



Wireless Solutions for K-12 Education

Application Portfolio

K-12 Education

Networking Challenges and Wireless Solutions

Educational institutions are faced with multiple challenges when it comes to providing the modern networking capabilities demanded by today's applications. Buildings with historical value, possible asbestos hazards, large campuses, temporary buildings and a vast mobile population can create a networking nightmare. And with a limited budget, these problems might be difficult to overcome.

Wireless technologies solve these problems readily. Wireless offers:

- no new wiring
- fast installation with no permits required
- large coverage areas
- mobile freedom

With a wireless network in place, the infrastructure can be simply employed for multiple purposes – doubling or tripling the advantage of the wireless investment.

Applications for K-12 Networking

[Classroom Internet Connectivity](#)

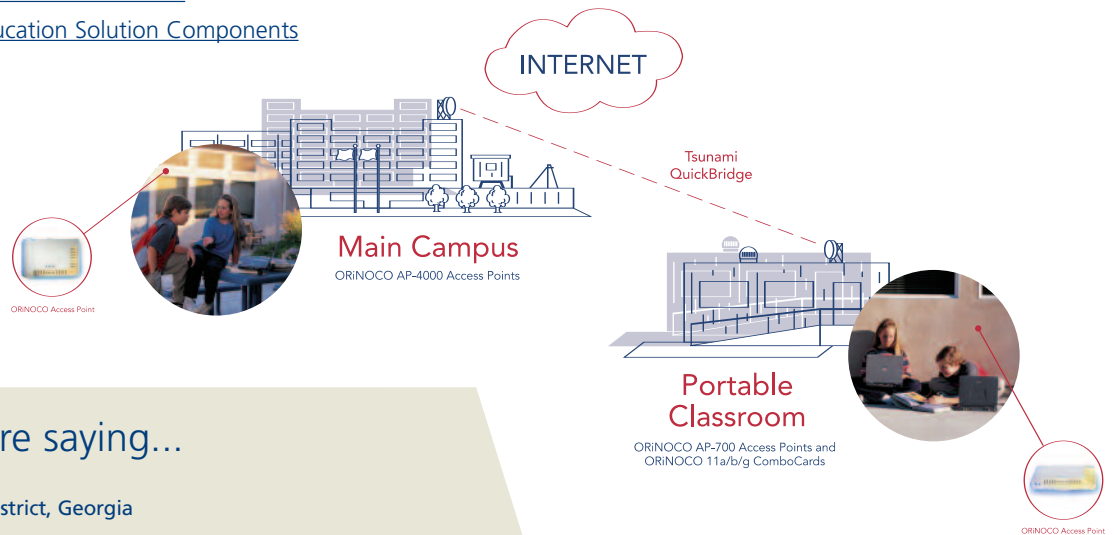
[Increased Student and Faculty Safety with Phone Service Across Campus](#)

[Student and Faculty Security](#)

[Affordably Linking a District of Schools](#)

[Increased Access to Education](#)

[Proxim's Education Solution Components](#)



What customers are saying...

Cherokee County School District, Georgia

"Using the Proxim access points for our mobile computer labs has enabled us to bring Internet access directly to the classroom in a very efficient and affordable way."

Tim Feltner, Director of Technology Services/Data Communications

Kings County Office of Education, California

"[With Proxim's broadband wireless network], our users are benefiting from a highly reliable, high-speed service that allows faculty to better perform their jobs and provides students with an enhanced learning experience."

Jerry Waymire, Assistant Superintendent, Information Systems



❖ Classroom Internet Connectivity

The challenge:

Most schools with Internet connectivity have limited the connection to either the school's computer lab, or to one computer in each classroom. Children either file down the hall to the lab, disrupting the normal flow of learning; or they take turns clustered around the classroom computer in groups of two or three. Though the student's learning experience would be both enhanced and more productive by having her own computer lesson at her desk, the cost of supplying a Cat5 connection and computer to each student makes the idea untenable.

