Enabling the Freedom to Learn and Innovate Teaching

Customer Case Study

Cisco infrastructure supports the efforts of Singapore's oldest school to reinvent teaching and learning.

EXECUTIVE SUMMARY

Customer Name: Raffles Institution

Industry: Education

Location: Singapore

Challenge

- Supporting the sophisticated technological needs of educators
- Coping with increased bandwidth requirements
- Provide a pervasive learning environment in the school campus and beyond

Solution

- Cisco Unified Data Center Architecture powered by the Cisco Unified Computing System
- Cisco Borderless Network supported by Cisco Wireless technology

Results

- Pervasive video for learning
- Freedom to experiment with new forms of learning
- Scalable infrastructure ready for future growth

Raffles Institution

Founded in 1823, Raffles Institution (RI) is the oldest school in Singapore, with the commitment to nurturing leaders who bring out the best in their communities. As an independent school that delivers educational excellence, Raffles Institution offers an integrated six-year Raffles Program (RP) that enables students to bypass GCE 'O' Levels and take the 'A' Levels. Currently, RI has a capacity of 600 staff and 4,500 students, with about 400 students staying on the school campus.

The RP is in line with the school's strategy in establishing a highly flexible and integrative system that supports pedagogical teaching approaches and effective learning. Its forward-looking curriculum emphasizes on keeping learning relevant and applicable to the real world.

RI recognizes the importance of technology and has been constantly exploring new ways to incorporate technology into the classroom – its Raffles Discovery Studio (RDS) being one of the most recent avenues for such experimentations.

Keeping pace with evolving educational challenges

As educators face the constant challenge of bridging academic learning and real world practice, this has called for the need for educators to shift away from traditional teaching methods – by coming up with more innovative ways of teaching and creating a conducive environment that can spur students' creativity and inspire them to think out of the box. RI stands at the forefront of education by encouraging pedagogical innovation, with technology being a key enabler in enhancing students' learning experience.

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Jason Tan Chong Lee, Dean/Academic Studies (Year 1 – 4), Raffles Institution

"Effective teachers utilise a variety of strategies to engage learners, and technology plays a complementary role in supporting pedagogical goals. We work closely with teachers to facilitate their understanding of the value and relevance of technology in improving instruction," said Jason Tan, Dean/Academic Studies (Year 1 – 4), Raffles Institution.

One of the steps taken by RI to raise the standard of education was the launch of its online learning management system (LMS) – Discovery@Raffles – which gives students online access to essential learning materials such as lecture notes and videos. "With the pervasive use of mobile devices among students, we made the decision early on to provide complete wireless network coverage throughout the entire campus. This allows staff and students to conveniently check emails, access lecture videos, use LMS or surf the internet," said Maurice Yu, Senior IT Manager, Raffles Institution.

"Due to the increasing adoption of more sophisticated systems and usage of computers and mobile devices within the RI campus, the bandwidth requirements are relatively high. A scalable and efficient network infrastructure is vital to cope with future growth," he added.

Supporting educational developments with Cisco infrastructure

Through the years of working with a wide range of organizations and institutions, Cisco brought its expertise to help RI manage its technological transformation. In 2005, RI implemented a Cisco Wireless LAN infrastructure that caters to students living on campus and the entire school population, which has over 80 percent penetration rate of smartphones and tablets. Having wireless access throughout the campus creates a more immediate learning environment for all.

The network switching and routing infrastructure is also fully powered by Cisco, with a recent update pushing the backbone bandwidth to 10G. The bandwidth increase allows them to handle usage spikes without impact.

"Whenever it was nearing test or exam periods, there will be peaks in network traffic as students may use the LMS simultaneously. After investing in the 10G infrastructure, we are now more prepared in accommodating fluctuations of network traffic," said Maurice.

In the data center, RI has been moving its core applications to a Cisco Unified Data Center architecture based on the Cisco Unified Computing System (UCS). This would create a flexible, dynamic and virtualized server infrastructure that helps save on hardware costs, improve management, and boost responsiveness to future growth. Bandwidth-intensive applications that were moved to Cisco UCS include the school website, SharePoint and Stamford Student Portal.

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Jerome Lo, Head of Department, Education Technology, Raffles Institution

Empowering students and teachers with technology

With the 10G network infrastructure from Cisco, there is now sufficient bandwidth for RI to support students' applications such as the online portal hosting video recordings of all their lectures. This portal helps students internalize learning and allows those who missed classes to be able to catch up on lessons. And the time taken to edit and upload a video has been greatly reduced. "The Cisco infrastructure enables our staff and students to access and make use of information optimally, which in turn helps us to plan and utilize our resources optimally," said Tan Nam Seng, Senior DP/Planning & Resources, Raffles Institution.

"In the past, it took us up to two hours to edit and render a one-hour lecture. And because of bandwidth limitations, we could only upload the video to an offline computer in the library for student access. This was very time-consuming, given that the Year 5-6 students now have access to about 40 new lecture recordings per week in various A-Level subjects," said Jerome Lo, Head of Department, Education Technology, Raffles Institution. "The network has boosted the efficiency of our video uploading process, and eased the burden on our IT resources, while changing the way students learn with media," he continued.

By leveraging the Cisco infrastructure, RI has also set up a fully digital and wireless classroom as a platform for teachers to experiment with technology and new pedagogical approaches that can potentially be applied in future. Known as the Raffles Discovery Studio (RDS), the classroom is equipped with 32 tablet devices and eight interactive whiteboards to create collaborative learning opportunities.

Above: Students enjoying lessons in the fully-wireless Raffles Discovery Studio

Within two months since its launch in July 2012, over 400 students have gone through innovative lessons in this new environment, with more than a dozen of unique pedagogical experiments have been held to date. The reinvented classroom has resulted in positive feedback from both students and teachers. As the wireless environment allowed student group discussions to be held without being restricted to their desks, this enabled the classroom to have flexible seating configurations.

"The students are more engaged in class and their learning experience has been enhanced. They even want class durations to be extended because learning is a lot of fun! The integration of technologies through the networking of various hardware and applications were instrumental in complementing my lesson objectives," said Lee Liak Phong, one of the teachers who conducted a pedagogical experiment at the RDS.

PRODUCT LIST

Data Center

- Cisco Unified Computing System
- Cisco Unified Wireless Network
- Cisco 10GE network backbone

Overall, Cisco has enabled RI to have a scalable infrastructure designed to accommodate future growth and support the school's technology roadmap. The Cisco UCS helped to consolidate more than 20 servers to just three UCS units, greatly reducing the server footprint. Plans are also underway to implement desktop virtualization. The move to desktop virtualization would minimize the difficulty of maintaining different versions of hardware, while increasing cost-effectiveness in the long run. "We will start by implementing desktop virtualization in our computer labs. In the near future, we'll be able to introduce a bring-your-own-device scheme for our staff as well," said Maurice.

Future outlook

The adoption of technology for pedagogical innovation is a continuous journey for RI. Looking forward, there is still much room for exploration in the field of education and RI is collaborating with teachers to review other possible implementations.

"Our teachers and students are open to the use of educational technology for pedagogical innovation. We will do our best to find an approach that suits our context and students well," said Brian Ang, DP/ FACULTY (Designate), Raffles Institution.

"At Raffles, we aim at giving our students not just a good experience but also a remarkable one. Technology allows RI to customize education programs to cater for the various needs of the students. This is our way of ensuring that Rafflesians continue to embody the hope of a better age," said Mrs. Lim Lai Cheng, Principal, Raffles Institution.

For More Information

For more information on Raffles Institution, visit www.ri.edu.sg

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