



Case Study

Quad-Core Intel®

Xeon® 5300 Processor

Education

Content/Service Delivery

Infrastructure



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Professor

Zheng Hsu Cheng

Head of Information Technology

School of Continuing

Education Chinese Culture

University

Increasing Compute Power without Increasing Cost

Taiwan’s Chinese Culture University taps on high-performance features of Quad-Core Intel® Xeon® 5300 processors for its long-term IT strategy

The School of Continuing Education (SCE) at the Chinese Culture University (CCU) in Taiwan serves a growing number of students and faculty staff that make use of the University’s online resources for several services. These services include online class and course registration, student details, admission dates, schedules and other pertinent course information that is important to students and faculty. With over 40,000 students, and growing, at SCE assessing the information, the University wanted to ensure uninterrupted online data access and turned to Quad-Core Intel® Xeon® 5300 processor-based servers to upgrade its IT infrastructure to meet its burgeoning needs.

Challenge

- **Increase server processor power.** Deliver increased processing power to University’s online services for staff and students to handle growing computing needs.
- **Enable a cost-effective solution.** Deliver a cost-effective solution that will support a growing student base, without increasing costs normally associated with increased performance infrastructure.

Solution

- **Deploy Intel® architecture.** Utilize Quad-Core Intel® Xeon® 5300 processors in the blade servers for the University’s IT infrastructure.
- **Utilize Intel technical expertise.** Enable optimization of server performance applications for quad-core processors.

Assessing the Situation

For 10 consecutive years, the School of Continuing Education (SCE) at the Chinese Culture University (CCU) has been ranked first by the Taiwanese Ministry of Education among private universities and other tertiary institutions for its extension program. So how exactly does the Chinese Culture University achieve its goals of providing quality education through the use of IT? The secret lies in a long-term IT strategy built upon servers based on Quad-Core Intel® Xeon® processors.

The CCU has a strong focus on research, and a very good track record in obtaining federal funding for research. To better contribute to society, the University has to align market demands with an emphasis on practical applications are also part of its long-term research and development plan.

The CCU was the first University in Taiwan to deploy a system where stored value travel cards, electronic wallet, campus access control, are integrated into a single card for multi-purpose use within campus. As such, the CCU has built a reputation not just for comprehensive use of technology, their achievements in the area of continuing education are also well known. To have the honor of being ranked first by the Ministry of Education for 10 consecutive years is no mean feat. Credit must be given to their effective use of IT in education.

“The Chinese Culture University is different from other universities,” says Professor Zheng Hsu Cheng, head of IT at the Chinese Culture University’s School of Continuing Education.

Chinese Culture University's choice of Quad-Core Intel® Xeon® 5300 processor-based servers was instrumental to its strategy for benefits-driven IT

"When it comes to IT investment, our strategy is designed very much with practical applications in mind. There is also a wealth of IT expertise available here. For example, both the current Principal of the University and the CEO of the School of Continuing Educator previously held the post of head of IT."

In fact, the development of Chinese Culture University's IT strategy is spearheaded personally by the Principal. This illustrates the emphasis placed on the use of IT within the university. This is because effective use of IT is a significant contributing factor to the university's success in delivering quality education.

The strategic role of it in a benefits-driven model

In the last nine years, the SCE's IT Group (ITG) has expanded from a six-person team to an 80-person organization. The expanding student population has doubled in recent times and the ITG is currently supporting more than 40 thousand students, managing funds of over NTD 900 million this year. During this metamorphic period, the ITG was able to provide reliable IT support for the school's operations, thanks to the robustness of its infrastructure.

Since the early stages of its computerization, the School has made strategic moves to secure its continued leadership by investing in areas such as e-learning. More than 300 staff members support the School of Continuing Education at the CCU. Their administration model is not one commonly seen among other universities. Prof. Zheng explains that because the ITG is involved in many areas within the school, such as research and development, media,

technical administration, distance learning, and digital pedagogy, there is a need for the large number of staff (over 80) within the ITG.

"IT is at the core of our school's development. With birth rates decreasing and admission numbers shrinking, each university needs to develop an area of specialty. This is the how the ITG at the School of Continuing Education became the one to watch, among other IT groups within the educational sector."

In fact, the ITG group at the School of Continuing Education does not just serve the students of SCE. Two years ago, it extended its business model and won the tender to provide an outsourced e-learning platform for the Industrial Technology Research Institute of Taiwan. Since then, the ITG has continued to provide outsourced e-learning solutions to other private and military tertiary institutions. Prof. Zheng reveals that this is how they have benefitted from their strong IT strategy. "At present, we have more than 100 servers based on the Intel® Xeon® 5300 processor. All solutions that we provide for other institutions are also based on Intel® architecture," he says.

With the upgrade to Quad-Core Intel Xeon 5300 processors, the University is also taking steps to becoming a Predictive Enterprise, using technology to make its educational enterprise resource planning proactive instead of reactive by reducing the gap between knowledge and execution. As a Predictive Enterprise, CCU would be more agile, maximizing return on investment (ROI). The key to becoming a Predictive Enterprise is learning how to develop work processes and infrastructure that are connected and adaptive.

Delivering the Solution

Prof. Zheng maintains that the performance capabilities of their backend servers are of the utmost importance. Because the student numbers for the School of Continuing Education are huge, with over 40 thousand students in the extension program, all learning information is made accessible via the Internet or phone. This effectively reduces the need for face-to-face assistance, achieving the target of promoting self-service within the CCU.