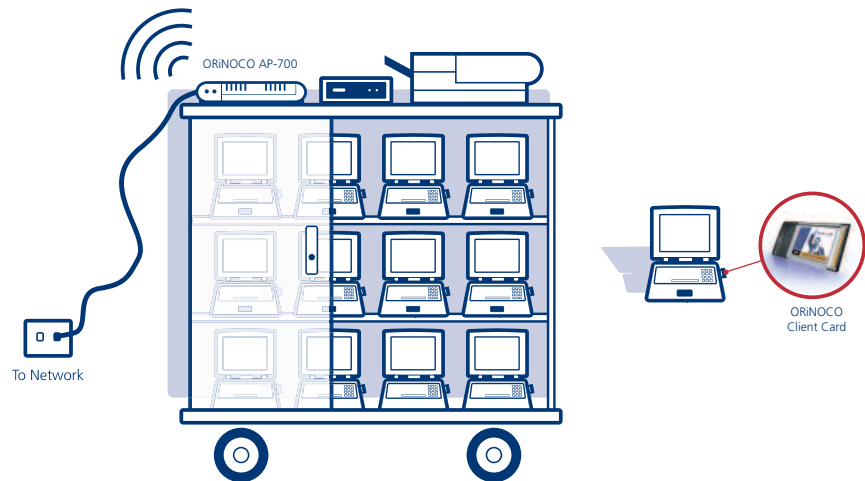
The solution:

Using wireless LANs allows schools to integrate interactive online lessons inside the classroom. Wireless network access throughout the school is much simpler, faster and costs a fraction of wired networks. A shared, mobile computer cart containing wireless-enabled laptops and a printer can be wheeled to classrooms as needed, minimizing expense by not requiring computers for each classroom. In fact, properly positioned access points can even provide wireless coverage outdoors, providing further opportunities to incorporate the Internet into science, physics and other curricula that benefit from experiments and observation outside the classroom.

For schools that do not have any Internet network connection – whether a single temporary classroom, or the entire campus in older schools – an inexpensive wireless bridge can bring Internet access from a main administration building to classrooms throughout the campus. Unlicensed band operation means quick deployment, with no need to obtain a permit or need for expensive and time-consuming cable laying.

The products:

- Tsunami MP.11
- Tsunami QuickBridge
- ORiNOCO AP-4000
- ORiNOCO AP-700
- ORiNOCO client cards



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❖ Increased Student and Faculty Safety with Phone Service Across Campus

The challenge:

Most schools in the US and Europe were constructed before the expectation of ubiquitous telephone availability. Classrooms often do not have phones, and installing new phone lines can be expensive, complex and sometimes impossible in older structures. To fill that void, teachers often bring their own cell phones into the classroom. This not only places undue burden on the faculty member, but the school remains haphazardly connected. Privacy concerns also make it inappropriate for teachers to provide personal phone numbers to coworkers and students' parents.

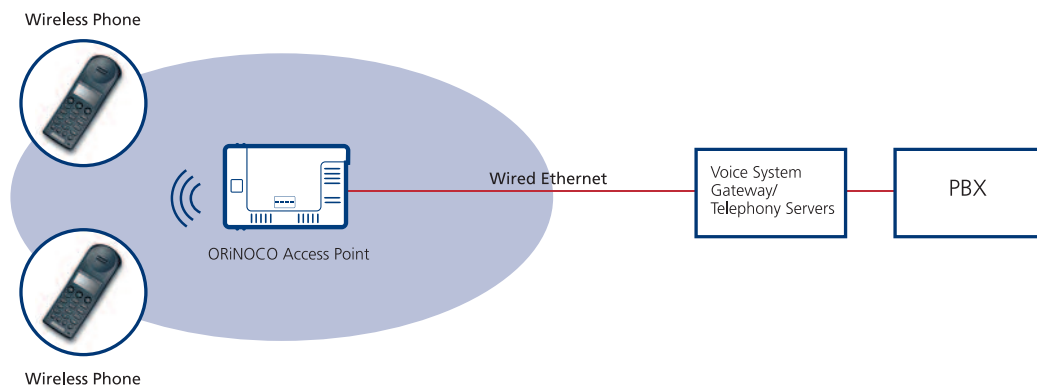
The solution:

IP telephones that use a school's wireless LAN network, similar to cordless phones used in homes, offer increased access to communication for students, faculty, administrators and guardians – which is especially important in the event of an emergency. By installing Proxim wireless access points, no new telephone wiring is required to extend phone service to every classroom. Properly positioned access points can even provide wireless coverage outdoors, extending phone service to playgrounds and other outdoor areas. As the wireless LAN can simultaneously support both Internet access for student classroom work, as well as phone calls, the return on investment is significantly increased.



