

Wireless Home Networks

SIR Area 2

Computers & Technology

Dean Steichen

March 2012

Why Any Home Network?

- Get access to all the Internet has to offer
(e.g. E-mail, websites, streaming video, etc.)
- Share your Internet Access with multiple devices
(e.g. Other computers, tablets, smartphones, etc.)
- Share external devices like printers or scanners
- Make sharing or copying files between computers easier
- Stream content to network enabled TVs (Ethernet)
- Others

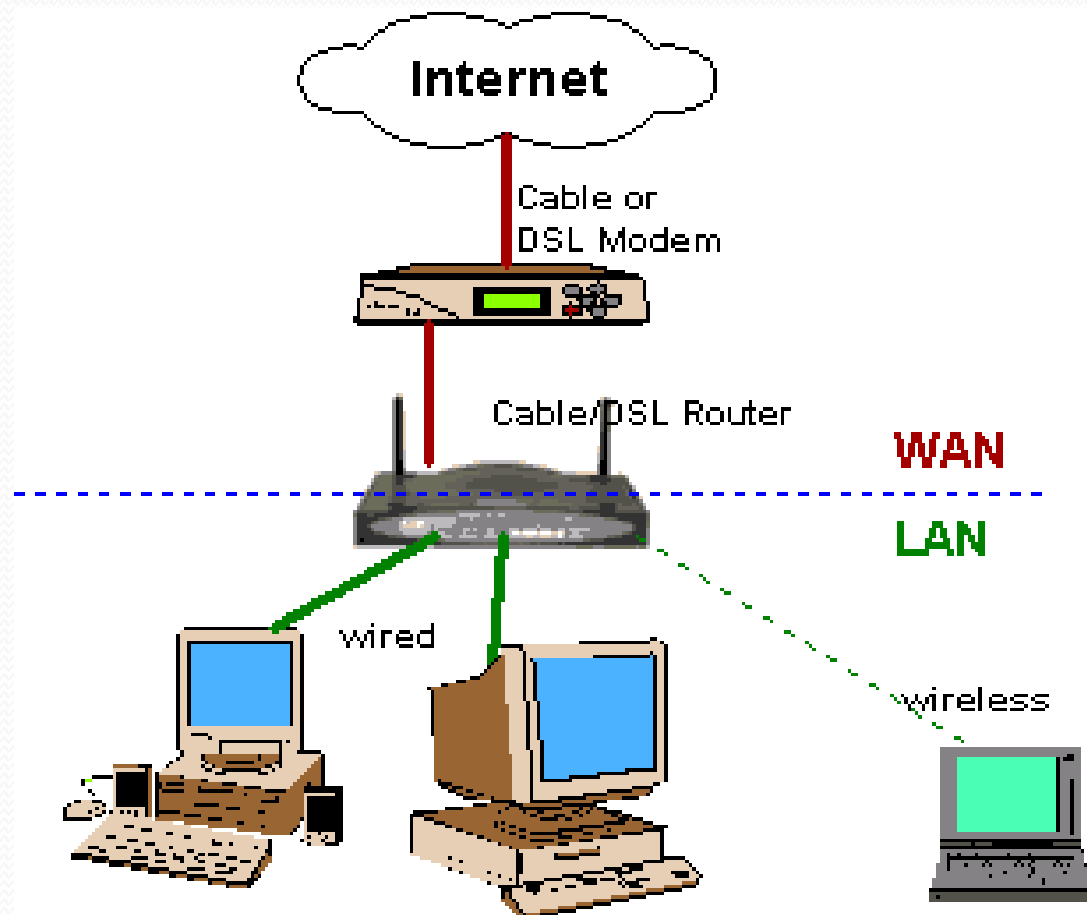
Wired, Wireless or Both?

- Why have a wired network?
 - Answer: Do all the things on the previous slide.
- Why have a wireless network?
 - Answer: Do many of the things wirelessly.
- Why have both?
 - Answer: Use the best solution possible.

First a few questions.

- Who has a wireless home network?
- What type of encryption do you use?
 - You ARE using encryption, aren't you?
(WEP, WPA or WPA2)
- Why did you install it initially?
- What do you use it for now?
- Does it work well for you?
- What problems have you had?

