

# Wireless Networking

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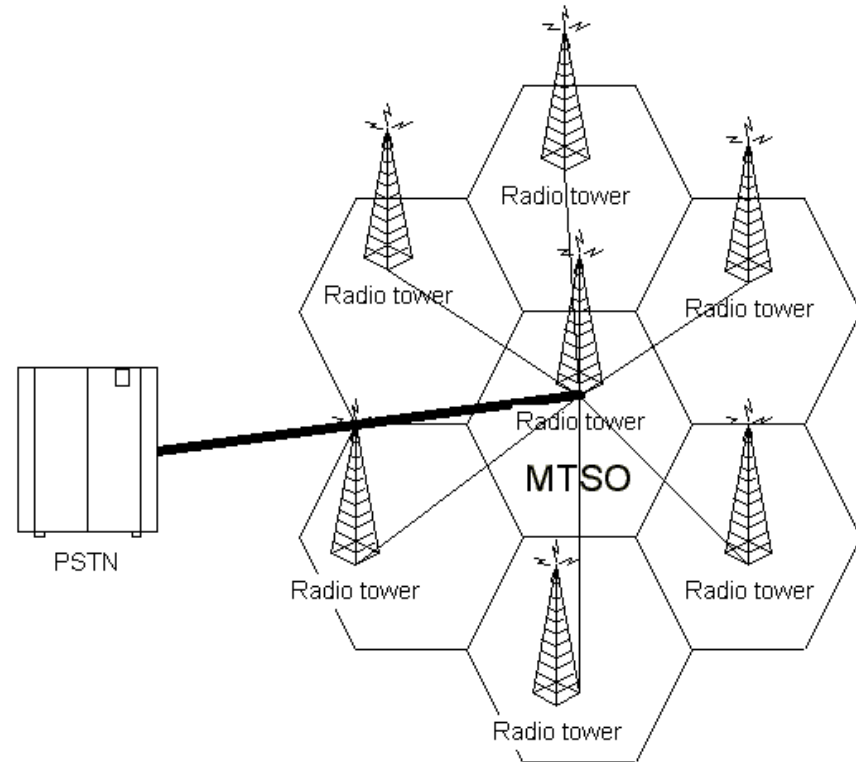
MTLC Instructor

# Wireless Network Basics

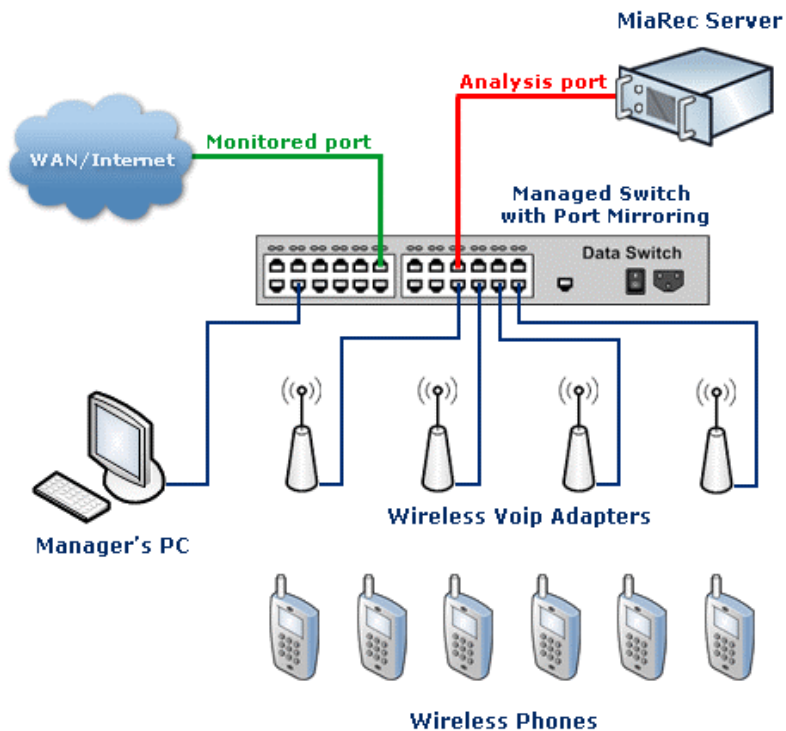
- Wireless networks eliminate the need for network cabling that connects the PCs to each other.
- Wireless networks use either radio waves or beams of infrared light for communication.
- Types of wireless radio wave networks:
  - IEEE 802.11 wireless Ethernet standard – wi-fi and Bluetooth technology