The products:

- ORiNOCO AP-4000
- ORiNOCO AP-700
- NetLink Wireless Telephones offered by SpectraLink





❖ Student and Faculty Security

The challenge:

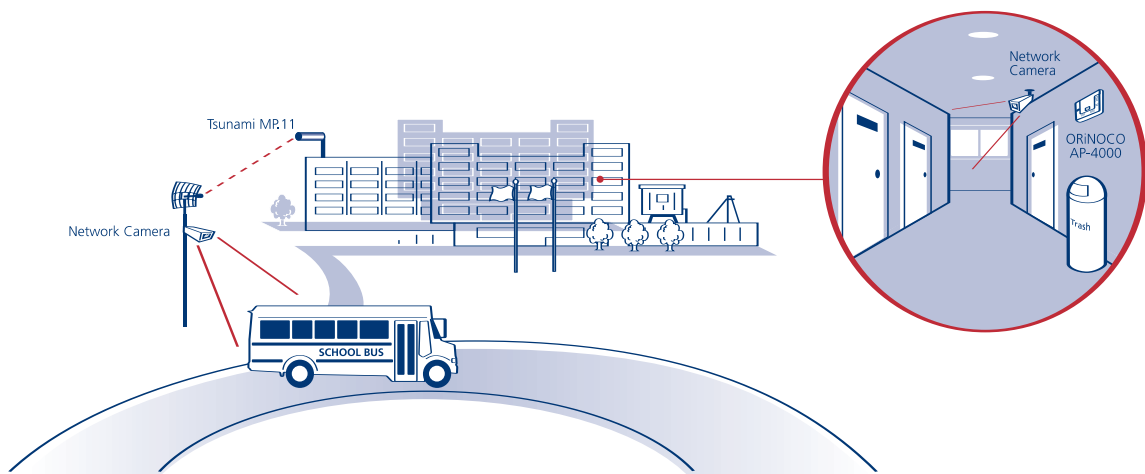
Recent tragic events highlight the growing need for campus security for faculty and students. Video surveillance can significantly increase security when placed at school entry points and throughout the facility, perhaps even acting as a deterrent. While IP video cameras are inexpensive, the expense of laying cable inside a facility and around the perimeter of a campus can forestall needed improvements in school safety.

The solution:

Wireless LANs and wireless bridges eliminate the expense of extensive cable pulling. From the main administration building, wireless bridges provide connectivity to the campus perimeter. Network cameras with wireless Ethernet adapters placed on lampposts, school fences, or any other surveillance point transmit back to wireless access points. Inside the school, wireless access points provide a similar function, allowing cameras to be placed inside hallways, libraries and classrooms, with a wireless Ethernet adapter connecting the camera to the wireless access point. All video, indoors and outdoors, is brought back to a central point for monitoring and recording.

The products:

- ORiNOCO AP-4000
- ORiNOCO AP-700
- Tsunami MP.11
- Network cameras offered by Axis Communications
- Wireless Ethernet adapters offered by Axis Communications



K-12 Education

❖ Affordably Linking a District of Schools

The challenge:

Both urban and rural school districts benefit from sharing educational resources and school operational systems. Applications such as student databases, email, and records often reside only on a local PC hard drive. Attempting to connect disparate schools through dial-up or DSL doesn't offer the bandwidth for database applications, or the accessibility and ease-of-use required for actual use. Leased lines would address these issues, but would add unreasonable cost – and may not be available in many locations. The cost of trenching fiber can run into the millions.

