

# Wireless Basics & Wireless Printers

Palm Creek Computer Club ~ March 2015



# What is a Wireless Network?

- A wireless network is commonly formed with a device called a wireless router or access point that sends and receives signals similar to a cordless phone base station. Other wireless devices on the network, like computers and printers, are like the cordless handsets. All communication on the wireless network runs through the wireless router, allowing the connected devices to talk to each other.
- This type of network is also called an "infrastructure network".
- If you have a wireless router, you have a wireless network.



# What is a Wireless Network?

(cont'd)

- Most wireless routers can also connect to wired devices such as computers and printers, using a special cable called an Ethernet cable. This wired connection is known as an Ethernet connection.
- All devices that connect to your wireless router, whether wirelessly or through an Ethernet cable, have access to the same network. These devices can communicate with each other regardless of how they connect to the network.
- For example, a desktop computer connected by Ethernet can easily print to a wireless printer as long as they are connected to the same wireless router.



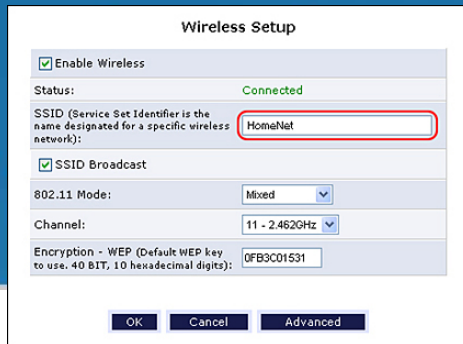
# What is an IP address?

- An IP address is a series of numbers by which computers, printers and other devices on a network are known.
- An IP address is usually issued by the local wireless router (network) from its DHCP service. A device is given an IP address that is similar to the wireless router's IP address.
- For example, if the wireless router's IP address is 192.168.1.1, a printer may be given an IP address of 192.168.1.5.



# What is a MAC address?

- MAC stands for Media Access Control.
- Every device capable of networking (computers, printers routers, etc.) is given a unique physical serial number by its manufacturer for use in network communication.

A screenshot of a 'Wireless Setup' dialog box. It has a title bar 'Wireless Setup'. Inside, there's a section 'Enable Wireless' with a checked checkbox. Below it, 'Status:' is 'Connected'. Then 'SSID (Service Set Identifier is the name designated for a specific wireless network):' is followed by a text box containing 'HomeNet', which is highlighted with a red rectangle. Below that is 'SSID Broadcast' with a checked checkbox. Then '802.11 Mode:' is 'Mixed' with a dropdown arrow. 'Channel:' is '11 - 2.462GHz' with a dropdown arrow. 'Encryption - WEP (Default WEP key to use, 40 BIT, 10 hexadecimal digits):' is '0FB3C01531'. At the bottom are 'OK', 'Cancel', and 'Advanced' buttons.

Wireless Setup

☒ Enable Wireless

Status: Connected

SSID (Service Set Identifier is the name designated for a specific wireless network): HomeNet

☒ SSID Broadcast

802.11 Mode: Mixed

Channel: 11 - 2.462GHz

Encryption - WEP (Default WEP key to use, 40 BIT, 10 hexadecimal digits): 0FB3C01531

OK Cancel Advanced

# What is a network name, or SSID?

- To communicate over a wireless network, each wireless device must know the name of the wireless network (also referred to as an SSID or Service Set Identifier) and any security settings the network uses.
- This information must be programmed into each wireless network device. There may be several wireless networks in your neighborhood, and your device needs to know which one is yours.
- This is why it is highly recommended that you set your wireless network name to something unique.



# What is Encryption?

- Knowing the name of the network you want to connect to is usually not enough. Most wireless networks are encrypted using a password.
- When encryption is used, each device on the wireless network must know the password in order to decode the information and use the network. This is what prevents unwelcome outsiders from accessing your wireless network.



# What is Encryption? (cont'd)

- The most common types of encryption are WEP (Wired Equivalent Privacy) and WPA (Wi-Fi Protected Access).
- If your wireless network uses one of these, then your device will need to know which one and the password (also known as the WEP key or WPA passphrase) in order to join your network.
- If your network does not use an encryption password, your device will only need to know the name of your network. However, anyone can then access the network, including unwanted outsiders, who can also watch everything that happens on your network.





# What is a WEP key or WPA Passphrase?

- A WEP key is a password used by a wireless network to code and decode any wireless network communication.
- A WPA passphrase works very much like a WEP key except that it is significantly more secure than WEP. There are two types of encryption methods associated with WPA: TKIP and AES. AES is the newest and most secure method and should always be your first choice if it's available.
- Any device that wants to communicate over a wireless network needs to know the wireless network name (SSID) and the encryption key or passphrase (if any).



# What is a Wireless Printer?

- A wireless printer connects to your wireless network and allows all computers connected to that network to use the printer.
- Because the connection is wireless, you can place the printer in any convenient location in your home and also avoid cable clutter.



# What is a Wireless Router?

- A wireless router is networking hardware that allows both wired and wireless devices to connect to a network.
- When connected to a wireless router, devices such as computers, printers, and other Wi-Fi enabled electronics can share one Internet connection AND connect to each other.
- Connections can be made to the wireless router through a wireless connection or a wired connection using an Ethernet cable.



# Why a Wireless Printer?

- Perhaps the best benefit of a wireless printer is that it doesn't have to be placed next to a computer or wireless router, but can be placed anywhere in your home where you have a power outlet available.
- Another benefit is that any of the computers connected to your network by either a wired or wireless connection can use the printer, after you have installed the printer software on each computer.



# Is Wireless Printing Secure?

- Your printer will use the same wireless security methods as the wireless computers on your wireless network, and is no less secure.
- Also, the presence of your wireless printer on the network does not make the network less secure.



# How does a Wireless Printer Connect to my Network?

- A wireless printer connects to your wireless network like other wireless devices you might have connected, such as computers.
- The wireless technology used is called 802.11.
- If you use encryption, all wireless devices that connect to your wireless network must know your wireless network name (also called an SSID) and the encryption key or passphrase.
- Some devices can also connect to your network with a wired connection called Ethernet.



## Why not just share a USB-connected printer from one of my computers?

- Sharing a USB printer only allows sharing of printing.
- If the printer also has scanning or fax capabilities, only the computer directly connected to the printer can scan or fax. The computer to which the printer is attached to must be powered on for other computers to share the printer. It can be complicated to set up sharing of a printer that is connected by a USB cable to a computer.
- The ability to share the printer can also become unreliable after you update the computer's operating system or security system.



## Should I use the USB port on my Wireless Router for my Printer?

- USB ports, available on some wireless routers, allow printing from computers on a network, but do not allow scanning or faxing, if your printer has those capabilities.