# Wireless Basics, Cont'd

- Wireless networks using infrared light are limited to Infrared Data Association protocol (IrDA).
- Cellular networks



# Wireless Networking Protocols

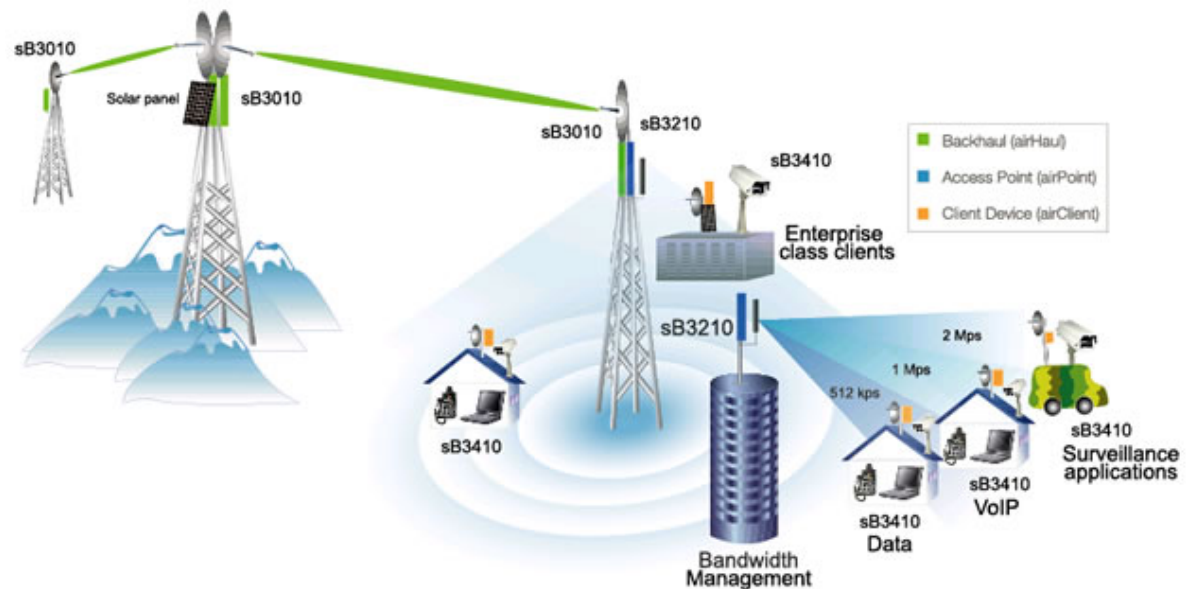


- Wireless networking uses the same protocol as wired protocol.
- Wireless devices use a technology called carrier sense media access/ collision avoidance (CSMA/CA)

