reetings and Salutations

Need a term defined or have an idea for a column? Email me at
aaron@applewizards.net or visit the Special Area at the Apple Wizards website by
pointing your faithful and trusty browser here:
http://applewizards.net/special/term.shtml .

Hype

Everybody with a pulse (and some without) have heard about the iBook.
Apple says it best when they say "Get Unwired." It was cool to have tons of
cords a couple of months ago, but cords are getting old-fashioned fast
(unless of course it's Firewire, in which case it's cool). The iBook brings a
technology referred to as wireless Ethernet to mainstream consumer use.

Wireless Ethernet is basically regular Ethernet minus the spaghetti-like
cables. There are two main ways of transferring data between two different
points without wires: LASER and radio waves. LASER works well only
between stationary objects, and wouldn't be practical with laptops. Radio
waves don't need line of sight, and are therefore excellent for use in mobile
computing objects like the iBook.

he AirPort

What exactly is an AirPort network? An AirPort network is
nothing

more than a regular Ethernet network (again, without cables). The various nodes on the network send out packets of data via radio waves rather than electrical pulses over a cable. Click the icon above and left to check out Apple's official AirPort site!

The AirPort Base Station is nothing more than a router with an antenna to broadcast signals, Ethernet and modem ports, and a really cool enclosure. The two ports support two network speeds, of course: the Ethernet port handles 10/100BaseT, while the other handles a phone line and connects to the AirPort's internal 56k modem. For an explanation of a router, see this month's reader question.

iBooks can even circumvent the AirPort and talk directly to each other. Suppose an iBook sends out a couple packets of data that are intended to go to another iBook within range. An AirPort Base Station is within range and it 'hears' the packets transmitted by the first iBook. It determines that the packets of data were not intended for it, so it does nothing.

Now lets say that an iBook sends out a few packets of data that are intended to go somewhere on the Internet. An AirPort Base Station within range picks up the signal and examines the packets, then determines that they are intended for the Internet. The Base Station then looks at its internal setup to check to see if it should send the data via the Ethernet port or the 56K modem (this is pretty easy for it to do, of course!).

The iBook has built-in antenna and an AirPort card to transmit data. The range of the signals is about 150 feet. Because it's radio waves, this 150-foot limit shouldn't vary much in various settings. It should work through walls (in a house) or wide open spaces. Your mileage, of course, will vary, but probably only slightly.

preading it around

AirPort networks transfer data using Digital Sequence Spread Spectrum at the rate of 11 Mbps (megabits per second) which is just a bit faster than a 10BaseT Ethernet network (10 Mbps). The AirPort Base Stations can be set up to require passwords for a connection so that anyone who just has an iBook (or IEEE 802.11 compatible device) can not pilfer your network

services. An added bonus is that the wireless signals are encrypted with 40-bit encryption. Unless you have some serious computer crunching power available to you, there won't been any iSniff AirPort packet-sniffing software.

Trend

What is the best part of AirPort networks? They are based on the IEEE 802.11 standard for wireless networking. This means that all third-party wireless products that conform to the standard will work together. Before Apple announced the AirPort, wireless Ethernet was a luxury only the filthy rich people could afford, but now the price has been brought down to a truly affordable level. The popularity of wireless networking is going to explode.

irect Sequence Spread Spectrum (DSSS): Okay, this is more than just one word, so let's break it down. Spread Spectrum denotes that a signal is spread over a broad range of frequencies when it is transmitted. Spread Spectrum is inherently inefficient because it uses a much larger amount of bandwidth than required. It's basically just redundancy.

To spread the signal over a better portion of the frequency spectrum, the signal is digitized and multiplied by a pseudo-noise spreading (PN) sequence.

Basically, a signal is being spread over a large frequency spectrum, and to spread it out, the signal is being multiplied by a PN (which is usually random). To decode the signal it must then be divided by the PN to narrow the frequency spectrum back to its original state. Sounds like fun. Count me in!

Q. What is a router?

A. A router is basically a device that is hooked up to two or more
networks and which receives packets of data and forwards them onward towards their destination. Information in the packet itself is examined and tells the router where to send the packet next. By the time you download an image from the Internet, for example, it is likely that well over 10 routers came into play along the way.

URLs From this Article:
http://applewizards.net/special/term.shtml
http://www.apple.com/airport/

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