

Wireless Routers

Hardware & Technology SIG

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What's a Wireless Router?

- Somewhat of a misnomer, a “wireless” router will accommodate wireless and wired connections
- If you have high speed access to the internet via either Suddenlink or Verizon you, connect to the ISP with a modem
- A Wireless Router is an appliance that connects to a modem, and
- Permits you to connect multiple computers to the Internet via either a wired (Ethernet) or a wireless adapter

Who Should Consider a Wireless Router?

- If you have more than one computers in your network,
- If you have 2 or more desktop computers who are not in the proximity of one another
- If you employ a laptop computer and would like the flexibility of being able to use it anywhere in your home, or
- If you have frequent guests (friends, children, grandbabies etc.) who travel with a laptop and are addicted to the Internet

Wireless Router Brands!

- In Sun City, the brands that we see most frequently are:
 - Air-Link
 - Belkin
 - D-Link,
 - Linksys (Cisco), and
 - NetGear
- The most predominant brands are Linksys and NetGear

Costs of Wireless Routers

- Wireless routers vary in price according to:
 - “Standard” 802.11 a, b, g, or n (purchase g or n)
 - Range
 - Speed
 - “Functionality”
 - Amount of vendor advertizing
- The cost for a wireless router, adequate for home network , is in a range of \$30 to \$100

Wireless Connection Speeds

- A wireless connection to a router will be slower than a wired (Ethernet) connection
- The hype is that future wireless connections speeds will equal or exceed Ethernet connects
- However... it's hype, wireless connections are slower than wire connections

Installation

- Routers come with “installation” disks,
- The theory is put the disk in and follow the prompts, however Murphy’s Law applies to routers
 - Sometimes an installation disk works,
 - Other times it does not
- If the installation disk does not work, a manual installation is required (the process is essentially the same)
- A manual install is not that difficult and we’ll walk through the basics

Supplies

Modem

- Modem
- High speed connection
- Power block
- 1 Ethernet cable, Modem to WAN port on router