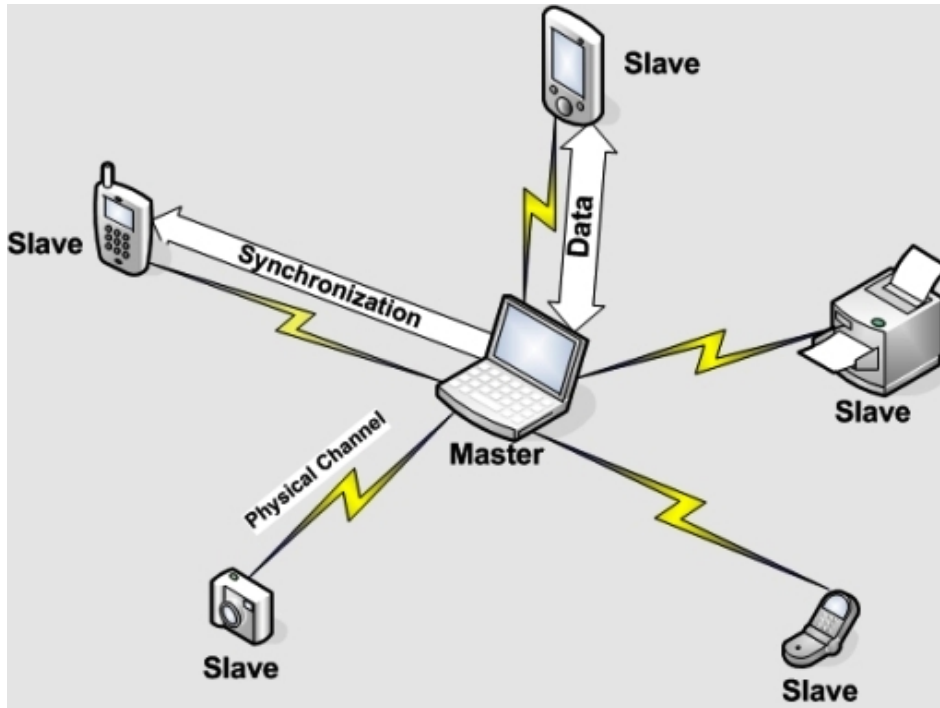
# Wireless Networking Protocols

## Cont'd

- Wireless Internet can also use the Request to Send/ Clear to Send protocol (RTS/CTS).



# Wireless Networking Components



- Infrared transceiver used by portable computers, such as PDA's, printers and some laptops.
- Wireless Ethernet and Bluetooth

# Wireless Network Components, Cont'd

- Wireless PC card
- External USB wireless card
- Wireless network interface card
- Wireless router



# Wireless Networking Components, Cont'd



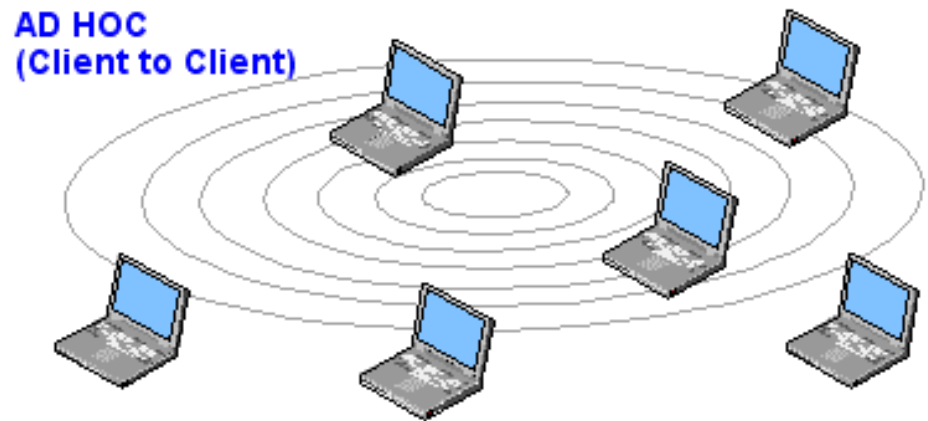
- Wireless Access Point (WAP) – many WAPs act as high speed switches and Internet routers

