of support we got from the IBM team – they loaned us a BladeCenter for six weeks to let us try it out before we bought it."

Compelling cost savings

The cost-efficiency argument was also compelling. The choice of Microsoft Hyper-V made immediate financial sense, as an enterprise licensing agreement with Microsoft kept the software costs to a minimum, making it £70,000 cheaper than a comparable VMware solution.

On the hardware side, the IT team at Hertford Regional College compared the cost of acquiring and running the new IBM hardware over three years against a strategy of replacing the existing servers on a like-for-like basis.

"With the IBM solution, we stand to save more than £190,000 on additional equipment in the next three years – as well as nearly £120,000 on electricity," comments Dr Hidlebaugh. "The BladeCenter and DS3300 hardware is 60 percent more energy-efficient than the existing infrastructure, which makes a huge difference in terms of both operational costs and environmental impact."

Intelligent power management

The college is also using IBM power management technologies within the BladeCenter management console, which enable the utilisation of each blade server to be monitored closely and managed in a more intelligent manner. For example, during the night-time, when many of the college's Hyper-V partitions require less processing power, they can be temporarily consolidated onto fewer processors and the unused blades can be switched off.

"This has obvious benefits in terms of energy efficiency, and it could also help us reduce ongoing hardware costs," adds Dr Hidlebaugh. "If a blade server only has to run for 12 hours each day instead of 24, its shelf-life can be prolonged significantly. As a result, we're hoping to extend our usual three-year hardware replacement cycle to four or even five years for some components."

First-class support

"We were the first organisation in Europe to implement Hyper-V on IBM BladeCenter, so we needed to work closely with both IBM and Microsoft to test all our systems and make sure everything was fully compatible," says Dr Hidlebaugh.

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> *Director of Network Services*
> *Hertford Regional College*

Business Benefits

- Energy-efficient BladeCenter solution reduces power and cooling requirements by 60 percent

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Key Components

- IBM BladeCenter HS21

- IBM System Storage DS3300

- IBM System Storage EXP3000

- Microsoft Hyper-V

"The support from both companies was really first-class: there was a real desire to make the project a success, and as a result we got the new solution up and running on schedule, ahead of our move to the new data centres."

Protecting data

Each data centre now hosts an IBM BladeCenter H chassis with 14 quad-core Intel Xeon processor-based HS21 BladeCenter servers and 64GB of memory, and a storage solution built on IBM System Storage DS3300 and IBM System Storage EXP3000 technologies, with 60TB of disk storage. Each BladeCenter is configured in seven dual-node clusters, and each cluster is mirrored to the other data centre, together with the storage. This provides a comprehensive high availability and disaster recovery capability that virtually eliminates downtime for the College's core systems.

"As an educational institution, we are subject to government regulations on data retention – for example, we are obliged to store all emails for seven years," says Dr Hidlebaugh. "So we need a lot of storage capacity, and we also need to ensure that our data is protected even in the event of a major disaster, such as a fire or flood at one of our sites. The IBM solution gives us the level of protection we need on the long-term, as well as maintaining the availability of our systems for day-to-day operations."

Into the cloud

The project has been so successful that Hertford Regional College is now considering investing in additional IBM BladeCenter servers and IBM storage systems to provide a private cloud infrastructure that can be sold as a service to other educational institutions.

Dr Hidlebaugh concludes: "This solution from IBM and Microsoft provides a leading-edge infrastructure that delivers excellent performance and availability for our core systems while supporting the new security and telecommunications systems that are a key part of our smarter buildings strategy. In our opinion, every forward-thinking educational institution should be considering virtualisation on IBM BladeCenter and Microsoft Hyper-V – and our own infrastructure is a shining example of how this can be achieved."