



Small Business Case Study

Products Used: HP servers with Intel® Xeon® processor technology, Dell laptops with Intel® Centrino® mobile technology, desktops with Intel® Pentium® 4



Canadian Business School graduates to online learning

Case Summary

As Canadian Business School (CBS) diversified to offer students a wider range of career training courses, the college saw an increase in the data requirements of its students. A more robust network and secure VPN access to link remote campuses were needed to move from a technical institute to a full-fledged career college offering specialized diploma programs for students in Southern Ontario and around the world.

Challenge

Founded in 1992, Canadian Business School is a career college focused on delivering interactive learning for students in computer related subjects. With a technology curriculum, the school opened campuses in Mississauga, Scarborough and Toronto, as well as founding training partnerships with large software developers. As the market for computer training slowed in early 2000, director Mazher Jaffery realized the school needed to diversify and offer a wider range of programs.

"A successful career college needs to be ahead of market changes to deliver learning options ahead of the next trend," Jaffery says. "We need to offer students courses before the trends hit so graduates are ready when the market needs their expertise."

With the launch of new programs in health care and business, Jaffery was scanning the horizon for other new educational opportunities. He saw an important contribution in the area of online learning and providing educational content on the Web. While he acknowledges that education will continue to be delivered in bricks and mortar institutions, he believes the convenience of online learning will expand access to programs for students.



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Coupled with the launch of new programs in health and business, the emergence of online learning required an update of the school's network infrastructure to handle the new workload. In addition, the school's disparate servers didn't talk to each other, preventing seamless transfers of student files and courses between the three campuses. CBS needed a new scalable network infrastructure to handle all its demands for online content.

Solutions

When IT Manager Xudong Xu upgraded CBS servers, he opted to standardize on HP* servers with Intel® Xeon® processor technology to provide more bandwidth for student files, sharing and online content. Consistency of servers allows Xu to have machines on hand to expand the network as demands increase and traffic levels boom.

Simultaneously, he linked the three campuses together using VPN access to the Microsoft Windows 2003* active directory structure for enhanced file sharing and data transfer. This move had immediate benefits for students who could now transfer from one campus to another easily. In the past, a student's records would be burned to CD, delivered to admissions at the new campus and then uploaded to the server. It could take a few days to get a student up and running on the new campus. Today, with one click, a student's records can be moved virtually instantly.

“We needed a more robust control network,” says Xu. “A student can now transfer on Friday, and Monday log in at the new campus seamlessly.”

Another priority for Xu was ensuring a more comprehensive back up system to protect student documents, as well as school records. When the college was founded, Xu could back up all records on two floppy discs. Today, the school backs up 20 GB of data onto a removable hard disc through a RAID 5 array.

Key Advantages

For Jaffery, the new network infrastructure gives the college room to grow. Jaffery sees the future of education linking bricks and mortar institutions with online content from learning universities and colleges around the world. CBS has already delivered programs for Harvard and Cambridge online.

To effectively offer these programs, CBS needs a scalable network, as well as the reliability of Intel processors to ensure the content is delivered to students seamlessly and without lag times. The college needs to ensure the content is delivered securely, but as Xu says, software and hardware are just one element of good security. “Management is critical to security protocols. It's all about how you manage access,” he says.

Xu notes that Hyper-Threading technology helps programs run more efficiently and allows the servers with Intel® Xeon® processor technology to run even more efficiently and use the available resources more readily. When coupled with the students' and administrative desktops with Intel® Pentium® 4 processor technology, Xu says students and faculty have the reliability and speed they need for their classes.

Care Giver Program Delivered in India

Last year, CBS launched a new diploma program for students in India. Delivered over the Internet, the course leverages the professional expertise and testing of a Canadian educational institution. Students access content over CBS's secure servers powered by Intel® Xeon® processor technology, to learn how to care for sick or elderly patients.

All the testing is administered by CBS staff in Toronto to ensure the appropriate level of competence is achieved before graduation. To date, more than 400 graduates have now completed a living caregiver program and obtained their diplomas. With a successful launch one year ago, the contract to deliver the program has been extended for a second year.



"This is the future of education" says Jaffery. "We are moving towards a future vision where more and more content can be delivered online, leveraging the expertise of institutions around the world. Using iPod* or MP3 technology, we can deliver shared online content that blends university education into information sharing. We are leaving the era of training and entering a new era of collaborative learning."

