



## Fairfax County Public Schools Uses AirWave to Manage a Multi-Vendor Wireless Network

Already one of the largest and most respected school districts in the country, Fairfax County Public Schools has an even more ambitious mission: to be a global leader in education. Technology plays a critical role in achieving that mission. “Our goal is not simply to provide students with occasional access to computer labs or to the Internet for research, but to use technology to improve the entire learning environment,” said Neal Shelton, FCPS’s Network Engineering Supervisor. “When teachers incorporate these new tools and techniques into their day-to-day classroom activities, the network itself becomes ‘mission-critical,’” he added.

FCPS was one of the first districts in the country to recognize that its goal of incorporating laptop PCs and new technology in the classroom would require a large-scale wireless network. The district began installing its first wireless access points in 2002. Since then the network has grown steadily to include more than 235 schools with more than 8,000 wireless access points used by an average of 26,000 unique users per day. More than 80% of these users are students.



The network engineers at FCPS were also quick to realize that they needed a specialized operations management solution to control a network of that scale and to support so many users. “The IT department is service-oriented. We need to make sure the network is running properly at all times and that students and faculty members have a reliable connection,” said Shelton. Proprietary

element management systems offered by wireless hardware vendors did not provide the visibility, centralized manageability or usability to achieve this goal. Instead, FCPS selected the vendor-neutral AirWave Wireless Management Suite network management software. “Right away, it was clear to us that AirWave was the leader in their industry,” said Shelton. “Partnering with them has helped us become a leader in ours.”

In managing its budget and hardware lifecycle, Fairfax County Public Schools must always balance the need to maximize the useful life of its existing infrastructure investment with its need to support exciting new applications that enrich the classroom experience. At the time FCPS first installed the AirWave software, the district’s wireless infrastructure consisted solely of stand-alone ‘autonomous’ access points from Cisco.

FCPS network engineers still found AirWave’s ability to support multiple brands and multiple generations of WLAN hardware from the same console extremely attractive. “While we only had one hardware vendor initially, AirWave’s multi-vendor management capabilities aligned with our service-oriented, vendor-neutral strategy,” said Matt Fry, Senior Network Engineer. “By using a management solution capable of supporting multiple vendors, we



**Location:** Fairfax County, Virginia

**WLAN Size:**

- More than 235 schools
- More than 8,000 wireless access points
- Average of 26,000 unique users per day

**Hardware:**

- Cisco Switches
- Multi-vendor wireless network including Cisco “thick” and “thin” APs, Aruba access points and controllers

**AirWave Product:**

- AirWave Management Platform Professional Edition
- RAPIDS Rogue AP Detection Module

knew we could always select the best technologies for our needs and foster healthy competition among vendors without constantly having to replace and upgrade our entire infrastructure. Multi-vendor management permits a more affordable, incremental approach to upgrades. This is especially important for school districts like us since wireless implementations may take years to complete and technology refresh cycles are always subject to the availability of school funding. In that time, both technology and user requirements can change dramatically. In that type of environment, maintaining flexibility is critically important.”



The wisdom of this approach was illustrated in subsequent phases of the wireless deployment, when FCPS started to implement Cisco’s lightweight access points (LWAPP) and controllers instead of the autonomous access points. “We had been experiencing problems with RF interference in some of our schools with the older autonomous APs,” said Fry. “A lot of our schools are in older, residential areas with many homes nearby. When some of those neighbors put in their own wireless networks, we started seeing more interference in our school buildings. Sometimes our users would accidentally connect to the wrong network and then call the support desk to report that the network was not working the way it should.” Shifting to the next-generation controller-based architecture helped automate RF management and eliminate some of these problems.

“The AirWave software was extremely helpful, because it allowed our IT staff to manage and monitor both the older autonomous Cisco access points and

the newer LWAPP infrastructure from the same console,” said Fry. “Using separate consoles for the different solutions would have been an operational nightmare for our support staff. We need to be able to see and control the entire network in one place.”

Recently, FCPS has started to implement WLAN products from Aruba Networks as it begins to upgrade its network to include higher-throughput 802.11n devices. The district is now purchasing three or four notebook computers for every desktop. This expanding population of mobile devices creates the need for more capacity. Since most of these new laptops come equipped with 802.11n-capable radio cards, starting to upgrade the wireless infrastructure to accommodate 802.11n made sense for FCPS.

“We found that Aruba products provided a great value and that Aruba’s 802.11n wireless access points actually worked with our existing Cisco 3560 switches,” said Kailish Chopra, Network Engineer. “If we had been using a proprietary, single-vendor management solution, we could not have selected the best technology because we would have had to duplicate our entire management infrastructure to do so. With AirWave, we didn’t miss a beat when we started using Aruba products,” Chopra noted.

AirWave’s intuitive, easy to use interface provides the IT team visibility to every user and device connected to the network, enabling faster remote diagnostics and troubleshooting. “I just look at the monitoring screen and I can tell you that we have exactly 14,209 users connected to our network right now. And if I need to, with a few clicks of the mouse I can drill down to see each individual user – where they are located, how strong a signal they’re receiving, how much bandwidth they’re using, and more.”

That level of visibility is key to resolving problems quickly. Recently, for example, a teacher who wanted an extra LAN port for a printer in the classroom brought a home-grade wireless router into the classroom. The teacher placed the wireless access point under her desk

#### Organization Overview:

Fairfax County Public Schools is the largest public school system in the Baltimore-Washington Metropolitan Area and in Virginia, and the twelfth largest school system in the nation. Students in grades pre-K through 12 are offered a diverse, high quality curriculum. FCPS is a recognized leader in the use of technology in its instructional and administrative programs.

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#### Kailish Chopra

*Network Engineer  
Fairfax County Public Schools*

and connected the printer – but did not disable the wireless features or DHCP on the devices. “Without AirWave, that kind of problem could have taken hours to diagnose and resolve. With AirWave, we were able to determine what was happening in minutes,” said Chopra.

“AirWave has become not just a supplier but a true partner,” said Shelton. “It’s the kind of relationship that’s harder to have with larger, more bureaucratic organizations. AirWave knows that our mission is to be a global leader in education and technology and they have made it their mission to help us achieve that goal. In our opinion, there is a real advantage to working with a small organization that is completely focused on wireless network management. Everyone from the product managers to the technical support team are extremely responsive to our needs and are focused on product innovation. I wish we had the same type of relationship with all our suppliers.”



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