



## Challenges

- Increasing number of users and applications
- Complex, time-consuming network management
- Growing use of network-delivered content for classroom education
- Upcoming transition to new Wi-Fi standards

## Value Created

- Improved Wi-Fi network capacity, performance, and future-readiness
  - 70% more bandwidth
  - Built-in transition to 802.11ac wireless and 5 GHz radio operation
  - Integrated architecture, controller-less
- Streamlined core network administration and management processes
- Investment protection
- Enhanced power efficiency

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-Andrew Hobbs,  
WAN/LAN  
Network Engineer

# Kentucky School District Improves Classroom Experience with Network Investment



Shepherdsville, Kentucky – Bullitt County Public Schools take Wi-Fi seriously. The district’s philosophy is to provide open access to the Internet, with only minimal restrictions related to the Children’s Internet Protection Act and basic network safety requirements. This enables students and teachers to use Web-based resources freely to expand and enrich the educational experience.

Usage has blossomed. At peak times, up to 5,000 students and staff are on Wi-Fi. This high level of Internet activity has put a strain on the existing Wireless Local Area Network (WLAN). Andrew Hobbs, LAN/WAN Network Engineer, comments *“Our largest challenge managing the WLAN has been the volume of data and traffic that we’ve seen as BYOD [bring-your own-device] and one-student-one-device trends have grown exponentially throughout the district.”*

With responsibility for supporting 13,000 students, 2,000 staff members, and 28 locations, the IT team recommended a network refresh to support the current and anticipated

growth in network traffic. A move to upgrade was triggered largely by plans to renovate and expand the Bullitt Central High School location. This effort proved to be an ideal opportunity for the IT team to transition to the latest in WLAN technology. Researching their options, the team quickly focused on benefits available to them with Avaya’s WLAN 9100 solution.

*“We really liked what we were hearing about the Avaya WLAN 9100 Series access points and controls,”* says Hobbs. *“The more we learned about the new architecture, the more we felt it would solve the challenges that we experienced in providing the quality of Wi-Fi service that our district needed.”*

“The mission of the Bullitt County Technology Department is to provide the most effective and efficient information systems possible to empower and equip the students, faculty, and staff with the latest technology and resources. We subscribe to the concept of ‘Intelligent Classrooms’ that prepare learners for a complex 21st- century society. Avaya is an important partner for us in empowering our teachers and staff, and providing a vital connection between school and the digital lives of our students.”

—Jim Jackson, District Technology Coordinator, CIO

Three features stood out as the primary benefits of the Avaya 9100 Series WLAN:

- With its integrated architecture all traffic processing and network services necessary for a more secure WLAN – including application control, firewall, threat sensor, spectrum analyzer, etc. — are executed at the wireless access points. This reduces equipment and infrastructure requirements, simplifying nearly every aspect of the deployment and helping to provide uninterrupted high performance.

“Having all control features right at the access point instead of tunneling everything to the core and then back out is a huge plus as far as the architecture is concerned,” Hobbs comments. “Basically you don’t have to use any bandwidth for application filtering. It is much easier to manage the system so that adequate bandwidth is available at any given time.”

- Also, the Avaya WLAN 9100 series access points can be updated from 802.11n to 802.11ac with a software upgrade. This feature makes the technology future-ready, with an easy transition that does not require touching the access points. “It’s like getting two access points in one,” Hobbs comments.
- The WLAN 9100 Series has software-programmable radios, enabling the district to customize their access points based on their end user environment. To accommodate the diverse mix of devices (supporting different wireless standards), one radio in the access point can be set to the 5 GHz band and one radio to the 2.4 GHz band to optimize the end user performance. As the environment changes over time, with the introduction of newer devices, both radios can be set to 5 GHz resulting in greater bandwidth. It’s estimated that this easy transition to a 5 GHz-centric network will result in a system that’s capable of providing up to 70% more bandwidth.<sup>1</sup>

“It soon became clear to us that the Avaya WLAN 9100 system is right on target for our needs,” Hobbs states. “It makes perfect sense for us because operational efficiency, cost savings, investment protection, and – above all – the ability to support our educational goals now and in the future are all built into the architecture.”

## A “Fast and Seamless” Deployment

According to Hobbs, the rollout of their new access points in the newly renovated high school was performed entirely by the district staff. Four staff members hung the access points and two staff members configured them, requiring about 10 hours of labor overall.

Hobbs comments, “As far as we were concerned, we had a very fast and seamless deployment of the new Avaya WLAN 9100 access points. We did not require outside assistance at all. Our small IT team easily completed the installation and configuration of about 100 new devices in just two evenings. Since then, we’ve had the great experience of receiving NO grumbles or complaints whatsoever from users about the service with these access points.”

