

Wireless poised to go mainstream

By Monte Hanson/TechLink Editor

Brad Rubin says corporate America is in the midst of a wireless revolution, although he warns that companies need to be more vigilant about security. He estimates that about 80 percent of local wireless networks aren't protected. Improvements in that area will come with time, if he has anything to do with it. Rubin, a Chicago native who has spent most of his career working at IBM and Imation, where he was the chief technology officer, launched his own business, Brad Rubin & Associates, last September. The business, which he runs from his home in Woodbury, specializes in computer security consulting, especially for wireless networks.

Operating without much of a marketing budget, he has managed to establish himself as something of a wireless guru, regularly being interviewed by national reporters who want to learn more about the technology. He teaches wireless networking seminars in the Twin Cities and was tapped to serve on an advisory board that is planning to incorporate wireless technology into the curriculum at White Bear Lake-based Century College. This fall, he will teach the first-ever computer security course at the University of Minnesota.

Rubin says wireless took a major step toward becoming mainstream technology last year, and interest will only grow as corporate executives discover how it can help increase productivity. TechLink recently sat down with Rubin to discuss the basics of wireless. The following is an edited version of our conversation with him.

TechLink: *Other than cell phones, what are some ways that businesses can use wireless technology?*

Rubin: One very common use is actually what I do in the house here, which is to have my high-speed Internet connection on my server PC in my office. Yet, I've got my laptop wirelessly enabled so that I can be anywhere in the house. And I can get access to my files. I can print from my PC and have it print remotely in my office and, probably more importantly, I can get high-speed Internet access anywhere so that I can browse the Web and do e-mail at any position in the house.

Translate that into the traditional company setting. You could be in conference rooms, pull up presentations without fumbling for cords, you could be in the cafeteria and have a meeting and draw up information from the corporate network, do Internet browsing, do e-mail. So the big advantage is being mobile in the traditional corporate setting.

There are lots of other specialized wireless applications. Things like a forklift truck constantly roving around the factory or warehouse floor and having orders wirelessly fed to it. It's very popular in medical settings, where doctors can carry around Palm Pilots or pocket PCs that let them write prescriptions or look at medical reports. So, in just about any industry, there's some specific productivity improvement you could probably see.

TechLink: *Are there any industries that are leading the way in using wireless technology?*



Woodbury wireless networking consultant Brad Rubin says interest in wireless technology will grow as corporate executives discover ways that it can help improve employee productivity. (TechLink photo by Bill Klotz)

Rubin: The ones where you have workers who need to be mobile, who need to be in different spots, especially if they are engaging with customers. If you can improve the productivity of those workers, like a doctor, then you can make a pretty good case to justify improvement in productivity versus the cost of deploying wireless.

I should also mention that universities are a big market. A lot of universities are giving students mobile access to do homework, to look up information from anywhere on campus and to be able to carry mobiles from classroom to classroom. As a matter of fact, one of the pioneers was Mankato State. The University of Minnesota and St. Thomas also have wireless deployed.

There are other instances where it would be less important, such as the law profession, where lawyers mostly meet in their offices, mostly meet with clients in offices. Then the justification drops a little bit because they could just as well serve the clients with a wired network. So to look for specific industries that would benefit, look for how mobile the workers are and look for the productivity gains they would have with computer access to a wireless network.

TechLink: *What are some of the other advantages?*

Rubin: Beyond mobility, the advantages recently with wireless are ease of use. It's very easy to set up wireless networks, for the most part. But it's a little tougher if you want to make them secure. But initially to get the connection, it's very easy, especially with Windows XP. It really has first-class support for wireless networking. So you can literally plug in a wireless network card, and in some cases they have zero configuration, meaning you don't have to do anything and you're connected to your corporate network. It's not the most secure method, but the ease of use has improved tremendously.

Also, the data rates are pretty good. You can stream audio and video. So another application that I like to use is Internet radio, where you can pick any radio station in the country that's broadcasting on the Internet and the data rates are almost fast enough that you can carry the PC around like a radio and get broadcasts. And that also works for video, so that you can get streaming video as well. So improvements in data rates, ease of use and mobility ... those have really come together, along with the standardization. So now you can apply parts and pieces from various manufacturers and put them together.

TechLink: *I'm sure there are some disadvantages as well.*

Rubin: In terms of disadvantages, the big one is security. From a business point of view, manufacturers like to reduce the return rates on the products. If they're too complex, people are going to return the products, especially at the retail level. Therefore, most of the products come without being security enabled.

So the user actually has to take extra steps to secure the wireless network. If that isn't done, then that opens your computer system to a number of different attacks, everything from eavesdropping — all the e-mail, Web browsing, communication, reading, writing, disk files from a corporate network — to being able to plant what are called Trojan programs, which are programs that will carry out an attack at some later date on a third party.

So one of the major disadvantages right now is security. Wireless networks can be made to be secure, but it is a complex task. And most people, if you drove around town, we'd find that about 80 percent of the networks in this area are not protected, even in the most basic way. So that's the challenge.