# Wireless Network Software

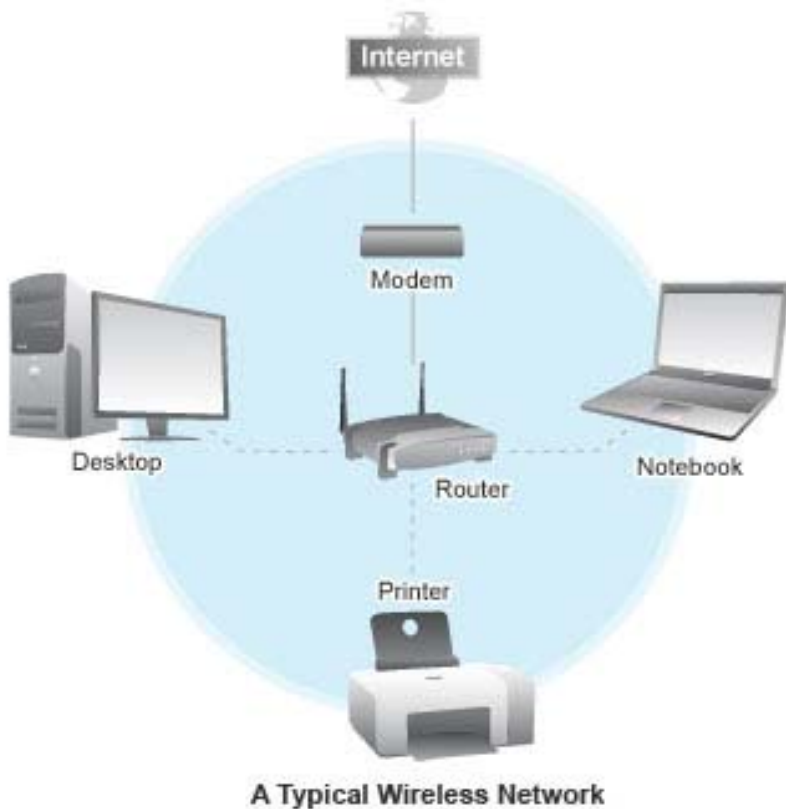
- Wireless network adapters are plug & play, most Windows versions will immediately recognize a wireless card.
- Make sure to load the drive that comes with the components

# Wireless Network Modes – Ad Hoc Mode

- In ad hoc mode each wireless node is in direct contact with every other node in a decentralized free-for-all.
- Easier to configure.



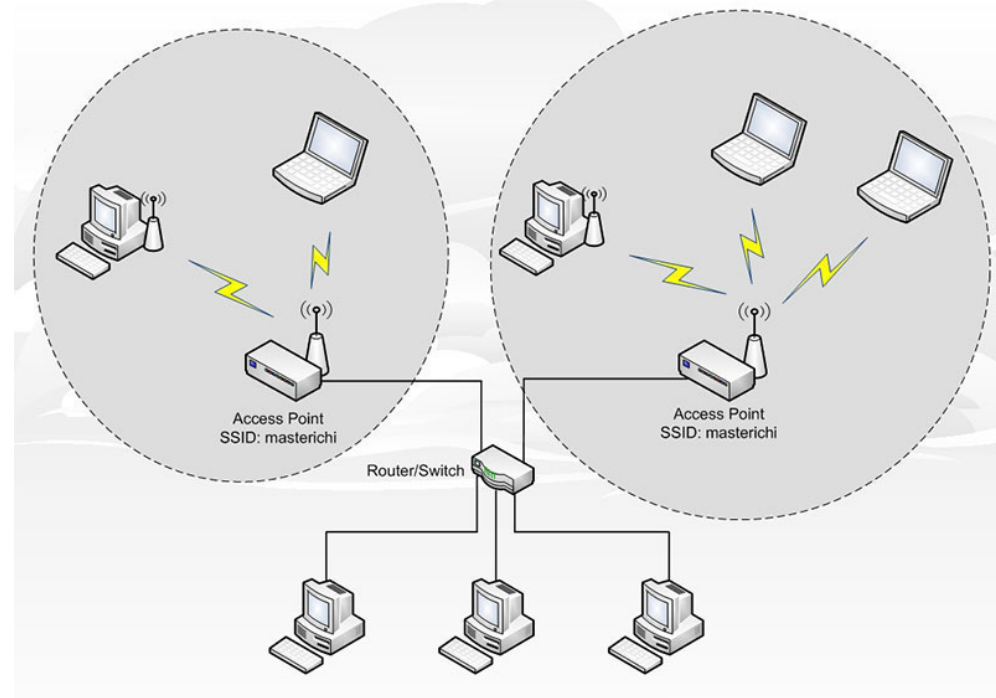
# Wireless Network Modes - Infrastructure



- These network use one or more WAPs to connect the nodes.
- Has centralized control over the wireless network.
- A single WAP serving one specific area is called Basic Service Set (BSS).