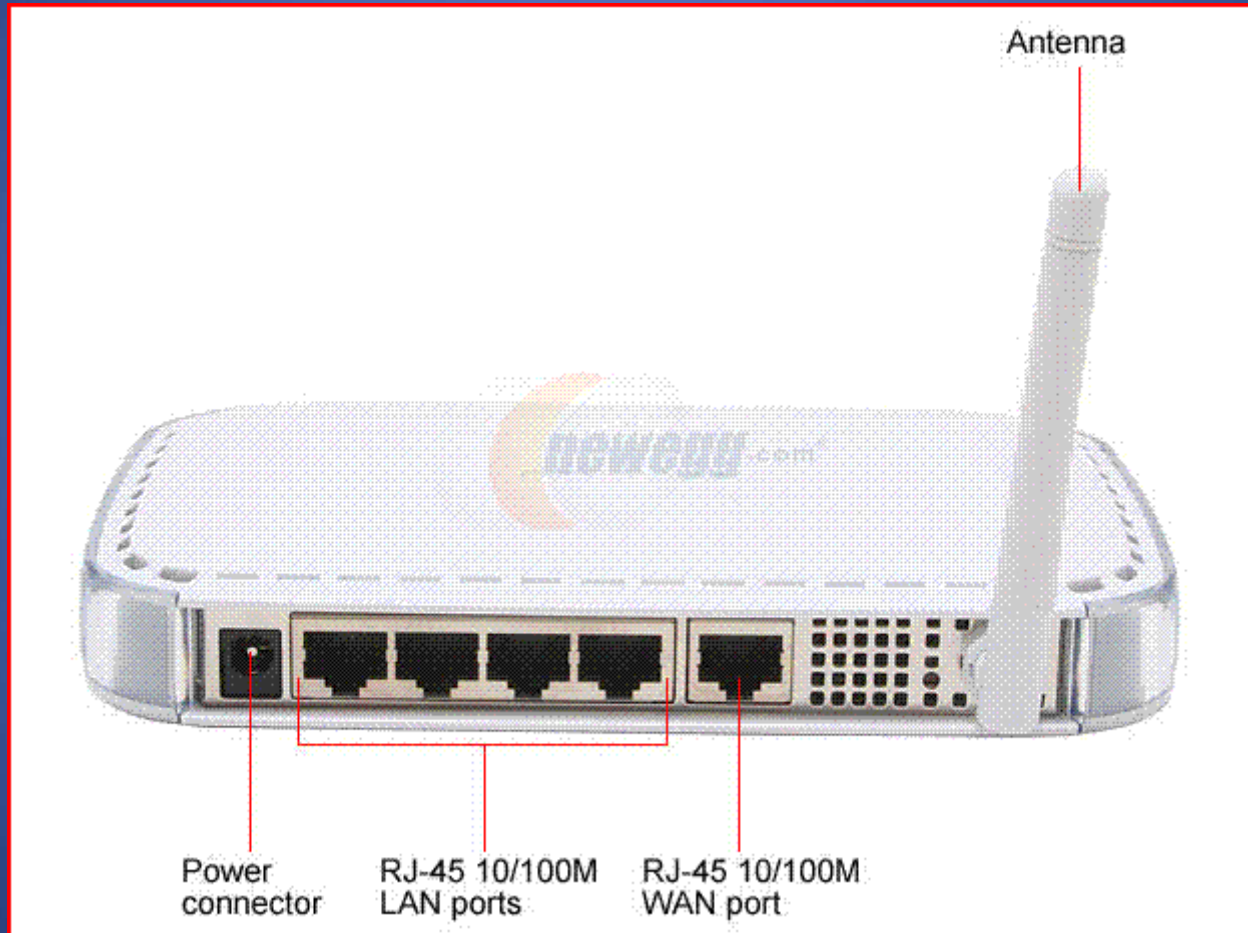
Wireless Router

- Wireless router
- Power block
- 2nd Ethernet cable to connect each wired computer to a LAN port on the router
- Install disk, use or not

Typical Modem



Router Connections



Where to Install the Router

- A wireless router should be installed on the desktop computer that is connected to either your cable or DSL modem
- Insert the installation disk and follow the prompts
- The purpose of the prompts are to ensure
 - That you understand which cables go where
 - How to power down and up
 - Connection recognition, and
 - Wireless setup