While we're on the subject of security, there's a phenomenon called war driving, where people drive around with laptops and wireless and look for open networks — networks that do not have security enabled, that do not have encryption enabled — and post maps of open networks on the Internet. So you can go to the Internet and find maps of cities' wireless networks that have security exposures. And the people doing this are very difficult to detect, because it's just like listening to an FM radio. You can't prove somebody's listening to a radio station. And it's not clear

what the legalities are. Statutes haven't really caught up with the technology.

One of the things I demonstrate is the Pringles can antenna. You can build an antenna that can get signals from six blocks away. And then there are variations of that. You have the Folger's coffee can. Somebody mounted a parabolic antenna on a rotor on the sunroof of their car. Then they drive around and rotate the antenna around looking for a radio signal. And they have a GBS [global positioning system] so that they can log longitude and latitude so that you can go back and create these maps of where the signals are.

TechLink: *Who are the people doing this?*

Rubin: People with a lot of spare time.

TechLink: *What about speed ... in terms of access to the Internet, is wireless slower than wired access?*

Rubin: In terms of data rate, it's about 11 megabytes per second; 11 million bits every second can go across the wireless network. The original Ethernet standard was 10 megabytes per second. So it's on about a par with the older standard. The wire networks, however, have taken a leap to 100, and wireless just took a leap halfway. They are at about 55 megabytes per second at the next generation. The current generation is called 802.11b, and that has a rate of 11 megabytes per second. The new generations coming out are called 802.11a, and it's five times the data rate, 55 megabytes per second. There's also another standard coming up called 802.11g, which also has that same 55 number for its data rate. But it has some other differences.

TechLink: *At the wireless industry's recent show in Orlando, one analyst predicted that 2002 would be the year that wireless usage becomes ubiquitous. Would you agree with that?*

Rubin: I think 2001 was the big year, and I can show you some of the market statistics. In terms of revenue for the wireless networking market, 2001 showed \$1.2 billion in revenue. If you look at some of the growth rates — say, last year's third quarter compared with the third quarter of 2000 — you get a growth rate of 74 percent in revenue. So you get a pretty healthy growth rate from quarter to quarter.

And then if you look at just the recent quarters — quarter three of 2001 to quarter four of 2001 — you get a 21 percent growth rate, \$310 million to \$363 million.

A couple of other factors: The prices have really come down on networking hardware. You can get a networking card for \$60 to \$70 at the retail level for a consumer-grade product. So the equipment cost has really plummeted, and that's really caused a surge in wireless purchasing. Plus, with the new standards coming out at four to five times the speed this year, that's another reason to be optimistic about wireless. So I think the big year was 2001 in terms of launch. There's just a huge interest in wireless technology.

TechLink: *What percentage of companies right now would you guess are using wireless technology?*

Rubin: I don't have all the statistics. But I can tell you informally from driving around and seeing where wireless is deployed, most midsized companies have some kind of wireless installation. For larger companies, it tends to be a bigger deal to roll it out because now you have to figure out what employees are going to use wireless, which ones are you going to be setting the standards in terms of security, putting the rest of the security infrastructure in place, making sure you don't jeopardize the investment you made in security for the rest of the corporation.

So it has to be a slow rollout for the very large companies. Midsized businesses, especially ones that are mobile, can deploy it pretty readily. A lot of hospitals, a lot of health-care facilities, have wireless in place. At the very small end, it usually involves enabling one or two people in wireless just to make it more convenient. For the investment of \$500, you can get that kind of setup. So you tend to see it at the low end for now.

TechLink: *Let's say you were a company just starting out ... would it be cheaper to install a wired system?*

Rubin: If you're looking at the cost of putting in new cabling or the cost of retrofitting it in an existing building to add cable, it almost always pays to go wireless, just from the cost of installation, especially given the plummeting equipment costs. And the nice thing about wireless, if the technology changes 10 years down the road, you're not looking at pulling old wiring out or upgrading wiring in the walls. You're updating equipment that's out in the open. In terms of planning for future technology and less disruption in the long run, wireless is a good choice for that.

TechLink: *If a company already has a wired system, would it make sense to switch over at this point or would it be better off to stick with its current wired technology?*

Rubin: I think you have to look at whether the employees will have enough productivity gain from wireless to justify the equipment investment and the service investment, to maintain it and administer it. If somebody's just sitting at a desk and there's already a wired network port and they don't get a productivity gain from being mobility-enabled, then it would make sense to stick with the wired.

To say that wireless will completely replace wired, I don't think that will ever happen because there are applications that can be done just as cheaply, if not cheaper, with wired, providing you don't need that mobility.

TechLink: *So would it be reasonable to think that wireless will be common technology in many offices within the next five or 10 years?*

Rubin: I believe so, especially if you look at the trends in laptops. My Dell laptop actually has a wireless antenna built in. So if I had a little different wireless card, you could tuck it inside and not have anything exposed. Apples come standard with wireless. The iBooks come standard with wireless. The capability is becoming more and more prevalent.