The performance of the servers is put to the test as many processes, from student admissions to course selection and application for transcripts, are all done online. All these processes require fast response times. "When we designed our database, we set the requirement that each calculation has to perform in less than 0.8 seconds, and each user request should have a response time of less than 3 seconds," explains Prof. Zheng.



"Our requirements are fully met by deploying servers based on Quad-Core Intel® Xeon® 5300 processors."

Professor
Zheng Hsu Cheng
Head of Information
Technology
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Spotlight: School of Continuing Education, Chinese Culture University

- Chinese Culture University (CCU) was founded in 1962 by Dr. Chang Chi-yuan and was originally christened College of Chinese Culture by the late President Chiang Kai-shek, henceforth mapping out the direction of its future development and educational ideals.
- In its four and a half decades as an institution of higher learning, the University has experience vigorous growth, and its School of Continuing Education has 10 departments and 11 graduate programs.



Since the deployment, the School of Continuing Education has seen marked improvement in their service levels. As Prof. Zheng recalls, the ITG and IBM spent only two weeks on the server upgrade. "We did not publicize the upgrade exercise. However, once the new servers were deployed, we started receiving feedback from staff and students commending us on the speed and performance of our services. This gave us great encouragement."

The increased efficiency is of great importance to the School of Continuing Education. "Our student numbers are huge," explains Prof.

Zheng. "Whenever the student service center receives calls from students, we need to retrieve the caller's admission dates and class registration details quickly, so that we can recommend related courses and provide relevant information to them."

As the servers needed to be deployed and fully operational quickly, there was limited time for testing. But the help the University received from industry partners made a great impact on the overall success of the deployment. Prof. Zheng shares, "The support from partners like IBM and Intel proved invaluable. They provided

Key Technologies

- IBM blade servers running Quad-Core Intel® Xeon™ 5300 processors formed the key infrastructure for the University's benefits-driven strategy to improve computing performance without incurring the increased costs normally associated with higher performance capability.
- **Intel Technology Pillars:**
 - **Dynamic resource management** provides patterns, technologies, and methods that sense the changing flows and demands for infrastructure or storage and can analyze them, as well as the facilities to redirect available processing capacity to maintain transactional performance and meet capacity demands.
 - **Data-intensive computing** provides the infrastructures and architecture patterns for the high- processing capability needed for the most demanding commercial systems. This includes specific processing infrastructure capabilities to address different types of application processing (e.g., data warehousing and data mining applications with different processing characteristics and profiles than messaging servers and message routers).
 - **Energy-efficient management** features include hardware features that provide unique information sensing and capture. Information can be stored and analyzed along with associated processing usage and workload consumption to inform active systems about the run time state of the infrastructure. These unique features can be harnessed to reduce the likelihood of firmware failures and improve the reliability of IT systems. These features can also produce savings by allowing unused systems to be switched off, transferring processing capacity to another service, or just closed down.

Integral Answers

- Deploying two racks of servers with 28 blades each quickly and without causing disruption to normal services required the expertise of Intel and IBM engineers, who worked with the University's staff and provided invaluable consulting throughout the project.
- Consolidating the server architecture to run on Quad Core Intel Xeon 5300 processors enables the University to lower hardware acquisition costs through a singular scalable architecture, as well as improve data center performance efficiency.

extensive of laboratory data, and brought in machines for actual testing. This sort of specialized consulting is one reason why we insist on dealing directly with the equipment manufacturer."

Quad-core platform for rapid growth

As part of this deployment exercise, the School of Continuing Education procured two racks of servers based on Quad-Core Intel® Xeon® 5300 processors, with 28 blades each. These are primarily used to service their industry clients. For example, in April this year, the SCE began a partnership with Microsoft TechEd* and TechNet Webcast* to make their On-air English Language Classroom content available on the Internet.

"The traffic volume for the On-air English Language Classroom is measured in the tens of thousands on any given day," Prof. Zheng points out. As the load is continually increasing, so are the requirements for server performance and capability. "Our requirements are fully met by deploying servers based on the Quad-Core Intel® Xeon® 5300 processor. At present, our migration to these servers is 80 percent completed. We are planning for another wave of procurement for new technology in February next year."

"No amount of marketing can compare with having our students and clients experience the benefits of increased speed and efficiency first hand," Prof. Zheng emphasizes. Even though the students may not fully understand the technology behind this deployment, they have clearly expressed their delight in the improved user experience created by the increased efficiency. The University places great emphasis on managing the university using competitive business models. This investment in IT is proving its worth as it brings the benefits of providing a platform for high-speed growth to the Chinese Culture University.

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Return on Investment

- The price/performance ratio of Quad Core Intel Xeon processor-based blade servers enabled Chinese Culture University (CCU) to increase the performance and efficiency of its online services without a corresponding increase in total cost of operations.
- Quad-Core Intel® Xeon® 5300 processors' outstanding performance makes it possible for the University to improve its service levels, evidenced through positive feedback from staff and students who use its online services.
- Investing in Intel quad-core processor technology allows the University to achieve its benefits-driven strategy model that enables the University with a future-proof platform for high-speed growth.
- Through Intel® architecture and quad-core processors, CCU is building the groundwork for the Predictive Enterprise, providing the computational capacity to meet its student and faculty demands by collecting usage data, analyzing trends, predicting needs and acting upon them. The solution stack serves as a catalyst for educational resource planning innovation for the University.
- Using Intel quad-core processor technology allows CCU to sense key metrics, predict its needs, and act to produce both energy and cost savings. These are the key steps to becoming a Predictive Enterprise.



Solution provided by:



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