A MERU CASE STUDY IN K-12 EDUCATION

St. Agnes Academy, Houston, TX

St. Agnes Academy Supports One-to-One Laptop Education with Meru Wireless Networking

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–Jason Hyams, Director of Technology

Founded in 1906, St. Agnes Academy is a four-year high school for young women located in the southwest corner of Houston, Texas. Rooted in the Dominican tradition, St. Agnes Academy provides a Catholic college preparatory education that encourages young women to develop intellectual curiosity, to work for social justice and to act with integrity and compassion.

Beginning with the 2001-2002 school year, St. Agnes adopted the "one laptop, one student" (one-to-one) program, and began providing each student and teacher with an IBM T60 laptop. To connect the computers to the school's server for use of the Blackbaud course management system as well as Microsoft Exchange and Office programs, the school's network administrator initially installed a Proxim/HP wireless solution. However, as the school slowly rolled out its one-to-one program, the number of users on the network increased until the network could no longer handle the load.

Assessing the Challenges

In 2005, Jason Hyams joined St. Agnes as technology director and assessed the situation. "We were getting constant complaints about classes not being able to access the network or stay connected," he says. "There were about 950 laptops in the school at that point, but only about 300 could connect at any given time." Eventually, all of the school's 840 students and 450 teachers and administrators would have laptops, so the network was headed for even more trouble.

Although there was an access point (AP) in every room, they weren't properly deployed; some were sitting on desks and some were even on the floor. Hyams at first tried to address the situation by deploying all APs on walls and ceilings, but even after the equipment was optimized, he was only able to enable connections for about 400 simultaneous users.

"We have a lot of interference here," says Hyams. "The building is made of brick with plaster walls that contain chicken wire, so it's difficult for signals to travel effectively, and there was also some co-channel interference among the access points." It was clear to him that the current network was totally inadequate, and that the school needed a completely different network solution.

After receiving approval from the school's management team, Hyams evaluated wireless network systems from Aruba, Cisco, and Meru. Ultimately he chose the Meru system for its unique deployment architecture, ease of management, and reliability in high-usage environments.

The Single-Cell Solution

IDuring the summer of 2006, Hyams swapped out every AP in the building, deploying 70 Meru AP200 Access Points along with a Meru 3075 Network Controller. "It's very easy," says Hyams. "If you have any kind of background in networking, you can do it yourself. The single-channel architecture allowed me to put an AP in every room without worrying about co-channel interference from surrounding APs." Hyams installed one AP for every 25 users, which provided the required throughput.

In addition, Hyams deployed Meru RS4000 Radio Switches in the cafeteria and library. Since they incorporate four-radios each, the RS4000 units deliver 400 percent more capacity for the dense cafeteria and library environments.

During the 2006-2007 school year, the system had its first test. Immediately, the network could support significantly more simultaneous users. Hyams then began adjusting network parameters in order to reach his goal of supporting 700 simultaneous users and serving as many as 1300 users in a 300-square yard space—making it one of the densest user environments. "I removed the domain controller log-in system we had been using and put everything on the Web," he says. "These days, everything is web-based, and the clients are now a little thinner than they were under the old system, which helps with overall capacity. I also used content filtering tools to limit access to non-educational sites like YouTube that cause a lot of extra traffic. We just can't support 700 simultaneous users with that kind of bandwidth."

As for the impact on the school's educational programs, Hyams says it can't be understated. "I think the teachers were about ready to throw the whole system out the door when I got here," he says, "but deploying the Meru system has made the network easy to work with, and the teachers have access to the tools they need 100 percent of the time. Now, they can pretty much focus on education rather than worrying about whether or not the network is up."

Situation

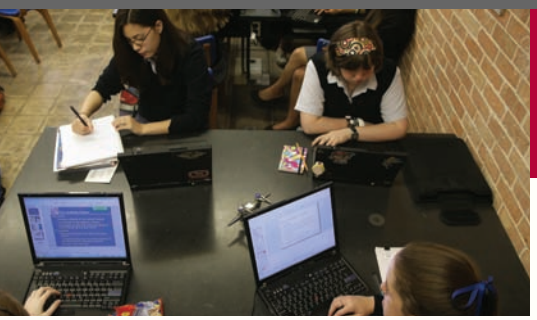
- St. Agnes Academy had begun a one-to-one laptop program for its students and teachers, but its wireless network couldn't handle the traffic from so many simultaneous users.

Solution

- The district replaced its legacy system with Meru AP208 Access Points and Meru MC 3075 Controllers to nearly double network capacity and simplify management.

Benefits

- Fast, one-man deployment and management by the director of technology.
- High density support for simultaneous log-ins by hundreds of students, even in a difficult wireless environment.
- Capacity to support video feeds from wireless security cameras.



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Video and beyond

Thanks to Meru's unique core technologies including inter-cell coordination, over-the-air QoS, and contention management, St. Agnes Academy has been able to exploit the full advantages of wireless mobility. St. Agnes Academy has been able to equip each classroom with wireless LCD projectors, so teachers can move around the class when they're giving a presentation. And the wireless network is now being asked to do even more. The school recently installed wireless security cameras on the exterior of the building, and Hyams has begun adding Meru outdoor wireless APs to carry the traffic. The additional systems will allow the school's administrative office to monitor the outside of the building at all times.

With a solid wireless infrastructure based on Meru solutions, teachers at St. Agnes Academy can now focus on the business of education, and Jason Hyams can manage a help desk staff of three while handling wireless network administration himself. "Meru has not only given us the capacity and performance we needed," he says, "but it has made managing the network much easier than it ever was before."

About Meru

Meru Networks is the leader in providing workplace mobility infrastructure for wireless voice, data and video applications. Its standards-based wireless networks ensure robust performance with secure, seamless connections, as well as simplified deployment and maintenance for business critical solutions.

Founded in 2002, Meru is based in Sunnyvale, California.

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