



Wired or Wireless Home Networking

What works, and when it works

When it comes to home networking there are many options for connecting computers together in order for them to talk to each other and share information or services. The question is begging to be answered on which technology should I use to transfer my data. **Wireless or Wired?**

A Wireless World?

Well maybe, it depends on your situation. Let's face it the world will never be wireless, we still need wire along the way somewhere. However, certain circumstances may negate a wired option. Lets look at when wireless is most appropriate and talk about the different protocols available for the Home user.

1. An existing home - where the walls are sealed and you have computers on various floors. The option for wireless computer networking needs to be weighed against the actual cost of the wireless devices and the speed in which the information will flow, against calling professionals to install a wired solution that will be faster and cost less than their wireless counterparts. A professional can usually give you the option of both solutions and be able to configure these devices for Internet Sharing and Firewall Protection.
2. An existing condominium - where walls are finished, but conduit is layered within the suite. A wireless option would be preferred, because of the same floor open concept of most condos. However, concrete slab walls and thin drywall with metal studs can wreak havoc on *wireless receivers* and various access points must be tested within the suite You wouldn't want to move your furniture or computer around just to be able to achieve a wireless connection. The frequency and spectrum hopping of these wireless devices can also be interfered with if multiple persons in the same given area have the same device. Some devices have 8 different channels. In addition, some current technology devices like the microwave and wireless phones in the 2.4 GHZ range may cause interference.
3. Lounging Around - probably the most practical use of wireless is when you are lounging around outside in your backyard and have the need to surf. A wireless option is the most obvious. However, certain wireless devices do have a range limit on indoor and outdoor use, please read the specifications of the wireless transceiver and receiver before purchasing each device.

Ok, so now you think wireless is the way to go. Lets look at the wireless protocols and the caveats to be aware of.

802.11a and 802.11b

What's the Difference?

Well, when you purchase these devices these numbers are called protocols or communication specifications as to how these devices interface with each other. **Think English and French!** Sometimes when speaking English to a French person, you get "*non comprend pas.*" That is exactly what happens to these protocols **they cannot work with each other** (there is a new protocol under development called 802.11g which will be compatible with 802.11b, making the 802.11a standard obsolete before its time).

Frequency

The Spectrum that these protocols travel on are different, the 802.11a standard operates on a higher frequency of 5 GHZ, while the 802.11b operates at 2.4 GHZ (join the crowd). The 802.11a standard, because of its higher frequency allows it to encode data over many more smaller frequencies creating many channels. This is significant because it allows for more scalable data across it networks, in this instance 52 channels or carriers compared to 802.11b which has only 3.

Security

When the standards for 802.11x where created, believe it or not security was not on the top of the priority list. The beauty of the lack of security is that it is the same across the board of Wireless standards, they all contain security holes. The **WEP (wireless encryption protocol)** can be sniffed out by any hacker who happens to have a receiver in the same proximity range of your network. **Should you be concerned?** Yes, but lets remember when you surf the Internet and are secure pages revealing credit card information or other personal data, this information is encrypted. If you are communicating with your office via **VPN** (virtual private networks), then I would consult with your I.T. Department before you utilize a wireless device.

Data Transfer Rate

The most important factor when deciding upon a wireless device is the transfer rate. Each standard transfers information at different speeds and depending on where the access point or receiver is located the speed dissipates. The chart below shows how speed degrades from its source:

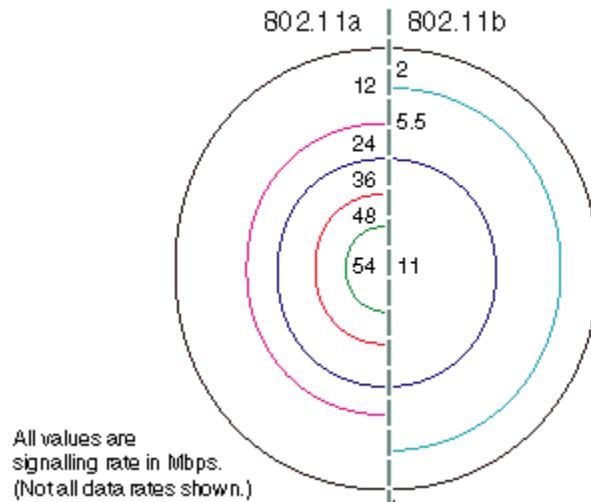


Chart from Proxim White Paper on 802.11a Sept. 2001

Final Review

So to review the difference between the two protocols, remember they are ***not compatible*** with each other, they operate in different frequency ranges 2.4 GHz (802.11b) and 5 (802.11a) GHz. The speed rate that they transfer data are different; 802.11a up to *54Mbps* compared to 802.11b *11Mbps* (theoretical speeds). Finally though 802.11b came first, 802.11a is the new standard which most people are adopting because of the higher transfer rates. However, with **802.11g** coming down the pipe over the next year or so, this standard will be able to achieve all that 802.11a can, while maintaining the compatibility of the 802.11b standards.



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