

Miami-Dade County Public Schools

An innovatively simple wireless network brings the world to hundreds of schools



Business Profile

The fourth-largest public school district in the United States, Miami-Dade County Public Schools has 347,000 students, 44,000 teachers and staff, and 365 schools, many in economically disadvantaged areas.

Challenges

- Give every student equal access to technology for learning and future success
- Manage technology for uninterrupted learning for hundreds of thousands of students and teachers
- Meet state and district mandates for the adoption of e-textbooks, online courses, and online common core assessment

Deployment Summary

- Goal: wireless access in 365 schools, in all classrooms and common areas used for learning
- 2,400 Meru access points deployed, consisting of AP311s, AP320s, and AP433s
- 15,000 more access points planned
- Three-radio APs (AP433s) for Gigabit/sec connectivity to future-proof the network
- 100 Meru controllers deployed, including MC1000, MC3000, MC3200, MC4100, MC4200

Benefits

- Ability to scale the network and add access points without the cost and trouble of re-engineering
- Reliable high-performance in high-density areas such as auditoriums and cafeterias
- Reliable, stable connection for online core testing
- A responsive technology partnership for mission-critical wireless infrastructure

"We looked at a lot of the technology out there. We saw the single-channel architecture that Meru provided, and that was something we could easily understand. We could deploy it on a large scale, and we could support it. Meru just seemed to be the perfect fit at the perfect time."

- Paul Smith, Director of Technology Services



WLAN for a massive 1:1 learning initiative

The fourth-largest school district in the United States is acting on its vision of technology equality for all students by putting a Meru wireless network in all 365 schools. When the project is complete, the Miami-Dade County Public Schools (M-DCPS) will have the reliable, flexible infrastructure in place for 1:1 computing, where every student in the district has an electronic device and access to a world of digital resources for uninterrupted learning, including e-textbooks, YouTube EDU, online courses, and whatever else the future may hold.

Toward a connected community

Miami-Dade County Public Schools has all the challenges of public education in abundance. The students, 347,000 of them, come from every rung of the economic ladder. While some students carry the latest iPad or 4G phone in their backpacks, many others have no computer or Internet access at home. “Students are at a distinct disadvantage in life if they don’t have a computer at home or attend a school that has a computer for every child,” says Deborah Karcher, CIO.

The M-DCPS vision for technology equality extends beyond school walls to a connected community. Providing technology access is a moral imperative for the district. “There must be no digital deserts in the Miami-Dade community,” says Alberto M. Carvalho, superintendent.



Under the leadership of CIO Karcher, the first step toward a connected community was DadeSchools.net, a set of portals for students, parents, teachers and staff, and the community as well. Students can download their virtual backpack of e-textbooks, take online courses in a virtual school, search the public library catalog, and take advantage of many other resources. Parents can check grades, apply for programs, and get information on school policies. A community portal provides links to information about the district, volunteer opportunities, public health, adult education, and much more. “We were thinking in ‘cloud’ terms, even before ‘cloud’ became a concept with a name,” says Javier Perez, executive director of Infrastructure and System Support.

Embracing BYOD—bring your own device

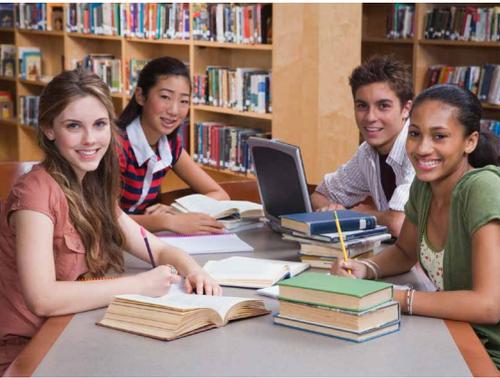
With the portals and content in place, the focus turned to the means of access. The district has 130,000 desktop computers—not enough for the entire student population. While the visionaries of the district expected computers to decline in cost, the explosion of relatively low-cost mobile devices has been a bonus. “We want to leverage what students have in their backpacks, and let them bring their own devices to use responsibly at school,” says Paul Smith, director of Technology Services. “Accommodating BYOD [bring your own device] will make achieving our 1:1 goal for students and technology a lot more affordable.”

“More than that, it’s a smart move pedagogically,” Smith adds. “Children just automatically embrace this technology. They learn better with this type of technology than from traditional hardcover textbooks.” For this reason, the state of Florida has mandated that by 2015 all textbooks in the public schools be electronic.



