

New High School Replaces Textbooks with Laptops

EXECUTIVE SUMMARY

CUSTOMER NAME

- Empire High School
- Tucson, Arizona, United States
- 330 students
- 37 teachers and staff members

INDUSTRY

- Education

BUSINESS CHALLENGE

- Find an alternative to purchasing textbooks, which quickly become outdated
- Differentiate school from other district high schools
- Engage students in the learning process
- Create a learning environment that more closely resembles the outside world where students would be working

NETWORK SOLUTION

- Deployed a Cisco wireless network and security products to provide complete, secure coverage across the campus
- Installed a Cisco converged IP network infrastructure to connect laptops to curriculum materials and learning resources
- Implemented IP Communications solutions to improve contact between parents, teachers, students, and staff

BUSINESS VALUE

- Wireless network enables all students and teachers to instantly connect to materials and resources, for improved education delivery
- IP Communications enhances parent-teacher-student interactions
- Converged IP network reduces phone costs
- Emergency Responder improves classroom safety

Empire High School uses Cisco network tools to connect students and teachers to course materials and resources through new, state-of-the-art laptop computers.



"SOARING WITH DISTINCTION"

NETWORK SOLUTION

A high school that is completely laptop-based requires a robust and dependable wireless network that the laptops can connect to. "We made our hardware decisions based on reliability," says Baker. "It had to work; it had to be almost as good as an ATM. It could not be down for several hours at a time, or the whole system would collapse." With this criterion in mind, the decision to go with Cisco Systems® was an easy one. "I wanted a system that enabled problem-free computing," says Matt Federoff, the district's director of technology. "Teachers needed to reliably tell the students, 'Open your laptops,' and get on with the instruction. And Cisco was the only choice for that."

Since the school was to be designed and built from the ground up, the wireless network and access points could be easily incorporated into the campus. "We brought Cisco into the process early to include the wireless network with the building itself," says Federoff. As security is so important with a wireless network, Cisco security products were incorporated into the design. "From there, it was really a discussion around voice," says Mike Baumann of Calence, Cisco's Gold Certified Partner in the deployment. "We looked at the cost between what the district had allocated for a

stand-alone phone system, and leveraged that money by just layering in IP Communications.” This decision gave the district an almost instant return on its investment.

“We were able to leverage a great deal of future expense into building the solution right from the start,” says Federoff. “And that will be a huge cost savings for us going forward in our new schools. We will be able to support wireless and voiceover IP at other schools, using the technology that we put in place here.”

Construction of the new high school took place over the course of a year. During this time Calence brought in all the equipment, and did a single implementation over the course of several weeks, saving the district money in the construction process. This implementation included Power Over Ethernet switches and integrated service routers to build out a LAN and WAN. The technology was fully operational a few weeks before construction was completed in September 2005.

“We installed 157 wireless access points that work in a perfectly smooth fashion,” says Federoff. “We have centralized control of all access points. Students have wandered all over this campus, and they cannot find a single place where they cannot connect. In reality, it was a lot less trouble than we thought.”

Finally, the district bought 330 Apple iBooks to loan to the students for the entire year. Since no textbooks were to be purchased, the school leveraged these funds toward the laptop expense. “It costs about \$500 to outfit a student with a complete set of textbooks that they’ll need for four years,” says Baker. “And if we had a computer lab, it would cost \$150 per student capacity at the school. So, if you add those two numbers together, you’re at \$650. We purchased our laptops for about \$800 each and absorbed the difference into our project budget.” Parents were then given a choice: they could either purchase an insurance policy for the laptop, or they could assume responsibility for repairing or replacing it.

BUSINESS RESULTS

How successful has Empire’s groundbreaking education strategy been so far? “Our students, as we expected, are more engaged in the learning process,” says Baker. “At lunch, on their breaks, at home, on the way to and from school, they are using their laptops, interacting with this learning tool.” Cindy Lee, Empire’s principal, has noticed that the students are reacting positively to the new learning environment. “They are excited to come to school. They enjoy being here. They love working on their laptops. The projects and the products they have been creating have impressed me and have impressed the parents and teachers.”

