

# ADVANCED NETWORK SYSTEMS

## A Case Study in Education

THE RIGHT  
TECHNOLOGY  
PARTNER



### Greene County Public Schools Give Meru's 802.11n Wireless LAN System an A+

#### The Situation

Prior to their implementation of a Meru wireless LAN, Greene County Public Schools (GCPS) had a wireless network system that wasn't "making the grade." Their legacy system consisted of mobile carts within each of the schools which were equipped with low-end Linksys® wireless routers. Because of this system configuration, wireless access was only active within the rooms where the carts were connected.

**Difficulty of Use and Technology Adoption.** Operating under the old system, teachers found the process of connecting a class to the wireless carts difficult and disruptive. At times, they were unable to connect to the devices correctly. The cumbersome nature of the process led to dampened enthusiasm for the system which adversely affected GCPS' efforts to use the technology for instructional purposes.



**System Management.** As GCPS' legacy wireless network grew over time, it became increasingly more disparate. Consequently, the IT team found themselves lacking an efficient way to implement system management and controls—including preventing the infiltration of unauthorized devices. At the same time, with the number of users steadily growing, finding an effective way to segregate student and public access from the private faculty/staff wireless network was also becoming a priority. With no single point of management, the IT staff was spending increasing amounts of time performing hands-

on maintenance and troubleshooting of individual components throughout all the different school buildings. They also had to find a way to abate the growing number of students and faculty using their own personal wireless devices on the school network (laptops, mobile phones and other hand held devices). These critical issues related to system management and security became a drain on IT department resources which translated into an unacceptable level of cost for the school system.

**Performance.** The legacy wireless network lacked the required throughput capability and, in turn, the predictability needed for running critical school applications. The old network would often exhibit "shaky" performance when used for state required Standards of Learning (SOL) testing. As a result, ensuring Quality of Service (QoS) during SOL testing and other on-line assessments became a high priority concern for the IT staff. With a plan for growth in the number of wireless devices in classrooms, GCPS needed a scalable system that provided all the required capacity without compromise in performance.

**Scalability.** Like most public school systems, GCPS is subject to the push to devote more space to learning and less to other areas of school operations. With physical space at a premium, the IT department was running out of viable options for housing their expanding LAN equipment. This dilemma made the idea of expanding the wireless network under a centralized system an even more attractive option.

#### The Meru Solution

With its list of technology priorities in hand, a short window of opportunity to deploy a new solution, and a fixed budget, GCPS turned to their technology service partner, Advanced Network Systems, to find a wireless system that met all of their requirements. During the summer of 2008, GCPS replaced its legacy system with a Meru solution consisting of an MC3100 controller and 74 AP311 dual radio access points. The solution was deployed at the County's high school, middle school and two elementary schools.

*"The new wireless system has been immensely important to our schools. On top of the convenience and flexibility we now have, we also have an underlying system which will carry us forward into the future. Having this kind of an asset will be invaluable as we endeavor to add more technology to our classrooms and buildings."*

David Jeck  
Superintendent,  
Greene County Public  
Schools



advanced  
network  
systems

800.639.6757

[www.getadvanced.net](http://www.getadvanced.net)  
[sales@getadvanced.net](mailto:sales@getadvanced.net)

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## Reaping the Benefits of Meru

According to Dale Herring, the benefits realized as a result of the Meru solution deployment were numerous. "We've been extremely pleased with Meru. We now have a really powerful system that has all the capabilities that we need," said Herring. He added, "From an IT perspective, the Meru system's centralized configuration and management features have cut down on a lot of time we used to spend maintaining all the different systems we had." Herring noted that another

benefit of the Meru system is its high level of flexibility. "Because we now have a consistent wireless solution, device compatibility issues have been eliminated; this allows GCPS' IT team to easily share laptops and other devices between schools when demands shift. Since there are no configuration changes to perform, devices move seamlessly from school to school. Having this kind of flexibility means we spend less of our time on management and a smaller budget needed because we don't have to have as many devices at every school." Herring noted, "One of the big reasons we chose a Meru solution is its compatibility and technology investment protection. No matter what type of device is connected to the network, a/b/g or n, Meru's access points can accommodate all the least common denominator in terms of performance as we go forward."

