

Farmington Municipal School District

Diverse public school district in New Mexico closes the digital divide with centrally managed Wi-Fi for 18 schools



Business Profile

A district covering 800 square miles in the high plains of northwest New Mexico, with a diverse enrollment of 10,000 students in 18 schools.

Industry

K-12 Education

Challenges

- Provide diverse students with equal access to technology for learning
- Centrally manage Wi-Fi in 18 schools
- Phase-in Wi-Fi as funding becomes available

Deployment Summary

- Three MC3000 series controllers at three central locations
- 285 Meru access points installed: 90 AP320i, 195 AP300, and 115 more planned
- Integration with Cisco switches to provide power over Ethernet to APs
- Wireless coverage deployed in phases, starting with four schools and expanding to eighteen

Benefits

- 90% reduction in support calls
- One-person wireless (and wired) network management team
- Four schools deployed with Wi-Fi in four days
- Easy deployment in phases
- 1:1 laptop initiative has students more engaged in learning

“Meru’s WLAN proved to be the best tool for our district to complete our wireless infrastructure upgrade, and we have continued installing Meru at all of our schools and district offices.”

- Charles Thacker,
Director of Technology



Equal access to the best tools for learning

The digital divide runs right through the area of New Mexico served by the Farmington Municipal School District, and the educators are doing everything in their power and budget to close it. With a student population that is one-third each Hispanic or Latino, white, and Native American, the school district encompasses rural farming communities and Indian reservation land, as well as the city of Farmington with its population of 46,000. Providing all students with equal access to the technology essential for 21st century skills isn't easy in such a diverse and widespread district. But they are closing the gap with laptops for each and every student from the sixth through the twelfth grades and an always-on Meru wireless network in every school.

One challenge confronting the Farmington School District is the disparity of conditions at home. "Twenty-five percent of our 6-12 students have no other computer at home besides the one we provide," says Charles Thacker, Director of Technology.

Another challenge is finding the money for the best technology tools in a state with a population smaller than the city of Denver. Fortunately, the well-managed district is able to augment state funding by selling bonds to finance the Farmington Learning Initiative.

"One goal of the Farmington Learning Initiative is to provide digital equality to all students—and their families," says Thacker. The cornerstone of the initiative is providing students with their own district-issued laptop for use at



school and at home. The laptops are preloaded with tools for consuming, creating, managing, and organizing information. Other approved software applications can be downloaded from a portal over the school's wireless network and used at home with or without Internet access. All the technology tools have one aim: to engage the students in authentic learning opportunities.

A perfect storm in the making

When the district embarked on the Farmington Learning Initiative, it faced what Thacker describes as a "perfect storm for chaos"—an influx of thousands of mobile devices, the high expectations of students and teachers for always-on wireless access, and insufficient school networks that aren't nearly robust enough to support them.

The existing wireless infrastructure couldn't even handle a cartload of 20 computers in one classroom. Students were already experiencing very long delays to log in, access their documents, or use the Internet. Technology was more a source of frustration than a tool for learning. "If we can't get 20 computers to work at once, how can we possibly handle 700? That was the big question at one school," recalls Thacker.

The answer came in a new Meru network that met the district's requirements. The requirements include:

A high-performing network that supports Wi-Fi protocols. Because the district won't be replacing all computers at the same time, Thacker wanted consistent performance for all devices, regardless of their generation. The Meru network provides Airtime Fairness[®]. Newer clients can't hog bandwidth and drive off older clients, and slower clients can't degrade network performance for everyone else. The experience is consistently good for all users.



Support for a high density of clients with little or no manual intervention. With the Meru solution, all the APs in the school use the same channel. If Thacker needs to add more APs, he can do it without remapping channels. "There's very little I have to go in and do," he says.