Government funding for a Meru network

Completing the vision is a Meru wireless network infrastructure, providing reliable, fast access to a vast array of digital content. M-DCPS obtained funding from the FCC E-Rate program to deploy Meru networks in the schools with the greatest need first. Eighty-seven percent of the schools in M-DCPS qualify for E-rate subsidies, many at the maximum level of 90 percent. The community stepped up with



private donations and non-profit grants to cover the remaining amount required from the district in matching funds.

With respect to the district's decision to deploy the Meru solution, Smith

says, "We had challenges that only Meru's unique architecture could solve. First and foremost, he stresses, the network has to be easy—easy to install, easy to manage."

The perfect fit at the perfect time

The M-DCPS IT team was already stretched thin, supporting the district's 130,000 desktops, the wired network, and, in Smith's words, a "hodgepodge of wireless technology" used to connect portable classrooms. While the district had added 68 new schools in the past six years, IT staffing had remained level. The situation is familiar, says Perez. "What we have is more technology with fewer people to maintain it. So we looked for a system that was easy to install." At the same time, it had to have many other attributes.

- **Scalable.** The district's need for connectivity is accelerating.
- **Reliable.** Classroom time is at a premium. Teachers can't spare even 15 minutes to a technology that is slow or not working. All core testing is also now electronic and computer-based, requiring that connections be absolutely reliable.
- **Agile.** "How we use the schools is changing dramatically," explains Smith. "We need agile

"This relationship goes beyond just providing infrastructure to a business. The future of our schools and our children are involved. We have put our trust in Meru."

- Deborah Karcher, CIO

connectivity, where we can move a kid anywhere within the school environment and still have them connected."

- **High-performance.** New educational content such as multimedia and IPTV depend on it.

But Smith comes back to "easy." Meru offered all the advantages that are important to the district, but if the network isn't easy to deploy and support, the other advantages are out of reach. "We looked at a lot of the technology out there. We saw the single-channel architecture that Meru provided, and that was something we could easily understand. We could deploy it on a large scale, and we could support it. Meru just seemed to be the perfect fit at the perfect time," says Smith. Today, the entire Meru wireless network is managed centrally by the equivalent of two full-time technicians.



"Meru is our choice because it has the capacity, it is very innovative, and it meets our cost points."

- Javier Perez, Executive Director, Infrastructure Systems and Support

A solution even better than it sounds

To prove the perfect fit, the district began with a limited deployment at one school—the Young Women’s Preparatory Academy. Occupying a three-story commercial building that had been taken over by the school board, the Academy offered a good test of the Meru single-channel architecture. Douglas Galbraith, supervisor of Infrastructure and Support, describes the pilot deployment this way:

“It sounded good and it works even better. We put up access points where we felt we needed to have them. Nothing interacted and everything worked. Wherever there were weak spots, we just added another access point. Because all access points are on the same channel, there was no co-channel interference.”

Adds Smith, “Meru passed our test. There was no significant engineering cost to implement or change the network.”

Two thousand access points and growing

The Meru wireless network is in the midst of deployment. In fact, the wireless network will always be a work in progress, as both device technology and pedagogy evolve. To date, 2,000 Meru AP320 access points are up and running in the first-priority schools. The district started with a hybrid wireless network, putting wireless hotspots in areas where students gather in large concentrations, such as auditoriums and the cafeterias, and moving to pervasive wireless in all the classrooms as funding becomes available. Soon there will be more than 15,000 APs installed district-wide. The Meru technology gives the district this flexibility to scale the network at its own pace, without costly re-engineering as they go.

The wireless foundation for the future

With a fast, reliable wireless infrastructure coming in, the wired network is on its way out in M-DCPS. “We plan to move all deployments over to a wireless platform. That includes Voice over IP to reduce telecommunications costs. Once our Meru wireless network is pervasive enough, we will add different layers on and run everything across the wireless network,” says Perez.

A phenomenal partnership

In the Miami-Dade County Public Schools, the wireless network means more than the technology. It enables the vision of a connected community and equal opportunities for all its children. “Meru is a strategic partner for us,” says Karcher. “The network we are building together is required for virtual classes, computer-based testing, and all the visual content that we’re going to be using into the next decade. This relationship goes beyond just providing infrastructure. The future of our schools and our children are involved. We have put our trust in Meru.”

About Meru Networks

Meru Networks (NASDAQ: **MERU**) designs, develops, and distributes 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 major vertical industries including Fortune 500 businesses, education, hospitality, healthcare and retail supply chain. Founded in 2002, Meru is headquartered in Sunnyvale, Calif., with operations in North America, Europe, the Middle East and Asia Pacific. Visit www.merunetworks.com or call (408) 215-5300 for more information.