<sup>1</sup>70% more bandwidth is based on the following: Competition: Industry-standard 802.11ac, 3x3 AP: Radio 1 = 225Mbps (2.4GHz); Radio 2 = 1.3Gbps (5GHz) = Max Bandwidth = 1.525Gbps. In Contrast: Avaya 802.11ac, 3x3 AP: Radio 1 = 1.3 Gbps (5Ghz) and Radio 2 (5GHz) = 1.3 Gbps = Max bandwidth = 2.6 Gbps)

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## Full Network Visibility and Granular Control

The Avaya WLAN 9100 system includes a WLAN Orchestration System (WOS), a wireless network management platform that provides full monitoring and management of the Avaya WLAN 9100 Series network. It is a web-based application with graphical map views that enable full network visibility and granular controls down to the individual user level.

Using the WOS, Bullitt County IT administrators can perform pre- and post-deployment planning, configuration, verification, management, and optimization of their new wireless infrastructure, knowing the platform can accommodate their large campus environment of thousands of wireless users.

Hobbs comments, *“The WOS gives us full visibility into the network, right down to the individual user level, and there are many benefits to this. Perhaps the most important is that, as we learn about the patterns of usage, we’ll be able to make informed decisions about future policies and purchases to enhance the educational value that our teachers and students draw from the Internet.”*

## Reducing Complexity of Configuration in the Network

To gain further efficiencies and cost savings, the Bullitt County IT team is also replacing its legacy Avaya switches with the Avaya Virtual Services Platform (VSP) 8000. This is a cost-effective networking package that offers simplicity, agility, efficiency, and versatility. It supports both Fabric-based virtualized networking and conventional IP

Routing deployments for high-performance and high-density 10/40 Gigabit Ethernet connectivity.

Hobbs says, *“We are moving to next-generation technology with the VSP 8000 as a way of continuing to simplify the network and reduce complexity of configuration. The smaller footprint will be more energy efficient and the maintenance warranty will save us at least \$10,000.00 year. However, in our minds, the most important features are the future-readiness and scalability that we feel will protect our investment for many years to come.”*

The IT team is especially looking forward to being able to leverage the benefits of Avaya Fabric Connect technology, an enhanced implementation of the Shortest Path Bridging standard, to provide a strong foundation for network virtualization, cloud, mobility, and video — while simplifying the network and reducing operational costs. For more information about Avaya Fabric Connect, please see

<http://www.avaya.com/usa/solutions/#Fabric%20Networking>.

## “Moving Forward”

The Bullitt County Public Schools have the simple but powerful slogan, “Moving Forward,” and the district highlights its aspirations of being a “leader in educational excellence.” The schools have already established a strong connection with Internet learning programs such as Edmodo, Schoology®, Edgenuity™, and Compass Learning®, to name a few. The district also has a team of certified teachers whose full-time role is to serve as Technology Integration Specialists. They work with the district’s educators to advance the effective use of e-learning in the classroom, and they liaise with the IT



team to help ensure that the district’s technologies correspond to what the teachers and students need.

The district currently utilizes Avaya solutions for networking, Voice over IP (VoIP), and wireless LAN. These advanced technologies deliver the performance, flexibility, scalability, and future-readiness to continue making a strong positive impact in Bullitt County public schools’ technology-enabled learning environment.

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—Andrew Hobbs, WAN/LAN Network Engineer

In speaking about the Avaya solutions the district has chosen to deploy, Hobbs concludes: *“Our district has committed to Avaya technologies for several reasons. They are rock solid and easily configured, and we love the service. We are forward-thinkers, from both the IT perspective and the educational perspective. Avaya helps us turn our goals into realities.”*

## Learn More

For more information, contact your Avaya Account Manager or a member of the Avaya Connect channel partner program, or access other collaterals by clicking on Resource Library at [www.avaya.com](http://www.avaya.com).

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Statements in this case study were made by Andrew Hobbs, WAN/LAN Network Engineer; and Jim Jackson, District Technology Coordinator, CIO.

### Systems, Applications, and Services

- Avaya WLAN 9100 Series with Wireless Orchestration System (WOS)
- Avaya Virtual Services Platform 8000 Series
- Avaya Identity Engines Portfolio
- Avaya Communication Server 1000

## ABOUT BULLITT COUNTY PUBLIC SCHOOLS

Bullitt County Public Schools is one of the top ten largest school districts in Kentucky, with 24 schools, 13,00 students and 2,000 staff. The Bullitt County Schools District offers educational excellence to students in Preschool through Grade 12. Integrating technology into the curriculum and fostering a student-learning environment that develops and enhances technological skills is an important goal for the school district.

## About Avaya

Avaya is a leading, global provider of customer and team engagement solutions and services available in a variety of flexible on-premise and cloud deployment options. Avaya's fabric-based networking solutions help simplify and accelerate the deployment of business critical applications and services. For more information, please visit [www.avaya.com](http://www.avaya.com).

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