Typical Wireless Network (Usually why you got it)



Secure Wireless Networks

- See my Nov. 2004 Presentation on A2CAT Website for an introduction to securing your Wireless network. It explains : How the router enables internet connection sharing (NAT, DHCP); Why you should enable encryption (Prevent unauthorized use of your internet access, computers and files); and outlines How to enable the encryption. (wpa or wpa2 are recommended)
- www.sir-web.org/computer/
- http://sir-web.org/computer/2004_presentations/nov_2004_presentation.pdf

What does a Wireless 4-Port Router Do For You?

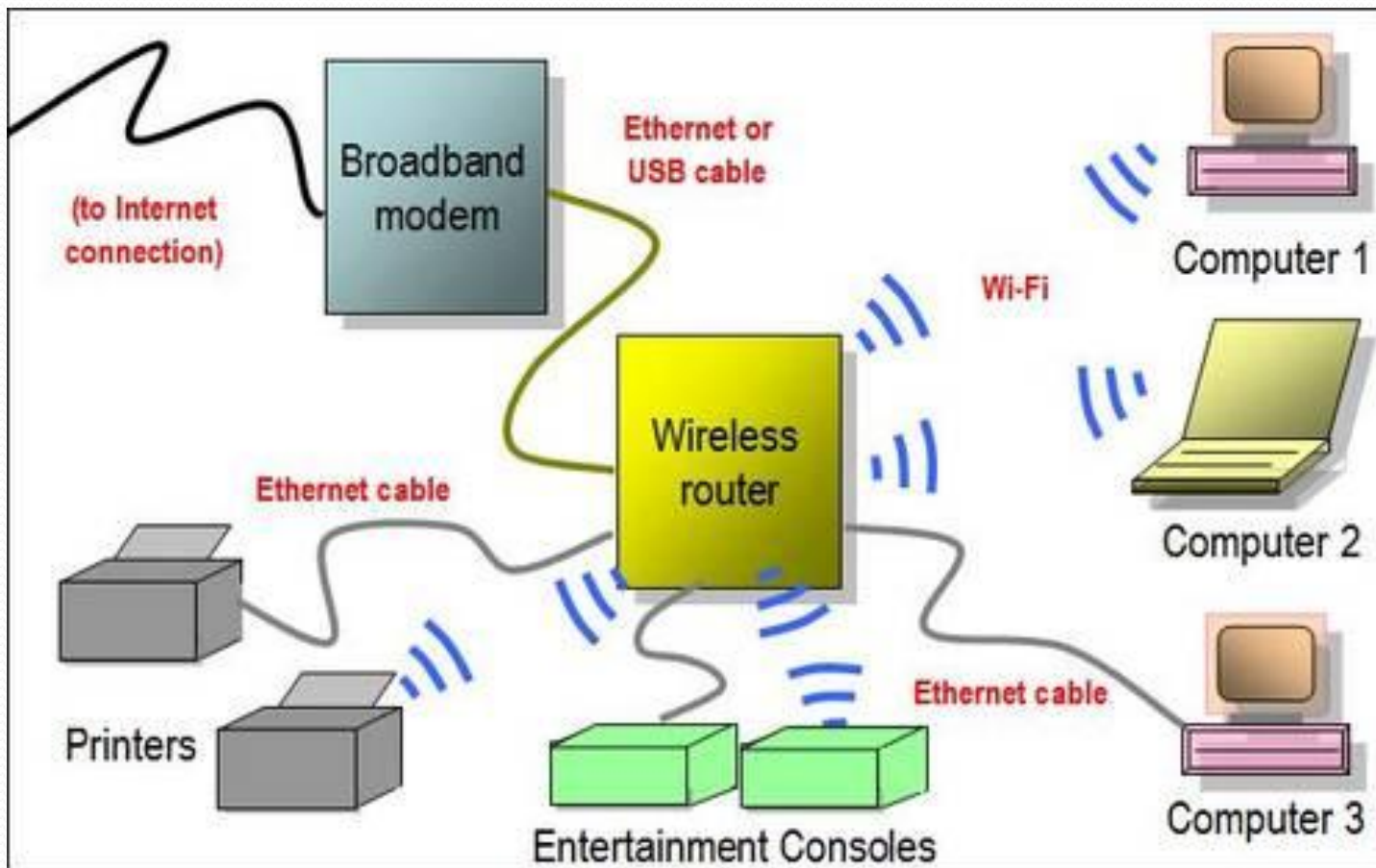
- Shares your internet connection across several computers and devices
- Allows you to connect to other computers and devices on your local network (LAN) to transfer files (photos, documents, music, etc.) between computers and to access Wireless devices like printers and cameras.
- Allows you to connect to the internet using Wi-Fi Tablets (e.g. KindleFire or iPad), Wi-Fi enabled SmartPhones, Wireless Internet Radios, etc.
- Allows you to stream video and audio to your laptops, tablets and TV (e.g. Netflix, Hulu Plus, Pandora, Amazon movies, etc.) using entertainment consoles like Blu-Ray Players, Xbox, PlayStation, Roku and even network ready TV's.
- AT&T U-Verse **WIRELESS TV** (TV without a coax connection) uses an Ethernet connected access point connected to your router and a wireless receiver.

