

Wirelessly Enhancing Student Performance in Texas

Keller Independent School District demonstrates that Motorola's 802.11n technology and innovative adaptive architecture are the keys to optimizing the student learning experience



Situation: the need for high bandwidth wireless local area network (WLAN) connectivity to support multimedia learning at a multiple-location K-12 school district.

Located in north Texas, Keller Independent School District (Keller ISD) is one of the state's fastest-growing school districts. Serving more than 30,000 K-12 students, the district is implementing its long-term strategic vision of how to improve student performance system wide. Keller plans to move to a digital curriculum to support one-to-one (1:1) instructional objectives and enable a more personalized learning experience. Crucial to this vision is a reliable, easy-to-use high-speed wireless infrastructure capable of delivering bandwidth-intensive multimedia learning materials to students across the district's 36 locations.

Solution: Motorola 802.11n wireless LAN infrastructure that meets and exceeds the district's demands for throughput, coverage and reliability.

Initially, Keller installed a video-on-demand and digital media management solution to deliver rich multimedia content to classrooms across the district. The district's legacy wireless system, however, was incapable of supporting this system. Keller chose a Motorola 802.11n WLAN infrastructure and the Motorola AirDefense Security, Compliance and Network Assurance (troubleshooting) solutions. The deployment includes Motorola's unique adaptive architecture and the AP 7131 intelligent wireless access points. The solution provides exceptional network coverage, performance and quality for dozens of simultaneous users who need to stream video and quickly download large data files to many different wireless devices. The flexibility and security of the solution, along with its proven cost effectiveness, made it particularly appealing to the school district.

Result: the Motorola 802.11n solution delivers high-quality digital content in classroom environments and on personal computing devices.

Rolled out across all of Keller's school district campuses, the Motorola 802.11n WLAN network is providing the bandwidth and reliability necessary to ensure that the school provides an excellent education for their students. The network reliably delivers streaming video, interactive applications, collaborative environments and peer-to-peer connections so that students and teachers have a trouble-free connected learning experience.

CUSTOMER PROFILE

Enterprise

Keller Independent School District, Keller, Texas

Industry

36-location, K-12 school district

Motorola solution

- 802.11n WLAN supporting district's move to a digital curriculum with adaptive architecture
- Motorola RFS 7000 wireless controllers
- Motorola AP 7131 dual- and tri-radio access points
- Motorola AirDefense Wireless Security and Compliance Solution
- Motorola AirDefense Network Assurance (Advanced Troubleshooting) Solution

Solution features

- System-wide throughput of up to 300 Mbps
- High-quality video and multimedia education content delivery to large numbers of students over wireless
- High-speed connectivity for K-12 campuses over an area of 51 square miles
- Automatic intrusion and rogue protection
- Centralized, easy-to-use remote troubleshooting to resolve connectivity challenges

Improving Student Performance by Increasing Network Performance

They grow everything big in Texas, including K-12 school districts. With 36 campuses located in a 51-square-mile area in north Texas, Keller Independent School District is large and still expanding. “Keller ISD is not finished growing yet,” says James Veitenheimer, Keller ISD superintendent. “We continue to build new schools [because] there are still parents and students coming into our system all the time.” Adds director of security Jeff Baker, “We currently have just under 32,000 students in the district [and] expect to be built out in a few years to between 36,000 and 40,000 students.” Keller ISD is one of the fastest growing K-12 school districts in the state.

Academics and More

Like most school districts, Keller ISD is focused on improving student performance. But Keller doesn't stop there. “[Our] expectations are for well-rounded students,” explains Veitenheimer. The district maintains a significant focus on its academic

program, but stresses that life is about more than just academics. Continues Veitenheimer, “[Life] includes love of art and music, participation on teams and experiences that allow you to work together with other students.” Within its commitment to create more well-rounded students, Keller ISD is working to integrate advanced technology into virtually every aspect of the learning process.

Technology Planning Committee

At Keller, technology goals and initiatives are overseen by a strategic District Technology Planning Committee that meets regularly. “The committee is comprised of parents, students, teachers and corporate sponsors,” says Joe Griffin, chief technology officer at Keller. To facilitate the move to a digital curriculum and more 1:1 learning environments, the committee examined a variety of software and educational applications — such as streaming video and collaborative tools — that would help students not just in their schoolwork but in their lives. “Keller ISD recently installed the video-on-demand and digital media management solution from SAFARI Montage to deliver rich digital educational content to classrooms,” reports Griffin. The next step was planning and deploying a robust, easy-to-use wireless network to support this and other bandwidth-intensive applications.

Robust Wireless Network

Keller ISD knew it needed a robust, easily managed wireless network with speed, reliability and cost-effectiveness for their large-scale environment. Although the district had a wireless network in place, it proved incapable of supporting the new digital curriculum requirements to support mobile multimedia applications across all campuses. “Our existing wireless system wasn't designed for 1:1 computing or dense coverage,” notes Vaughan Hamblen, Keller ISD director of network services.

The old system's unreliability caused much frustration. “I would take a classroom full of students up to the computer lab, and we would go to get on and it wouldn't work,” says teacher and instructional technology facilitator Vicki Hart. “And there you are, stuck as a teacher as in, ‘What do I do next?’ It was very frustrating for me as a teacher. It was frustrating for the students as well.” Adds Joe Griffin, “[Some teachers] quit using technology at all because it wasn't reliable for them.”