# Wireless Network Modes – Infrastructure Cont'd

- Adding more WAPs to a single WAP is called Extended Basic Service Set (EBSS).
- Infrastructure mode is better suited for business networks.



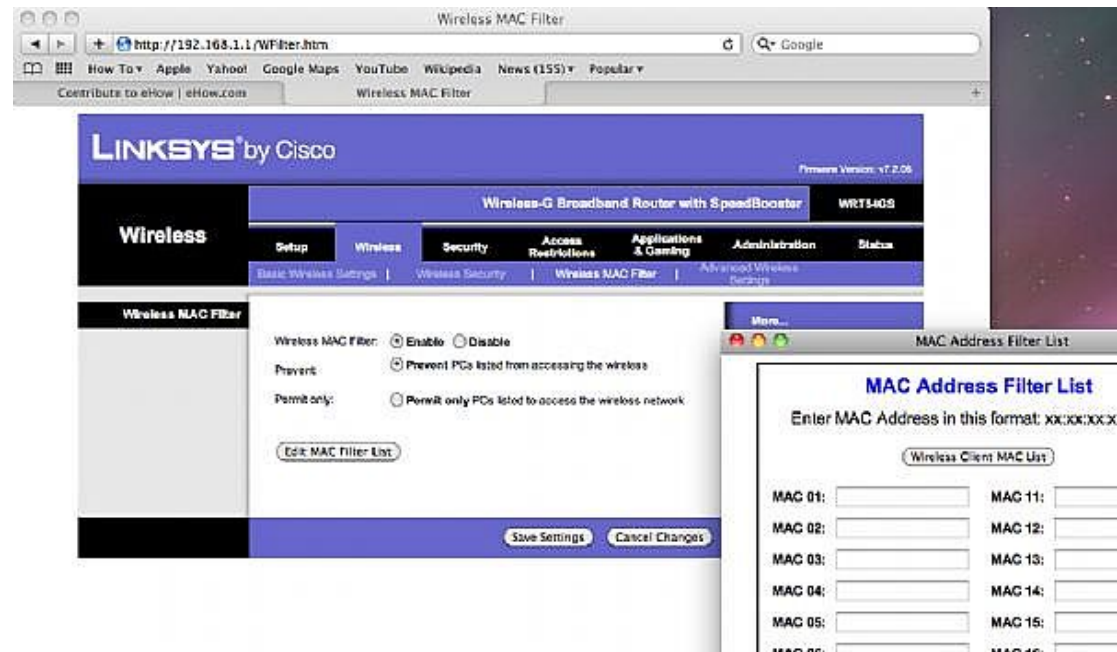
# Wireless Network Security – Service Set Identifier



- Wireless networks use 3 methods to secure access to the network.
- Service Set Identifier
  - The SSID ensures that only wireless network devices that have the same SSID are permitted access to the network.

# Wireless Network Security – MAC Filtering

- Media Access Control Filtering
  - Allows to create a list of the machines that are permitted to access the network.



# Wireless Network Security – Wireless Equivalency Privacy



- Wireless Equivalency Privacy (WEP)
  - Ensures that the data packets themselves are secure while in transit.

# Wireless Networking – Speed and Range

- Speed ranges from 2mbps to 54mbps.
- Range from 150ft to 300ft
- Both speed and range affected by:
  - Distance
  - Interference
  - Large electrical appliances
  - Electrical fuse box
  - Wireless speed

