Mega Campus goes Wireless

Guangdong's 10-campus university of 18 square kilometers goes wireless to boost learning outcomes and share resources online.

Guangzhou University City (GZUC), officially known as the Guangzhou Higher Education Mega Centre has big plans. Located in China's Guangdong Province, GZUC is home to 10 of the province's universities' campuses, many of whom also have campuses located elsewhere. GZUC can accommodate up to 200,000 students, 20,000 teachers and 50,000 staff.

Guangzhou Higher Education Mega Centre

Wireless Technology for an Unwired Campus

Intel is working with the Guangdong Department of Education (DoE) on a variety of programs to develop GZUC as mega high-tech, unwired campus in China. The DoE sees broadband wireless access on campus as one of the key technologies to meet its e-learning requirements and vision of creating a world-class unwired campus, along with Wi-Fi enabled laptops and technology-enabled teaching methods. Work is ongoing to unwire GZUC, and already, five of the 10 university campuses have been Wi-Fi enabled. GZUC is currently populated mostly with freshmen and sophomores, with a currently estimated student count of more than 100,000.

"Intel is providing us with the industry expertise and technology that's required to transform the GZUC into a leading edge digital campus."

Mr. FANG, Yu Lin
Director, Information Center,
Department of Education of
Guangdong Province

Measures of Success

- The Guangzhou University City project has pulled together ten university campuses into a higher education mega center with a wireless ecosystem that is transforming e-learning experiences for both students and faculty members.
- Successful implementation of the wireless login authentication process among the ten universities, allowing students to access and share online knowledge resources across all the schools.
- The huge scale of the project and the wireless implementation across the entire mega campus has attracted attention from academics and leaders from across the world.
- GZUC receives many visitors every day, not just from the central government ministers, but also from other countries, like the Korean Ministry of Education, to share ideas on information sharing, environmental protection, and more.

GZUC's vision of an unwired, world class digital campus is being met by Intel wireless technology and expertise

Bright Lights, Big (University) City

Guangzhou has 2,800 years of history on which to build an ambitious future. The city is part of Guangdong Province, which covers 180,000 square kilometers and is home to 74 million people. About 280,000 new students enter the higher education system each year. GZUC is located at

Xiao Gu Wei Island south of Guangzhou. Just barely two years ago, the island was nothing more than farming land. Today, it has been transformed into what many hail as the "first and the largest mega university campus in the world". Barry Sum, Intel regional public relations manager for mobility solutions in the Asia Pacific, says, "As far as I know, this is the only place that has built an entire city with 10 and more universities, and built with a high-tech blueprint for technology enhanced learning."

In the center of the island is the Eco-Park for sports and culture. It includes a stadium for 35,000 people, hotel/conference center, library, recreation center, and large lakes and gardens. The park forms the literal and symbolic center of the university city, from which knowledge and water flow.

Building a university city from the ground up provides university officials the unique advantage of making use of the best, and the latest technologies to enhance student learning, campus administration, and more. By going wireless, GZUC is enabling students the freedom to connect, research, view, share and play how they want—on the go. The wireless implementation covers the entire campus areas of the 10 universities in the GZUC, including public areas that include the exhibition center, stadium, public library, hospital, control center, streets, and more. An authentication center set up in the university city enables Wi-Fi roaming, allowing students from the various universities in the grounds to authenticate, logon and access the wireless network regardless of which school they are in, anywhere on the campus.

The authentication center also allows the various universities to share learning resources, such as digital libraries, amongst themselves. In the future, this will be expanded to include more educational development and learning resources. "With such a large campus, students can be anywhere, and sometimes the ideas that help them in class happen anywhere but the classroom," says Mr. ZENG, HaiBiao, network center director, ZhongShan University. "With our Wi-Fi roaming and notebooks with Intel® Centrino® mobile technology[1], students can access classes and university resources anywhere on the 18 square kilometer mega campus."

Intel Centrino mobile technology was designed from the ground up for mobility and enables what mobile users like the students at GZUC, want out of their notebook computers—high mobile performance, extended battery life, integrated wireless LAN capability and thinner, lighter form factors. These make them ideal for wireless roaming and student use. The authentication center's certification system that authenticates users' Wi-Fi roaming features the Intel® Xeon® processor[2] running on the Linux* operating system.

To help GZUC encourage and prepare students for a 'wireless student lifestyle', Intel is providing technology expertise and consultancy. Intel is also helping GZUC create IT experience centers within the campus grounds, which together with IT suppliers and the retail channel will provide tailor-made notebook bundle programs for teachers and students. The experience center will also give

students a chance to test-drive various Intel® processor-based notebook and desktop PCs while accessing GZUC online resources. With an intake of several thousands of new students a year, the experience center, and other innovative programs that Intel and GZUC are planning, will be kept busy all year round.

