WiFi architecture

- WiFi architecture is simple and closely resembles Ethernet architecture
- "stations" are connected to "access points" within "basic service set" (BSS) areas
- multiple BSS can be connected together into an "extended service set (ESS) area (e.g. AirYork)

(Fig. 1)

- access points in WiFi support roaming!
- Protocol architecture:
    o Like Ethernet, WiFi only specifies the bottom two layers (physical and MAC)
    o Intentional: so that WiFi can fit with Ethernet routers

(Fig. 2)

WiFi Radio Interface

- most versions operate in the 2.4 GHz ISM band
- WiFi divides the ISM band into channels – number of channels varies with location, 11 in North America, 13 in Europe, 14 in Japan
- Channels are 22 MHz wide and spaced at intervals of 5 MHz, thus overlap

- Choose non-overlapping channels for a large-scale WiFi installation (similar to cells)

(Fig. 3)

- Information transmitted using frequency hopping spread spectrum (FHSS), as in Bluetooth, or direct sequence spread spectrum (DSSS), as in CDMA – DSSS in 802.11b