

Get *Un*Wired!
Is your school ready for the wireless revolution?
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I made an interesting discovery last month while I was killing time in the Dallas Fort Worth airport waiting for my connection back to California. I turned on my laptop to get a little work done and, having placed the laptop in sleep mode prior to beginning my trip, it started up with Netscape as the active application in the foreground. As I dragged my mouse across the screen, I accidentally clicked on a link. To my amazement Netscape loaded a new web page, one I had never visited before! I quickly looked around to see if there was anyone watching with a knowing grin or one of those Candid Camera guys ready to pounce on my silly gestures, and then I tried another link. Wham! A new web page loaded and I was surfing the Net in DFW on my laptop with no wires connected! After further investigation I found out that the airport was piloting (no pun intended) a new program to provide their travelers with wireless Internet connections while in the terminal. Because my last connection to the Net was via a wireless connection, my wireless card was already in my computer's PC slot and my TCP/IP settings were correctly set for a wireless connection. The two and a half hour layover went by very quickly as I surfed the Net and sent/received email from the convenience of just about anywhere in the airport terminal.

Programs such as NetDay and E-rate, and the hard work of many committed individuals have wired the majority of U.S. schools for a network connection to the Internet. But is it time to pull the wires out and install the latest option for a wireless network? Although in most situations it is still cheaper to install a wired network, wireless prices are coming down at the same rate that the connection speed increases. Wireless offers great flexibility for the end user because, just like in the DFW airport, your laptop can remain connected to the network even while you move from location to location. But one of the largest advantages of a wireless network is the ease of installation.

Most people have figured out that the expense and difficulty of installing a Local Area Network is the labor involved in pulling the wire from room to room and designing the network to meet Category V requirements. Because wireless networks are just that - wireless, there is little, if any need to install network cable throughout the facility. Installing a wireless network requires the use of base station(s) such as the Apple Airport (<http://www.apple.com/airport>), which sells for approximately \$299, works with both a Windows and Macintosh computer, and is industry standard IEEE 802.11 compliant. Every computer that will connect directly with the base station must also have a wireless PC network card (these cards are available for both Macintosh and Windows Machines), which can present some difficulty for legacy Macintosh computers. Any Macintosh with an available PCI slot (or laptop with a PCMCIA slot) or Windows computer with an ISA or PCI slot can accept a Lucent (<http://www.wavelan.com>) or Farallon SkyLINE (<http://www.farallon.com/products/wireless>) wireless network card. These cards cost between \$100 and \$150. Once these pieces of hardware are in place and configured there is no further hardware, software or wires necessary to purchase or install.

Is wireless right for your situation?

It may be more economical to install a wireless network. An Apple Airport will have an average coverage of 200 feet from each base station. Most schools' require a considerably larger connectivity area so additional base stations would be needed. If the school has legacy Macintosh computers then it might not be realistic to go wireless at this point because each computer needs a wireless network card as discussed above. There is an option of hooking a lab of computers to a hub or switch and then connecting that hub/switch directly to a base station via a network cable. This would decrease the need for wireless network cards but you would still be running wires from each

computer to one point in the room. Another factor to keep in mind is that these relatively inexpensive wireless systems ideally run at 11Mb, and today most networks are being installed with 100Mb Ethernet capability. This speed difference may be an issue with file sharing over the network but it would probably not affect Internet access because most schools have about a 1.5Mb connection to the Internet.

A key advantage of a wireless system is when you have difficult connections between rooms and buildings. Placing wires in trenches and/or drilling through asbestos filled walls can become very expensive. However distance and terrain is important to consider when looking at a wireless solution. Rather than purchasing additional Apple Airports, you could purchase a more powerful base station such as the Lucent Technologies Orinoco base station, but they are more expensive as well. One trick to increasing the distance of an Apple Airport is to install an external antenna. Although it is not documented (or warranted) by Apple, step-by-step instructions for installing an external antenna on an Apple Airport are available at <http://homepage.mac.com/hotapplepi/airport/#heureux>.

Needless to say, wireless networking is an obvious solution for the near future and many of today's situations. The technology is becoming simpler and less expensive and the applications are becoming more obvious. Voice, along with data, will soon be carried across wireless LANs and, as small, handheld personal Data Assistants become increasingly more affordable and useful, a wireless solution will be the only solution.