EXECUTIVE SUMMARY

Customer Name
Prince Mohammad University

Industry
Higher Education

Location
Saudi Arabia

Number of Employees
360 staff and 5500 students by 2012

Business Challenge
· Create flagship institute to raise skill-base in business, science, and technology
· Deploy innovative methodologies and technologies to promote learning
· Implement royal governor's vision for privately financed higher education

Network Solution
· Secure, scalable, converged network architecture
· Voice, data, and video solutions with full wireless connectivity
· 'Smart classrooms' offering advanced technological aids to learning

Business Results
· Phased expansion after successful launch of mini-campus in 2006
· Modern business education, in English, on high-tech campus
· Continuing donations secured from business community due to strong IT deployment

Saudi Arabian University Deploys Advanced IT to Support New Education Model

New Prince Mohammad University uses innovative IT technologies to promote learning

Business Challenge

In 2004, Prince Mohammad bin Fahd, governor of Saudi Arabia's Eastern Province, donated an area of empty desert beside Half Moon Bay, near the city of Al-Khobar, as the site for a new university. The driving force of the prince's vision was a perceived national need for a new generation of home-grown leaders in business, science, and technology, which are areas where the country tends to depend heavily on imported skills. The aims were to promote international competitiveness, reduce over-reliance on the oil industry, and provide new opportunities for both men and women.

Students would learn, in English, to international certification standards. The planned facility, known as Prince Mohammad University (PMU), would be the first in a new wave of privately funded higher education institutes in Saudi Arabia, in parallel with an expanded and restructured state higher education system. Another key objective was for PMU to become known as the leading IT-based institution in the region.

Technology choices were critical to the PMU vision. As well as preparing future leaders, PMU is committed to exploring innovative methodologies and technologies. The university wished to make 'a pervasive use of technology' a hallmark of its learning processes. To help ensure alignment with today's demanding business education standards, PMU examined various possible models and, in late 2005, signed a two-year contract with a consortium of 32 U.S. universities to set up and run the academic, financial and administrative systems for the US$80 million project.

Network Solution

PMU's U.S. education consultants outlined a basic IT infrastructure for the campus. They proposed simple data networks, run separately from the voice network. Cisco and its partner, MMR, responded to an initial Request For Proposal based on this concept. However, Cisco also presented a more ambitious alternative, based on Cisco's vision of the network as a platform. This would help ensure scalability, and it showed how the network could be a key enabler of PMU's wider aspirations for integrating advanced information and communication technology (ICT) into its educational processes.

The U.S. consultants' starting point had been a collapsed backbone network design, which is an approach that works well for networks serving small and medium-sized campuses or large buildings. Cisco and MMR employed a hierarchical, multilayer model, which is better suited to a large, progressively expanding campus. This model simplifies internetworking, improves manageability, and optimizes performance, with each layer focused on specific functions. It enables the designer to choose the right systems and features for the layer, while facilitating changes and improving fault isolation.

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Modularity allows the creation of design elements that can be replicated as the network grows, so that new buildings and server farms can be easily added without changing the design. Cisco's proposal was ideally adapted to PMU's phased growth plan. It consisted of a distribution switch, with full redundancy, to which all access switches would be connected. The buildings would then be connected to the core to form the overall campus model, to optimize network performance and manageability.

In this way, PMU would be able to provide the faculty and students with advanced services, while offering ample scope for future expansion. Cisco's proposal envisaged creating a "mini-campus" at the outset, designed to serve about a quarter of the eventual student complement. It would help ensure that the critical emphasis on ICT as a core element in the learning process was transparent at launch. And it would accommodate a phased approach to PMU's future evolution, in terms of physical expansion and the range of ICT services that could be deployed as the campus grew.

"It is here that the added value of Cisco came in," says Osama Al Saif, PMU's chief information officer. "The partnership of Cisco and MMR was more creative in its approach, so their solution was more appealing. We wanted an infrastructure that was solid and dependable from Day One."