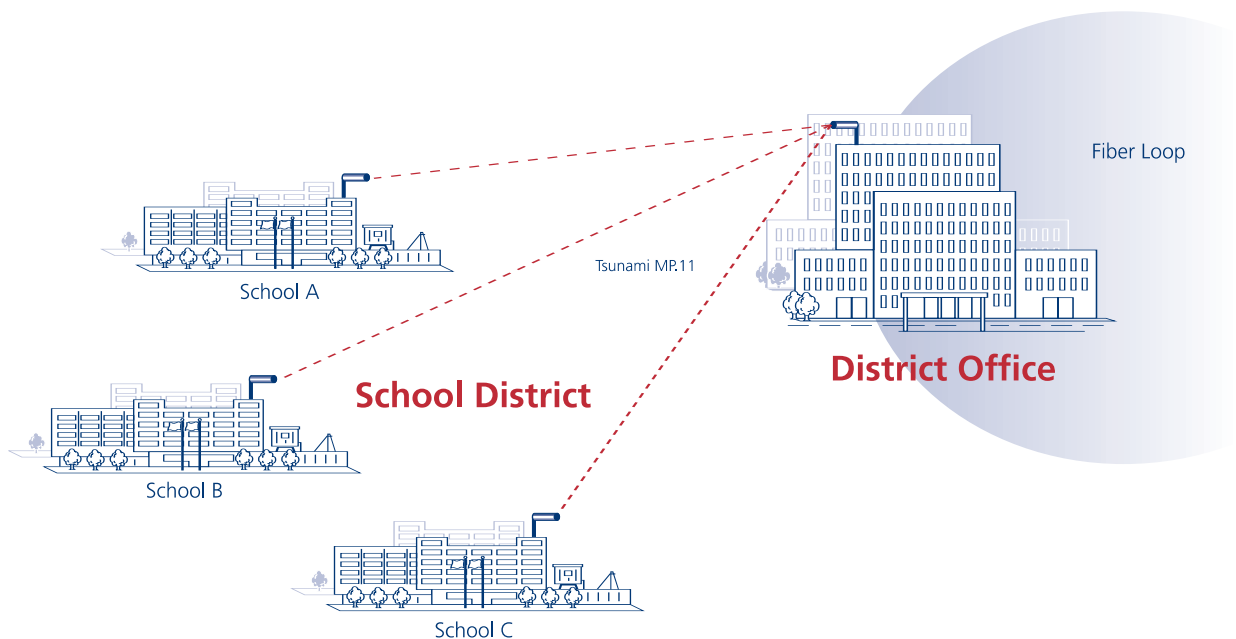
The solution:

Because wireless networks can be installed simply and affordably relative to fiber optics, they are a perfect solution for linking many schools in a region. As part of its wireless metropolitan area network, a wireless service provider could afford to offer inexpensive connectivity to school districts at a monthly fee. Or, the school district could opt to own the infrastructure itself. Either way, wireless provides a viable solution for improving communications and sharing resources between many schools.

As an added benefit, the district could offer low or no-cost Internet access to households in the immediate vicinity to the schools. Using an inexpensive multipoint network or standard Wi-Fi technology, broadband access can be fanned out from the school.

The products:

- Tsunami Point-to-Point
- Tsunami MP.11
- Tsunami MP





❖ Increased Access to Education

The challenge:

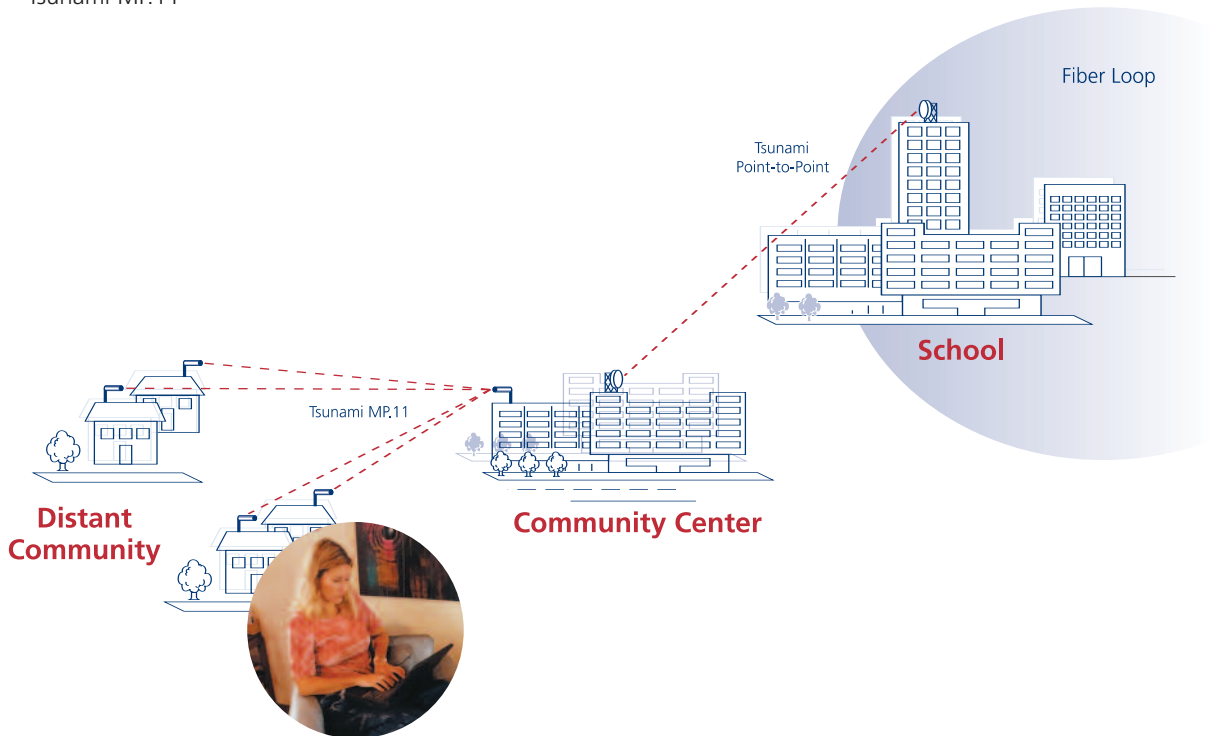
As world population increases, so does the need for universally available education. This education ranges from access to skilled labor training and university liberal arts to basic public health information. The problem is how to physically bring together educators and students. Schools in sparsely populated regions struggle with cost-effective course offerings for a small number of students. Students face a limited number of program options, and challenging schedules with commuting. In developing nations, higher education may be impossible without significant wealth and freedom to travel. In farming communities, every member of the family may be needed during the daylight hours.