Acing the test

Farmington Municipal School District invited three vendors to demonstrate their solutions. The test consisted of 32 laptops of varying ages and wireless technologies: ten were 802.11b clients, twenty were 802.11b/g clients, and two were 802.11a/b/g/n clients. All the laptops were triggered remotely to log on simultaneously,



launch multiple websites, and access documents on a file server. The tests were repeated several times and the events were timed. "Meru outperformed the other vendors. Logins completed faster and web pages loaded faster. This alone was significant and worthy of our undivided attention. However, the Meru solution was also impressively simple to set up," recalls Thacker. "We are a Cisco-based network infrastructure, but we are most interested in getting the right tool for the job. Meru proved to be the best tool for our district to complete our wireless infrastructure upgrade, and we have continued installing Meru at all of our schools and offices."

Four schools covered in four days

The Meru network was installed in four middle schools first, with minimal effort. "We simply changed out Cisco access points with Meru APs and moved on to the next school. It took two people four days to deploy 70 access points across the four schools," reports Thacker.

Simple deployment in phases

Farmington Municipal School District deployed wireless coverage in stages as funding became

"Meru outperformed all other vendors. Setting up the Meru wireless network was exceedingly simple and impressive in its execution."

available. It began with the middle school campuses, added the high schools, and finally extended wireless coverage to the elementary schools and ancillary offices. As more APs were added, their management was easily redistributed across the district's three controllers.

The Meru Wi-Fi network is integrated with the district's Cisco switches to provide power over Ethernet to the access points. "We will realize our goal of a single homogenous Meru network in 2013," says Thacker.

Support calls down 90 percent

Support calls from the schools with the Meru network decreased by 90 percent, Thacker reports. With higher utilization of wireless clients, Thacker expected regular helpdesk calls about performance issues, but he was surprised. Once the Meru network was put in place, support calls tapered off as dead zones were discovered and the initial configuration was tweaked. Eventually they disappeared almost completely.



"While we do not have control over access outside of our own schools, we can make sure that we are providing the best possible wireless access within our schools."



“The most common task in the Meru management system now isn’t troubleshooting or fixing problems, it is adding or changing coverage. This means that we’ve changed our model of support in the wireless arena from a reactive one to a proactive one,” reports Thacker.

More engaged students doing impressive work

Plagued no longer by frustrating delays and lost network connections, students are free to engage in authentic learning activities that are supported, rather than hindered by the wireless network.

Teachers are using the technology in creative and challenging ways across the curriculum. For example, sophomores integrated their studies of math and literature by chronicling and sharing their own Odysseys toward understanding geometry in poems, stories, songs, and videos, aided by the digital tools at their command.

Student projects developed with the aid of the Wi-Fi network and presented to the Farmington Board of Education include:

- An iMovie by a sixth grader about the layers of the earth, set to a rap song
- Animations of world history created by a tenth grader
- “Le Getaway,” a movie of a foiled bank robbery created by a high school senior, using green screen techniques

“We see work from our students that is as professional and high quality as any we see from adults who present to the Board,” says Nancy DeLong, Board of Education secretary.

“If we expect to engage students in their own education, we must provide access to educational tools and material wherever the students are—in school, at home, or in the community,” concludes Thacker. “While we do not have control over access outside of our own schools, we can make sure that we are providing the best possible wireless access within our schools.”

About Meru Networks

Meru Networks (NASDAQ: MERU) supplies virtualized wireless LAN solutions that provide enterprises with the performance, reliability, predictability and operational simplicity of a wired network with the advantages of mobility. Meru Networks eliminates the deficiencies of multichannel, client-controlled architectures with its innovative, single-channel, virtualized network architecture that easily handles device density and diversity. Meru wireless LAN solutions are deployed in Fortune 500 businesses, education, hospitality, healthcare, and retail supply chain. Meru is headquartered in Sunnyvale, Calif., with operations in North America, Europe, the Middle East, and Asia Pacific.

For more information, reach Meru Networks at (408) 215-5300 or on the Web at www.merunetworks.com

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