What is Internet Streaming????

Watch movies, TV shows, TV series and Listen to music of all types on your computer, laptop, tablet or your TV over your internet connection.

Content is “streamed” in real-time and is not “downloaded” so there are no files to store on a DVR, TiVo or similar recording device. It is like watching “live” TV.

A little more advanced Network (How you may be using it now)



Other (Future?) wireless uses

- Home security
- Video Monitoring
- Appliances
- Thermostats
- Home and garden lighting
- Others

Wireless Router Brands

All Brands are inter-operable and adhere to the 802.11 Engineering standards.

Common Brands:

Linksys, D-Link, Netgear, Apple,
Asus, Belkin, Cisco Valet, Others

All wired and nearly all wireless routers are faster than your internet connection (typically 1.5 to 10 Mbps). Fast router transfer speeds (over 54 Mbps) are only important for file transfers (e.g. backups) or gaming.

Wireless Routers (Speed and Wireless Range)

•Type	Wireless Speed	Reliable Wireless Range	Wired Speed
• 802.11b	11 mbps	0 to ~ 80 ft	10-100 mbps
• 802.11g	54 –108 mbps	0 to ~ 120 ft	10-100 mbps
• 802.11n	300-1000 mbps	0 to ~ 160 ft	100 – 1000 mbps

- **Considerations:**

- **Reliable Wireless Range is my estimate and depends on your environment (walls, interference, floors, etc.)**
- **Wireless N (802.11n) is now the standard and is backward compatible to “G” or “B” devices**
- **Older laptops might only have Wireless G built-in adapters or even older ones may have Wireless B adapters**
- **USB Wireless N adapters can be used for better laptop range if you have a Wireless N Router**
- **Wireless Range can be extended using a Wireless Repeater device (sometimes called Range Extenders)**

Common Conflicts or Problems

- Outdated Firmware on Router
- Multiple Firewalls - Router and Software Firewall on PC (Norton, McAfee, Windows Firewall, etc.) which conflict.
- Cordless phones, baby monitors, microwave ovens, fluorescent lights, etc. as well as walls and floors between the Access Point (i.e. wireless router) and the device
- Encryption (e.g. WEP, WPA, WPA2) not always supported by all your devices

How to improve wireless connectivity

- Re-Locate Wireless Router --off floor, away from interference causing devices like fluorescent lights, TVs, baby monitors, cordless phones, etc.
- Change the Router's wireless Channel
- Install a wireless repeater or "range extender"
- Install a Powerline adapter system (not technically wireless)
- Update to a better Wireless N router with better range and/or Dual Band (2.4Ghz and 5Ghz)
- Use a signal boosting antenna

Links

- <http://www.pcmag.com/article2/0,2817,2347539,00.asp>
- <http://www.microsoft.com/athome/organization/wirelesssetup.aspx>
- <http://wireless-router-review.toptenreviews.com/premium-wireless-routers/>