With Innovative Technologies, Universities Embrace Wireless in the Smart Mobile Era

Abstract

Customer’s name: China University of Geosciences (Wuhan)

Industry: Education

Location: Wuhan, Hubei Province

Number of teaching and administrative staff: 3,210

Number of students: 24,931
Cisco Helped to Deploy the World’s Largest 802.11ac Wave 2 Wireless Network for China University of Geosciences

About the Customer

China University of Geosciences at Wuhan is one of the country’s leading universities and a national key university directly under the Ministry of Education. Focusing on earth science, the university has national level-1 disciplines in geology, geological resources and geological engineering.

China University of Geosciences at Wuhan has always strived to become an academic innovator in science and technology and a leader in applications instruction. Six years ago the university built a wireless network based on 802.11a/b/g—becoming the first university in Wuhan to deploy this type of wireless network—and has become one of the leaders among Chinese universities when it comes to wireless network development.

Challenges of the Project

• The customer’s demand for the network has expanded.
• Student’s devices have become increasingly mobile.
• The customer looks to build a cutting-edge wireless network across its campus.

Solutions

• An entire package of wireless network solutions centered on the 802.11ac Wave 2 wireless technology.
• A combination of Cisco’s leading position in wireless technologies, as well as its success in collaborating with Chinese and foreign universities in addition to the functions of numerous other technologies such as Cisco AVC, VideoStream, HDX, and CMX.
• Comprehensive wireless network and signal coverage for all the teaching facilities, labs, office buildings, stadiums, public areas, and main roads on the three campuses.
Challenges of the Project

Due to the dramatic rise of smart mobile devices, bring-your-own-device (BYOD) programs and the introduction of various types of mobile apps; the Wi-Fi needs of the university population have grown too. Students and staff are required to use the network to perform all manners of their work via the wireless network. This meant that it was crucial to upgrade the existing networks. By doing this the university would be able to provide the modern tools needed for their students to succeed and be able to position itself as a leader in educational IT and ultimately be viewed as a world-class university.

Outcomes

- Realized the goal of network deployment, which is to focus on the wireless network and replace the wired network.
- The 802.11ac Wave 2 wireless technology supports a higher wireless network speed and a larger coverage area of the wireless network.
- The AVC technology is able to accurately recognize different groups of people such as teachers, students, and visitors, to facilitate campus network administration.
- The VideoStream technology enables the interactive video teaching through e-classrooms.
- The HDX technology can effectively cope with the traffic peaks in large communal areas of the campuses.
- The CMX technology can realize the collection, transmission and monitoring of data.
Solutions

Through systematic research and field testing, Cisco provided an entire package of tailor-made solutions allowing China University of Geoscience to take advantage of 802.11ac Wave 2 wireless technology.

Cisco created a comprehensive wireless network and signal coverage for the entire campus, which spans over one million square miles. The plan deployed two Cisco 8540 Wireless Controllers, and 2,172 Cisco Aironet 1850 Series Wireless Access Points. The wireless bandwidth supports numerous applications including online classrooms, video conferencing, instant voice communication, high-definition (HD) videos, real-time navigation, the Internet of Things (IoT) data collection, transmission, and monitoring, as well as video surveillance.

The latest Cisco 802.11ac Wave 2 wireless technology—called Multiple User Multiple Input, Multiple Output (MU-MIMO)—allows for access points to pass data back and forth to multiple clients at the same time. The benefits of MU-MIMO steps around limitations caused by clients with a lower speed, as it no longer slows down the throughput of the entire network. Instead quicker performing clients avoid bottlenecks by getting on and off the network faster thus providing higher wireless network speed and more wireless network coverage.

The benefits of this solution are immense. The 802.11ac Wave 2 wireless technology is future-proof and customers won’t need to redeploy the wireless network platform in the next few years.

Also included in the solution are Cisco’s other industry-leading features: Cisco Application Visibility and Control (AVC), VideoStream, High Density Experience (HDX) and Connected Mobile Experiences (CMX).

These Cisco technologies have aided the university in other ways too.

For large communal areas of the campuses, such as cafeterias and large lecture halls, Cisco HDX technology ensures that even during the peak hours students and teachers can still have a high-quality wireless access experience. In addition, the CMX solution based on the Wi-Fi positioning principle enables the collection, transmission, and monitoring of data to cope with campus network administration scenarios, such as monitoring people during major events and the locations of major assets, and the sharing of the locations of security personnel.

Cisco AVC technology is able to accurately recognize different groups of people, whether it’s professors or students or even visitors, this has been a boon to the campus network administration. VideoStream technology enables interactive video teaching through e-classrooms.
The deployment of the integrated wired and wireless campus network is an infrastructure project of the Smart CUG initiative, which has helped to advance making campus-information service ubiquitous, to increase the resource utilization rate of students and teachers in teaching, learning and research. The deployment also makes network administration more comprehensive, more intelligent, and more visualized. This project has fully demonstrated the characteristics of wireless networks of being simple, convenient, and fast. It not only has met the need of the students and teachers for getting connected wirelessly whenever and wherever but also has realized the unified administration of the existing networks. In short, making the university’s mobile network environment one of the best among universities in the world can better serve the university’s long-term goal of becoming a first-class university in earth science in the world.

Zhang Feng
Director
Network Center
CUG (Wuhan)
Outcomes

The entire package of solutions enabled China University of Geosciences to achieve its goals. The solution’s deployment allowed for a new Wi-Fi network capable of supporting the needs of the university’s entire student body and staff. This new network made online teaching more flexible, wireless access faster and network administration more efficient.

More Information

For more information about Cisco’s professional collaboration services, visit http://www.cisco.com/web/CN/index.html.

List of products/solutions

- Cisco 8540 Wireless Controllers
- Cisco Aironet 1850 Series Wireless Access Points