The proposed mini-campus consisted of three buildings: one for administrative staff, a second for teaching male students, and a third for female students. The Cisco IP network was linked to a powerful data center, and the routing of all fiber-optic cabling on the site was redesigned by MMR and Cisco to improve access to services.

The data center supports PMU's integrated back-office system, which is specifically designed for higher education, including handling information on recruitment, admissions and accounts, HR functions, such as payroll and benefits; and financial management software. Security is underpinned by Cisco® ASA and intrusion protection devices.

Under the original RFP requested by the university, the voice solution had been treated as entirely separate from the data network. After working closely with Cisco, the university opted to integrate the two and deployed Cisco Unified Communications across the campus. IP phones are integrated with directory, voicemail, and remote dialing services.

Business Results

By mid-2008, PMU had enrolled some 1380 students, in a ratio of 55:45 males to females. The student population, naturally enough, includes a high proportion of Saudi-born students. Others are the children of expatriate workers based in Saudi Arabia, who would otherwise have gone abroad for their higher education. And there are 20 orphans or poorer students, who attend without having to pay fees. This number is expected to rise proportionately as the student body grows.

Courses include business administration, engineering, IT, and interior design. All courses are taught with a common academic core curriculum centered on technology. Staff and students benefit from the various ICT-based services on the mini-campus, and PMU students in all branches of study quickly become steeped in multiple, advanced, connected ICT applications to reach their full collaborative potential.

The quality of access to ICT is a key factor in the educational experience. By September 2008, it was expected that wireless coverage would be extended to all outdoor areas, extending the learning process beyond classroom boundaries.

After careful consideration of specific cultural needs, the technologies deployed have helped make new educational opportunities accessible to both genders equally.

At PMU, a state-of-the art, converged IP infrastructure has turned out to be more than just a well-planned but largely invisible foundation for an extensive portfolio of services. Not only is it now an explicit feature of the university's educational model; it has become a catalyst for continued donation from the Saudi business community. The university's technologies are also used extensively to maintain close connections with, and solve persistent problems existing within, the surrounding community.

"The rate of donation has actually increased from business donors visiting PMU and feeling it is a wise investment," says CIO Osama Al Saif. "We are still receiving donations to expand our labs, establish new buildings, enhance our IT infrastructure, or endow scholarships."

The ICT system has also helped PMU launch international academic partnerships. The Saudi university is able to offer a European Master of Business Administration (EMBA) under a 'dual degree' program, with the Maastricht School of Management. The European body provides visiting faculty, and academics can communicate easily across time zones or participate in course grading processes remotely.

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Next Steps

A further generous donation of land adjacent to the PMU campus site by Prince Mohammad bin Fahd is set to house the university's next phase of development. The plan, which is still at an early stage of engineering design, is to construct a village to accommodate academic staff, with separate dormitory accommodation for male and female students. The city of Khobar is about 45 minutes drive away, and at present, both staff and students have to commute.

The scheme will involve installing fiber to the home in the new village, with IPTV over fiber, together with IP telephony, remote controls, remote sensing, and remote cameras. It will include building new schools for the children of university staff, at all educational levels, and may incorporate a polytechnic, offering short courses to adults. PMU is also in parallel talks with its academic consultants and with Cisco on establishing a Cisco Networking Academy at PMU.

Product List

Routing and Switching
· Cisco Catalyst® 6500 Switches (network core)
· Cisco Catalyst 4500 Series Switches
· Cisco Catalyst 3750 Switches
· Cisco 3845 Series Internet Router

Security and VPN
· Cisco ASA Security Appliance
· Cisco IPS 4255 Sensor

Voice and Unified Communications
· Cisco Unified Communications Manager
· Cisco Unified IP Phones

For More Information

To find out more about Cisco's **education** and **networking** strategies, please click on the relevant topic.

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