With the stability and speed of their new server technology, online content delivery is becoming more and more convenient and feasible.

"By partnering and collaborating with others, we can benefit from each others content and deliver a better product or service to the students," says Jaffery, noting that online delivery when coupled with in-class education is the right combination for students to learn effectively. To be effective, online content needs to stream easily and quickly for students, which is why a stable and robust network, powered by Intel® Xeon® processor technology, is essential.

High Tech Dentistry

"In the dental program, having access to technology is improving student results," says Paul Sharma, director of the dental hygiene program at CBS. Using laptops, projectors and Internet access, Sharma says the students get a more visual experience in the classroom which helps them retain more information and improves performance on exams. After each class, Sharma uses Microsoft Windows SharePoint* technology to post lecture notes and slides to the intranet so students can review them easily and prepare for exams.

SharePoint* gives students access to an intranet site housed on the schools servers powered by Intel. This site stores all the course notes, slides and information needed for studying. "It's more professional," says Sharma, noting the advancements in technology entering dentistry such as digital cameras, and that students are more successful if they have experience with the technology before graduating.

"They can see the images on the screen and listen to the lecture rather than having their heads down taking notes and not always understanding what was being delivered," he said, adding that they can also save money in the anatomy radiography courses by using online images of the skull which everyone can see, rather than buying a single skeleton for \$5,500 each. "With a skeleton, only one student at a time can look at it. When we use images, it can reach everyone."

"The results have been positive for student grades," says Sharma. In oral pathology, the average failure rate is 20%. With the move to a more visual presentation using all available technology at CBS, Sharma has seen that failure rate cut in half.

Sharma is also helping his students prepare for their board exams by bringing high-tech, online testing into the classroom. All quizzes are developed from a central database of questions housed on the school's server and delivered to students seamlessly by the Intel® Xeon® processor technology.

Sharma says the new technology is a real boon to his program. While it may take him a little longer to develop original programming, he can now make changes to his courses in as little as two hours (down from six) because all the changes are done electronically. He also estimates that the school is saving hundreds of photocopies per class by delivering content electronically. Marking exams is also faster than when they had to grade by hand.

"It's really about giving students access to as much information as possible. As professors we need to share as much information as we can to make education better. There's a lot of information out there, why not access it," says Sharma.

Wireless Saves Renovation Costs

When renovations were made to the main campus in 2004, the school opted to install a wireless LAN to ease connectivity across the building. Jaffery estimates the decision to implement a wireless LAN saved the college half the estimated cost for hardwiring.

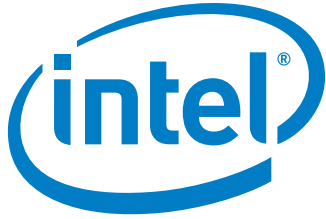
Jaffery notes that wireless access makes it easier to move classrooms around because they don't worry about the location of cabling. In addition, the school is bringing in more professionals as both guest lecturers and students, so the ability for them to connect to the network using their laptops with Intel® Centrino® mobile technology is a real benefit. "They all carry laptops with them. Being able to access the Internet and connect with e-mail is valuable to them," says Jaffery.

Collaboration Software Connects Teachers and Students

Accessing SharePoint* for collaboration and messaging has been a benefit for students at CBS but Sharma says it also helps reduce the paperwork for record keeping and attendance. Students log in by swiping their ID, which will soon be equipped with a bar code reader. Since all tests are graded electronically, it also makes it easier to store student records.

The school has also implemented an electronic student satisfaction program where students can rate the programs. Sharma says this is real benefit to ongoing improvements in content delivery.

Sharma is looking forward to further opportunities to enhance online collaboration and training by recording more lectures to post online. This would enhance accessibility for students who can't attend school one day but don't want to miss the content. Already 10% of the lectures are recorded but Sharma would like to see this increased.



Future Uses

For Jaffery, the future is all about further online collaboration to enhance content delivery. With the early success of both the Harvard program and the caregiver program, he is convinced CBS will become a leader in educational content. As program delivery increases online, Xu sees further expansion of the server network, and is investigating Intel® Itanium® 2 technology to take advantage of 64-bit computing.

WiFi is also a large part of the future plans for the college. Jaffery says that as WiFi expands across Toronto, there will be more opportunities to deliver educational content to people in more places.

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