Expanding on the idea of better system performance Herring added, "Because Standards of Learning testing is considered a mission-critical application for the school district, we need to have guaranteed quality of service when it comes to its implementation. 'Hiccups' in the system are incredibly disruptive and are not an option. With Meru's built in QoS, the on-line SOL testing process has gone very smoothly; the system has reliably supported this and all the other bandwidth-intensive applications we use it for."

According to Dale Herring, "We've had a lot of positive feedback and increased use of the wireless system because connectivity is now a more seamless, transparent process. Disruptions to the teaching process in our classrooms are minimal; plus we were able to easily segregate access for students and the public from the private portion of the network. Everyone in the IT department loves the flexibility and we don't worry the way we used to about adding more devices or new applications. We are all definitely benefiting from having a pervasive system that provides access wherever and whenever it's needed; both inside and outside of the school buildings."

## New Opportunities with a Meru Solution

The 2008/2009 school year brought forth new opportunities for GCPS to improve the learning environment using their state-of-the-art Meru wireless network. Students and school personnel alike are reaping the benefits of being able to successfully run applications over the air including web-based assessments, instructional videos and presentations, along with Internet-based learning and staff training.



Opportunities on the horizon are all about learning and teaching processes. The technology and cost/benefit analysis of implementing an e-reader program is now under consideration. The GCPS' IT department is currently piloting e-reader technology to support the County's reading program in the Middle School. If successful, the program will be expanded to all schools. According to Dale Herring, "We considered the option of e-readers before the Meru installation. But now since we have the technology to effectively support this kind of program, the concept has gained a lot of traction and taken on a new meaning. Students are now able to access the most up to date material throughout the facility, not just in certain designated locations." With the number of electronic formats consolidating and significant improvements in device battery life, the use of hand-held devices containing e-books has grown significantly within the educational market. Herring added, "The concept of e-readers appeals to students and school administrators alike. Students already lug around enough laptops and heavy books. On the other side, books are expensive and quickly fall out of date which makes it challenging for schools to stay current."

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As part of the teacher development and evaluation process, GCPS administrators are using iPod's to wirelessly connect to a web portal to run their classroom observation software. So far this year, over 1000 informal classroom observations have been conducted and recorded. That data collected is used to insure that best instructional practice is being followed, to provide specific feedback to teachers, and to help administrators stay in touch with what is going on in the classrooms. According to Herring, "Using a secure wireless/web-based system, we've made big strides in recording evaluation info in real time and

keeping it secure. We essentially eliminated the need to keep data on a device which could get lost or stolen and need for any further data transfer." Purchased with private enterprise grant funds, the implementation of these mobile devices has had a significant, positive impact on the collection, storage and utilization of this vital information.

## Plans for the Future

GCPS has plans to expand the implementation of Meru products in its primary school and school board office in the near future. Further out on the horizon are plans for a VoIP telephony solution which could ultimately also be run over their Meru wireless network.

## About Greene County Public Schools

Greene County is located in central Virginia at the foot of the Blue Ridge Mountains, with the Shenandoah National Park and the Skyline Drive forming its western boundary. Although rural in nature, this picturesque County is part of the Charlottesville metropolitan region which includes the University of Virginia. As a result, the County has become a community that has experienced significant growth in its residential population as well as business investment and economic development. The Greene County Public School System has a student enrollment of approximately 2,800 and is comprised of seven schools including one primary, two elementary, one middle, one high school, an alternative education center, and a technical educational center. The school system's popular tag phrase, "Every child, every chance, every day," echoes its formal commitment to build a positive, responsible and effective learning community where students, teachers and staff are encouraged to believe, achieve and succeed.

## About Advanced Network Systems, Inc.

Advanced Network Systems specializes in the design, installation and support of information technology solutions. The company's expertise covers a wide variety of IT applications, including network security, virtualization, managed IT services, core infrastructure, networked storage, and wireless, as well as IP-based telephone and conferencing systems. With multiple locations, serving Virginia and West Virginia, Advanced Network Systems supports a diverse base of clients, including small and medium-sized businesses, government agencies, and educational institutions.

To learn more about Advanced Network Systems, visit us on the web at [www.getadvanced.net](http://www.getadvanced.net).



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