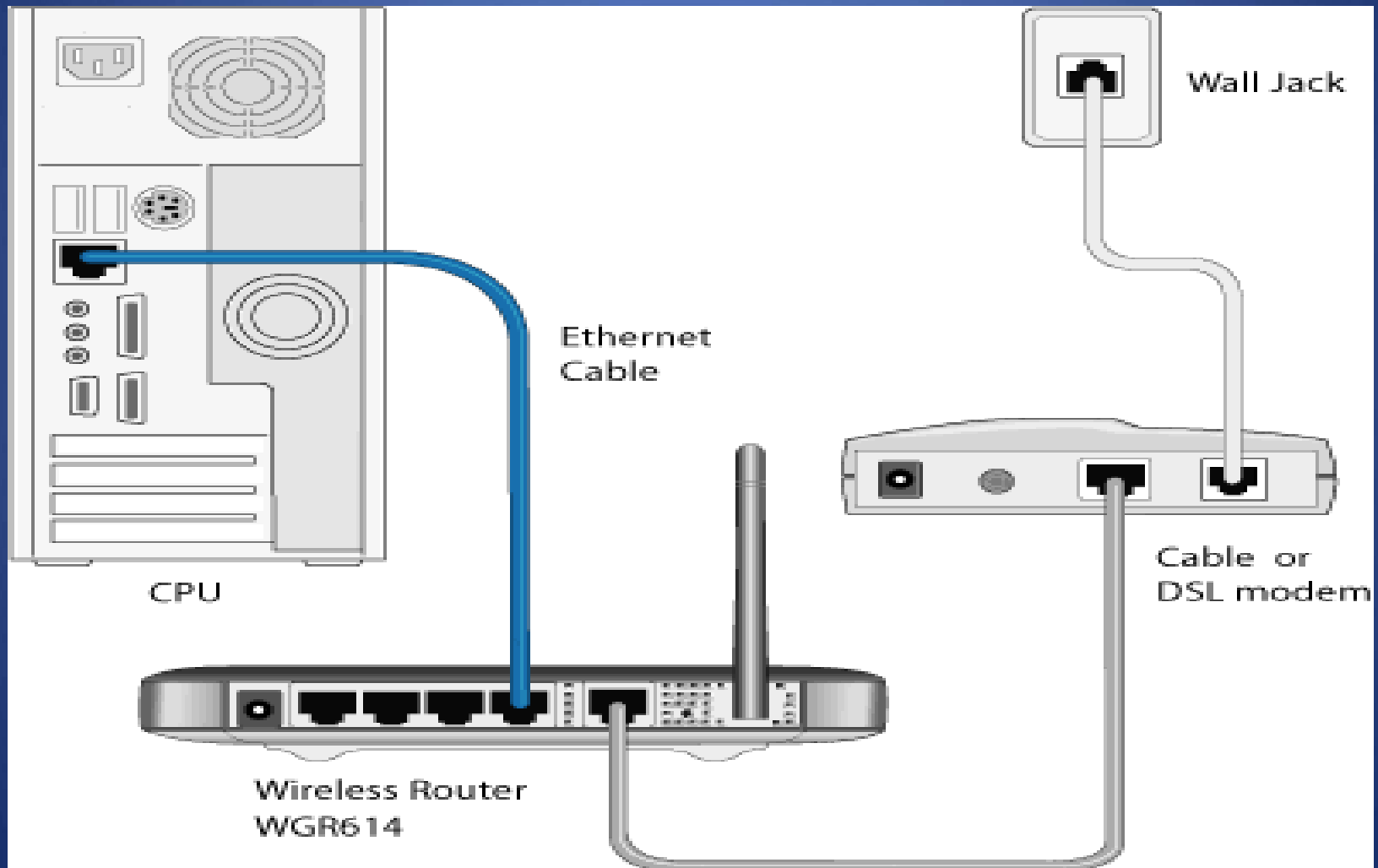
Basic Router Setup

- Turn on your desktop computer
- Power off the cable or DSL modem
- Disconnect the Ethernet cable from the computer (leave other end connected to modem)
- Plug the Ethernet cable that you removed from the computer into the WAN port on the back of the router
- Plug one end of a 2nd Ethernet cable into one of the LAN ports on the router
- Plug the other end of the 2nd Ethernet cable into the LAN port on the back of your computer
- Do not connect the power to the modem or router, yet!

Powering Up

- Plug the power into the modem, first,
- The modem lights will begin to blink, be patient, wait until they stabilize (1 -2 minutes)
- Plug in the power to the router, wait until the blinking lights stabilize
- If all goes well, the router will be recognized as your “Default Gateway”
- You can check by going to the Command prompt and opposite C:\ (type) ipconfig >
- If opposite Default Gateway, you see 192.168.X.X you have an Internet connection and all is well
- Write down the IP address opposite “Default Gateway”