Enhanced e-Learning Models

Although it is not compulsory to have a computer—only a mandatory requirement for students attending the software college—students at GZUC buy their own desktops or laptops to gain access to the campus broadband wireless network, and access any class they want to learn, outside of their normal syllabus. Currently, there are 400 classes that can be accessed for online learning through the campus-wide network, and GZUC has made available funding for faculty teachers to develop more. With a target for 1,000 classes, these will cover most of what the students can learn on campus.

The regular teaching and learning model in GZUC is still based on normal classroom lectures and tutorials, as these provide live interaction between teachers and students. Students are encouraged to bring their notebooks into the classroom to access online resources for discussions and reference. In that way, online and wireless learning complements regular classroom sessions.

There are two kinds of learning materials available online for students. Students can access class resources that the teachers prepare. These allow students to prepare for taking actual classroom lessons, use as reference material, and for reviewing after lessons. The other type of learning material is a video of the actual class. Students who miss a class can attend a 'virtual class' by viewing the class video.

Students Reap the Benefits

GZUC has the facilities to enable this 'virtual class' learning experience model. All classroom lectures are recorded via a central control room from which live or recorded classes are broadcast throughout the campus. Students who missed their classes or students from other affiliated programs can learn remotely by accessing the online classes' repository via the wireless network anytime, from anywhere they are on the island campus. Videos of lectures, seminars and reports can also be shared online by a conference meeting system available throughout the network.

The advantage that GZUC provides its students is in expanding their range of learning options and opportunities. Students are not limited to their textbooks; they can tap into the rich repository of knowledge and experience put online by their lecturers, connect to specialty discussion groups and forums to share and learn, and communicate with fellow students and faculty easily. This helps students learn at their own pace, faster or slower depending on his or her own abilities. Students can also learn more than what their major covers, as they can have access to any online class they want.

Although GZUC officials do not yet have measurable results of the implementation, the general feedback is that students are learning with more flexibility, and missing classes due to unavoidable reasons would not disadvantage them as classes are recorded for later viewing.

Towards the Future

The learning experience is far from over. As new technology comes along, Intel together with GZUC will evolve the e-learning experience. Even though the massive island-wide wireless campus project is still ongoing, GZUC is already planning on a wider-scale resource sharing project, known as the Scientific Research Grid Project for Guangdong Education. GZUC hopes to share all resources in the province, even resources outside the province, like resource materials from Peking University and Tsinghua University in Beijing. And with the GZUC wireless campus project going from strength to strength, this vision looks set to become a reality, too.

Intel works with government, education, and industry leaders worldwide to develop, document, and deploy effective eLearning solutions.

Find a solution that is right for your education program.

Contact your Intel representative, or visit the Intel Web site at:

http://intel.com/go/education

Return on Investment

- Working together with Intel to help promote wireless usage models through campus road shows and various marketing activities, GZUC is moving forward with its vision of an unwired campus. Already an estimated 10 to 12 percent of the population has gone wireless (approximately 15,000 notebooks) since GZUC was opened in September 2004. The target is to reach 15 percent by the end of 2006.

- GZUC has established a wireless ecosystem that allows teaching and learning communities to evolve, thrive, and transcend the physical boundaries of the 10 universities, and enabled new models of learning.

- With access to virtually any online class available at GZUC, students are no longer limited to textbooks. Instead they are encouraged to use their own initiative tap on online resources, specialty discussion groups and forums to share and learn, and communicate with fellow students and faculty members, enhancing their learning experience.

- Students who are unable to attend actual lessons can gain access to pre-recorded lectures, seminars and reports remotely by accessing the online classes' repository via the wireless network anytime from anywhere they are on the island campus, enhancing GZUC's already extensive teaching capabilities

[1] Wireless connectivity and some features may require you to purchase additional software, services or external hardware. Availability of public wireless LAN access points is limited, wireless functionality may vary by country and some hotspots may not support Linux-based Intel® Centrino® mobile technology systems. System performance measured by MobileMark* 2002. System performance, battery life, wireless performance and functionality will vary depending on your specific operating system, hardware and software configurations. See http://www.intel.com/products/centrino/more_info for more information.

[2] 64-bit Intel® Xeon® processors with Intel® EM64T requires a computer system with a processor, chipset, BIOS, OS, device drivers and applications enabled for Intel EM64T. Processor will not operate (including 32-bit operation) without an Intel EM64T-enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel EM64T-enabled OS, BIOS, device drivers and applications may not be available. Check with your vendor for more information. Performance will vary depending on the specific hardware and software you use. See most up to date benchmarks at http://www.intel.com/products/benchmarks/server/index.htm for detailed information .

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