The solution:

Wireless MANs deliver a significant step forward in access to education anywhere. By installing wireless point-to-point (covering 40 miles in each hop) and multipoint systems to fan out coverage, Proxim solutions yield coverage for hundreds of square miles. Distance learning is extended to distant communities through the Internet and teleconferencing. Transportation to learning centers is eliminated as an obstacle to learning. Teachers of all kinds can deliver real-time lectures, training, or public health updates to people in their own communities. Flexible class times via videoconferencing overcome family and employment juggling. Rather than remaining isolated without a choice in field of study, students access a virtual community of learning.

The products:

- Tsunami Point-to-Point
- Tsunami MP.11



K-12 Education

Proxim's Education Solution Components

About Proxim

Proxim Corporation is a global leader in wireless networking equipment for Wi-Fi and broadband wireless networks. Proxim provides solutions for mobile enterprise applications, security and surveillance, last mile access, voice and data backhaul, public hot spots, and metropolitan area networks. Product families include ORiNOCO Wi-Fi products, Tsunami Ethernet bridges, and Lynx point-to-point digital radios.

Proxim has the widest array of wireless equipment to meet the networking needs of K-12 schools and districts. Solutions are comprised of ORiNOCO Wi-Fi LAN equipment and Tsunami broadband wireless systems to supply bandwidth to and between LANs. Only Proxim offers a wide enough array of capacity, capability and cost to properly mobilize schools of all shapes and sizes.

Proxim's ORiNOCO Wi-Fi Access Points

	AP-700 Access Point	AP-4000 Access Point
Description	Enterprise-class access point with either 802.11a or 802.11b/g mode operation	Enterprise-class access point with pre-configured tri-mode (simultaneous 802.11a/b/g) operation
Positioning	For mid-size, full-scale Wi-Fi deployments	For comprehensive 2.4 and 5 GHz rogue AP detection and automatic support of all Wi-Fi client types delivering scalability for evolving networks

Proxim's Tsunami Broadband Wireless Solutions

	Tsunami QuickBridge	Tsunami Point-to-Point	Tsunami MP.11	Tsunami MP
Description	Wireless Ethernet solution with superior price performance and capacity of 11-60 Mbps	Wireless Ethernet bridges with carrier-class reliability and capacity of 20-860 Mbps	Economical multipoint system offering 11-54 Mbps capacity	High-bandwidth multipoint system offering 20-60 Mbps
Positioning	For organizations requiring quick campus-wide connectivity	For organizations demanding the highest reliability wireless links across campus, or across town	For connecting multiple buildings to a central site or for Internet connection	For enterprise data and Voice over IP applications

Proxim's ORiNOCO Wireless Client Adapters

From economical single standard PC cards to highly flexible 802.11a/b/g ComboCards, ORiNOCO offers a wide range of Wi-Fi certified PC cards, PCI cards and USB adapters.

For more information on Proxim's education solutions, go to www.proxim.com/solutions/mobile/education/



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