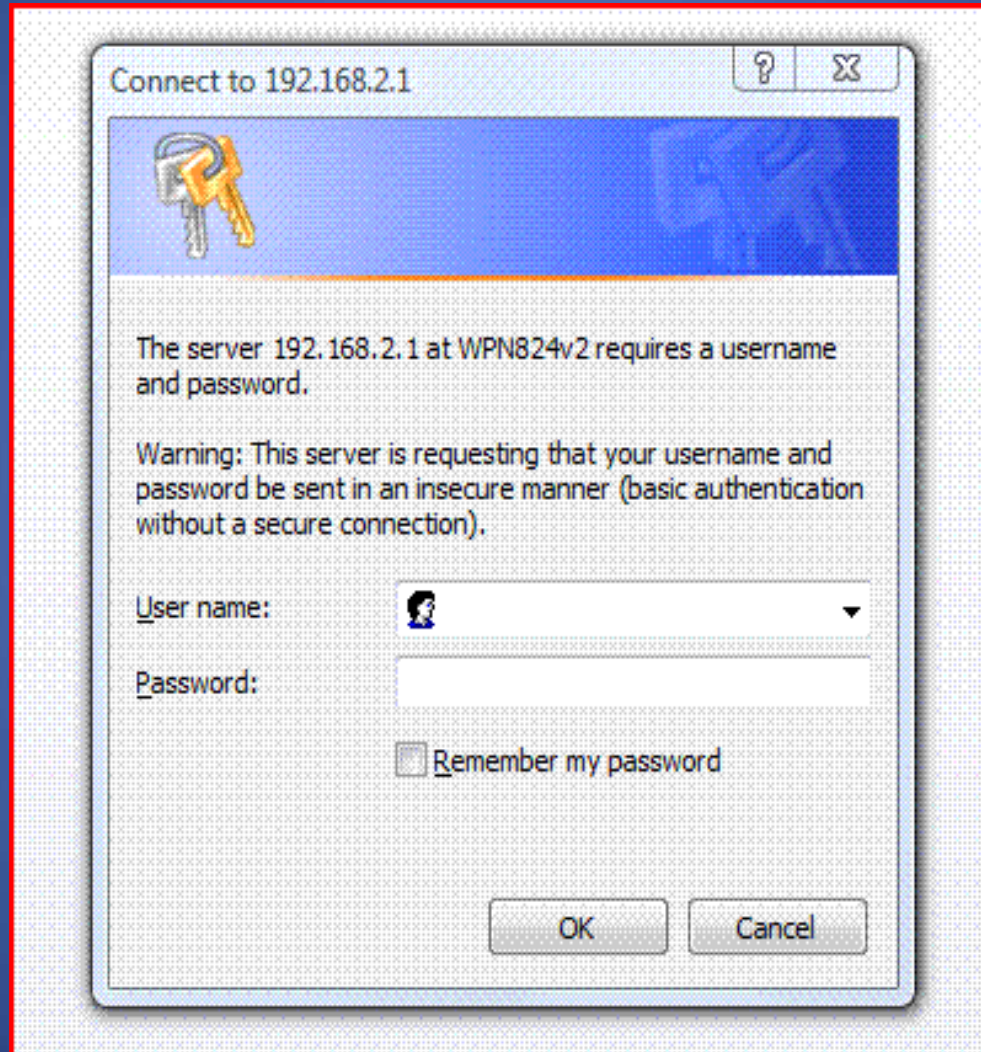
Configuration



Your Router is a Mini Computer

- To access the router administrative console:
- Open Internet Explorer,
- In the address bar type the IP address of your router, typically 192.168.1.1 > Enter,
- When the router console boots you will be presented with a login screen,
- Routers have “default” User Names and Passwords, people familiar with routers know what they are, default logins should be changed,
- Typically the User name is admin (not case sensitive)
- Typically the password is either, Password, password, admin, Admin or none, try them all, one will work, (passwords are case sensitive)

Router Login Screen



Router Console Menu

- **Setup Wizard**

- **Setup**

- **Basic Settings**
- **Wireless Settings**

- **Content Filtering**

- **Logs**
- **Block Sites**
- **Block Services**
- **Security Service**
- **Parental Controls**
- **Schedule**
- **E-mail**

- **Maintenance**

- **Router Status**
- **Attached Devices**
- **Backup Settings**
- **Set Password**
- **Router Upgrade**

- **Advanced**

- **Wireless Settings**
- **Port Forwarding / Port Triggering**
- **WAN Setup**
- **LAN IP Setup**
- **Dynamic DNS**
- **Static Routes**
- **Remote Management**
- **UPnP**

Basic Router Settings

Basic Settings

Does Your Internet Connection Require A Login?