New Network Necessities

Keller understood exactly what it needed from its new wireless network. “We needed a cost-effective solution that could provide high-speed, district-wide coverage and ensure seamless delivery of

MOTOROLA'S INTELLIGENT ADAPTIVE ARCHITECTURE



Motorola's adaptive access points adapt automatically to constantly changing network conditions. These self-healing capabilities ensure high availability and reliable connectivity. Motorola WLAN access points also provide the dual function of access and network management, by running Motorola AirDefense solutions on an integrated radio. Now for both security and compliance, Network Assurance solutions are run on a single access point, eliminating the expense of separate dedicated sensors.

K-12 DIGITAL INSTRUCTION FROM SAFARI MONTAGE



SAFARI Montage provides K-12 school districts with a comprehensive education solution for their digital media networking and visual instruction needs. The full suite of integrated products provides a single interface for accessing all visual resources from inside the school district Intranet or from students' or teachers' homes. The Video-On-Demand and Digital Media Management enterprise solution helps school districts reduce costs by utilizing intelligent digital media delivery, while facilitating visual instruction and learning in the classroom.

multimedia content to students and teachers, while supporting our efforts to expand these capabilities to all classrooms." states Griffin. The district needed reliable, 24/7 high-speed mobile access with the capability of delivering video and streaming multimedia content seamlessly. It also needed to provide access to the curriculum not only from school computers, but also from the proliferation of personal devices — computers, netbooks, iPods, smartphones, PDAs and more — used by today's students and teachers. "We were looking for a solution that would be device-agnostic," continues Griffin, "so no matter what kinds of wireless devices were being used, the wireless infrastructure would be in place to support them."

Motorola 802.11n WLAN Solution

As Keller ISD moves to a digital curriculum it is crucial, Veitenheimer says, "to have a reliable and easy-to-use wireless infrastructure in place to support our 1:1 instructional objectives and enable visual teaching district-wide." After researching a number of wireless solutions, Keller ISD and its systems integrator chose Motorola's 802.11n

wireless LAN (WLAN) infrastructure and a collection of Motorola AirDefense solutions including wireless security and advanced troubleshooting. The district found that the Motorola solution performed best in delivering streaming video and fast content downloads simultaneously to high densities of users, which is critical in classroom environments.

The Motorola WLAN solution enables Keller to deliver crisp, clear video and multimedia content over a cost-effective WiFi network. The network leverages Motorola's RFS 7000 wireless controllers and its two- and three-radio adaptive AP 7131 access points (APs) that eliminate the expense and complexity of deploying separate sensor radios dedicated to security and troubleshooting. The Motorola WLAN has proven to be the ideal network solution from the very earliest planning stages through providing the scalability that allows for seamless network growth.

Planning and Installation

The district's IT professionals and its systems integrator used Motorola's comprehensive LANPlanner software for network design, allowing the team to identify the correct number of APs that were needed, and the optimum locations for their installation. That's especially important in a large district with 36 locations. "LANPlanner really helped us be able to determine where the devices needed to be placed," says Hamblen. "It gave us a good look at exactly where equipment needed to go based on the structure of each facility." That upfront planning made installation faster, easier, a lot less costly with optimal wireless coverage.

High-Bandwidth Performance

As the new network is being rolled out, the district is at last getting the robust bandwidth to deliver video and other multimedia content with extremely high performance and without frustrating reliability issues. The district no longer has to place computers in fixed locations. "Previously, students could just use computers only at certain times, usually at the back of a classroom," says Griffin. "Now, they are carrying devices with them all throughout the building... and have access to the technology throughout their whole school day. Students can use their tablet computers, their smart phones and PDA devices and various types of teaching and learning tools wirelessly... in their classroom, from outside, from anywhere on the campus. And they have the ability to collaborate with peers and teachers."

Security and Network Assurance

Keller ISD also turned to Motorola for enhanced network management and security. "Security on a wireless network is always a concern," says Griffin. The district installed components of the Motorola AirDefense Security and Compliance and Network Assurance Solution for 24/7 wireless security, including proactive monitoring, advanced



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- James Veitenheimer, Keller ISD superintendent

troubleshooting and intrusion protection. The solution provides a best-in-class tool set that remotely identifies, analyzes and tests performance and connectivity issues across Keller’s multiple campuses. With this solution in place, administrators can now remotely troubleshoot and remedy network issues without having to travel across all 36 locations to perform onsite assessments. In addition, AirDefense solutions have reduced operational costs associated with running a wireless LAN and have dramatically increased IT staff productivity.

Beyond Curriculum

Keller ISD is energized by its new high-speed wireless network. “The value for us has been in both speed and reliability,” says Veitenheimer. “We are thrilled with our ability to take our technology where we need it to be to enhance our learning environments.” But the district is also looking to expand the network in a number of areas beyond

curriculum. “One of the things we’re most excited about now is [our trial of] having GPS and wireless on our school buses, helping us monitor location and giving students Internet connectivity on their ride to and from school,” says Griffin.

Partnership

Keller ISD values its relationship with Motorola. “It’s a two-way partnership,” says Veitenheimer. “Motorola knows the technology and we know the instruction. You meet in the middle and you come together as partners. It’s a great, great feeling for a school superintendent to have that level of partnership.” Of course, the district realizes that as important and successful as the new wireless network is, it’s not an end in itself. “Bottom line, it’s not about the technology,” notes Veitenheimer. “It’s about the instruction and the capacity for our kids to utilize the right tool at the right time to know the things that they need to know to be successful.”



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