Teachers, as well as students, are finding that laptops have opened up whole new possibilities in learning and instruction, forcing them to change and improve their practices. “I have seldom had a teacher come to me and say, ‘I cannot find anything to teach probability,’ or, ‘I cannot find anything to teach nouns and verbs,’” says Lee. “Using our resources and the free resources on the Internet, they have had no problem finding content to teach every day. And the creativity in teaching is much higher than I have seen at any other school that I have been to.”

“We buy bits, pieces, and parts to match what we want the students to learn and to match the state standards,” says Federoff. “For example, I can buy the Civil War from one vendor and World War II from a different vendor. Our teachers can choose from a wide assortment of resources, which has given them more power and autonomy.”

Teachers can deliver content to the students through the school’s new learning management system, accessible through the laptops. “This system is all-encompassing of our whole school,” says Lee. “Everything that a teacher delivers to a class is put on the system and stored under that class folder. When students log onto the system, they can see their six classes, click onto any class, and view all the assignments that have been given to them for the entire year.” Students are also required to do all their homework on the laptops.

Since Empire High School only recently opened, it is too soon to accurately measure if the new laptop-only system has improved student achievement. But the initial results are encouraging. “Our academic indicators for the first two quarters were right in line with our other high school, which has been rated as highly achieving,” says Baker. “And we are hoping that, as our teachers become more familiar with this system, we can improve our performance.”

PRODUCT LIST

Network Management

- CiscoWorks Wireless LAN Solution Engine (WLSE)

Routing and Switching

- Cisco 2851 ISR routers
- Cisco Catalyst 3560 switches
- Cisco Catalyst 3750 switches
- Cisco Catalyst 6500 switches

Security

- Cisco Access Control Server
- Cisco Emergency Responder

Voice

- Cisco 7900 Series IP phones
- Cisco Call Manager
- Cisco Unity Voicemail
- Cisco 7800 Series Media Convergence Servers
- Cisco Attendant Console

Wireless/Mobility

- Cisco Aironet 1200 wireless access points
- Cisco Wireless LAN Solution Engine
- Cisco Wireless IP Phone 7920
- Wireless bridges

In addition to the wireless network and propagation of laptops, Empire has also improved its connections with students, teachers, parents, and staff, through the new IP phone system and IP Communications tools. “Between the pervasive computing and IP phones in every classroom, parents are able to interact with teachers in important and meaningful ways,” says Federoff. “Cisco Emergency Responder also enables us to do emergency calls like never before. It reports the classroom number, so emergency personnel will know exactly which area of the school the emergency call came from.”

To help safeguard information, and reduce the likelihood of someone hacking into the network via a student’s laptop, a variety of security products have been installed. “Our Cisco wireless access points and wireless solution engine have very robust security features built in,” says Federoff. “Everything is encrypted in real time, so outsiders cannot look in to what the students are working on. All sensitive student information is protected.”

Even with all the new technologies, Empire has been able to achieve an excellent return on its investment. “Wiring the site for data has provided the foundation for our telephones,” says Federoff. “That saves us a tremendous amount of money and gives us greater flexibility. I can leverage the skills of my staff to become our own phone company. We are in control of rolling out phones, moving a phone from one room to another, changing a phone number, updating phone lists, and we are not dependent on outside vendors.”

What advice would Empire give to schools that are thinking about replacing textbooks with laptops? “The first thing would be to decide why, and what is the most important thing that you can gain from it,” says Lee. “The second thing is to think forward about everything that could possibly go wrong, and make a plan for it, as much as you can.” Federoff recommends having a reliable network in place above all else. “There is no way to have laptop-based instruction in a school with an unreliable infrastructure, because it will simply cause too much frustration for students and staff. If you design an infrastructure properly, and put the resources into a good, solid foundation, teachers can teach and students can learn.”

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This customer story is based on information provided by Empire High School, Vail, Arizona, Unified School District and describes how that particular organization benefits from the deployment of Cisco products. Many factors may have contributed to the results and benefits described; Cisco does not guarantee comparable results elsewhere.

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