- Yes
 No

Account Name (If Required)

WPN824

Domain Name (If Required)

Internet IP Address

- Get Dynamically From ISP
 Use Static IP Address

IP Address

74 . 192 . 158 . 165

IP Subnet Mask

255 . 255 . 255 . 0

Gateway IP Address

74 . 192 . 158 . 1

Domain Name Server (DNS) Address

- Get Automatically From ISP
 Use These DNS Servers

Primary DNS

0 . 0 . 0 . 0

Secondary DNS

. . . .

Router MAC Address

- Use Default Address
 Use Computer MAC Address
 Use This MAC Address

00:1E:2A:0C:59:EB

Apply Cancel Test

4 Things to Do

1. You should either right click on the router home page and save it as a Favorite or create a Shortcut, to facilitate getting back to the router,
2. Routers have default names e.g. Linksys, NetGear, etc which should be changed so that your proprietary wireless will be easily differentiated from others in the neighborhood (no personal names)
3. Wireless networks are unsecure by default (no security), which means that anyone can tap into your network, unless you “secure” your network
4. The router default password should be changed

Name Your Wireless Network

Wireless Settings

Wireless Network

Name (SSID):

Region:

Channel:

Mode:

Security Options

None

WEP

WPA-PSK [TKIP]

WPA2-PSK [AES]

WPA-PSK [TKIP] + WPA2-PSK [AES]

Security Encryption (WEP)

Authentication Type:

Encryption Strength:

Security Encryption (WEP) Key

Passphrase:

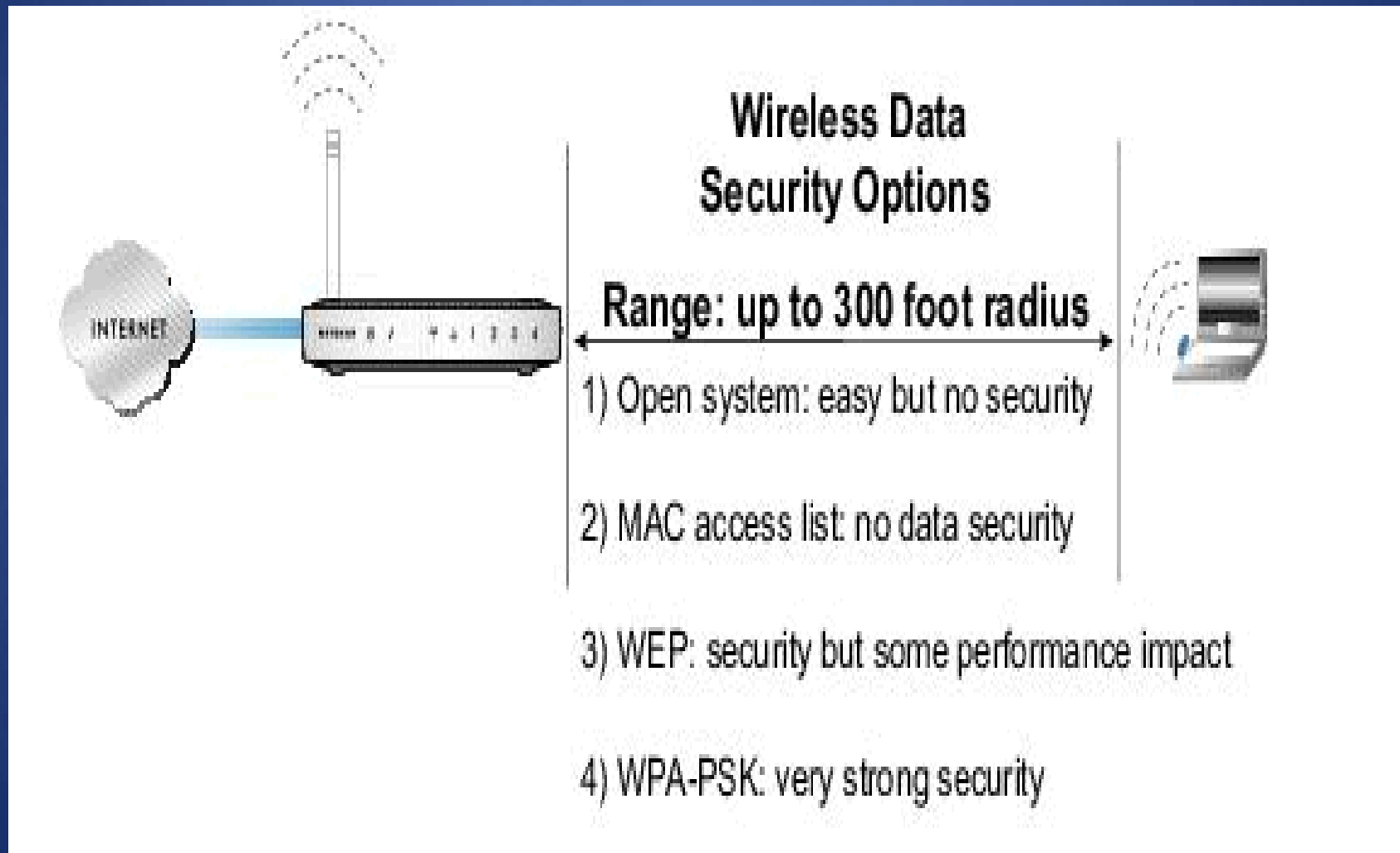
Key 1:

Key 2:

Key 3:

Key 4:

Wireless Security Options



Wireless Security

- I believe that all wireless networks should be secured
- WEP is a lower level of security, 64 bit and uses a 10 digit hexadecimal key (0-9, A-F), 128 bit WEP uses a longer key,
- WPA security uses a “Passphrase” as a key and is considered to be more secure than WEP,
- The message here is that all private wireless networks should be secured with either WEP or WPA,
- Once the key or passphrase is generated, it will required for other computers to logon your network,
- Finally, when you make any changes on a router, the page on which the change was made should be “saved/applied”.

WEP Security & Keys

Wireless Settings

Wireless Network

Name (SSID):

Region:

Channel:

Mode:

Security Options

- None
- WEP
- WPA-PSK [TKIP]
- WPA2-PSK [AES]
- WPA-PSK [TKIP] + WPA2-PSK [AES]

Security Encryption (WEP)

Authentication Type:

Encryption Strength:

Security Encryption (WEP) Key

Passphrase:

Key 1:

Key 2:

Key 3:

Key 4:

Changing Router Password

Set Password

Old Password

New Password

Repeat New Password

Apply

Cancel

What Can Go Wrong?

- Wireless, routers and modems can be (are!) fickle and Murphy's Law applies
- Typically the problems are related to:
 - compatibility issues between the modem and router
 - In ability of the router to get an IP address from the DNS of the ISP
 - Powering up in the “wrong” sequence and /or being impatient , when powering up

Accessing Your Wireless Network

- To access a wireless network requires a wireless adapter
- Most “modern” laptop computers come with a wireless adapter or an adapter can be added
- Wireless adapters can easily be added to desktop computers
- If a computer has a wireless adapter
 - Right click on the wireless adapter icon in the tray, bottom right, select available networks
 - Click on the network you want to access, and
 - If the network is secure you will be prompted for the “security key”, enter and click connect

Conclusion

- Adding a wireless component to your network can,
 - Add flexibility for how and where a computer is used in the home,
 - Leverage your high speed connection by letting multiple Users use an existing connection,
 - Provides a nice option for visitors to your home
- Finally, if you pursue an wireless installation on your own, and experience a hiccup, don't call your ISP, call a Mentor

Thank You For your Interest!

If you have questions or problems,
please send me an email:

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