

Wireless and Mobile Networks

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Wireless Networks

Elements in a wireless network:

1. **Wireless hosts:** A **wireless host** might be a laptop, palmtop, smartphone, or desktop computer.
2. **Wireless links:** A host connects to a base station (defined below) or to another wireless host through a **wireless communication link**. Different wireless link technologies have different transmission rates and can transmit over different distances.
3. **Base station:** The **base station** is a key part of the wireless network infrastructure.
4. **Network infrastructure:** This is the larger network with which a wireless host may wish to communicate.

Wireless Links and Network Characteristics

1. *Decreasing signal strength.* Electromagnetic radiation attenuates as it passes through matter (e.g., a radio signal passing through a wall). Even in free space, the signal will disperse, resulting in decreased signal strength (sometimes referred to as **path loss**) as the distance between sender and receiver increases.
2. *Interference from other sources.* Radio sources transmitting in the same frequency band will interfere with each other.
3. *Multipath propagation.* **Multipath propagation** occurs when portions of the electromagnetic wave reflect off objects and the ground, taking paths of different lengths between a sender and receiver. This results in the blurring of the received signal at the receiver. Moving objects between the sender and receiver can cause multipath propagation to change over time.

Wi-Fi: 802.11 Wireless LANs

- **Wi-Fi is the wireless technology used to connect computers, tablets, smartphones and other devices to the internet.**
- Wi-Fi is the radio signal sent from a wireless router to a nearby device, which translates the signal into data you can see and use. The device transmits a radio signal back to the router, which connects to the internet by wire or cable.

Wi-Fi Architecture

The fundamental building blocks:

1. BSS (basic service set)
2. Access point (AP).

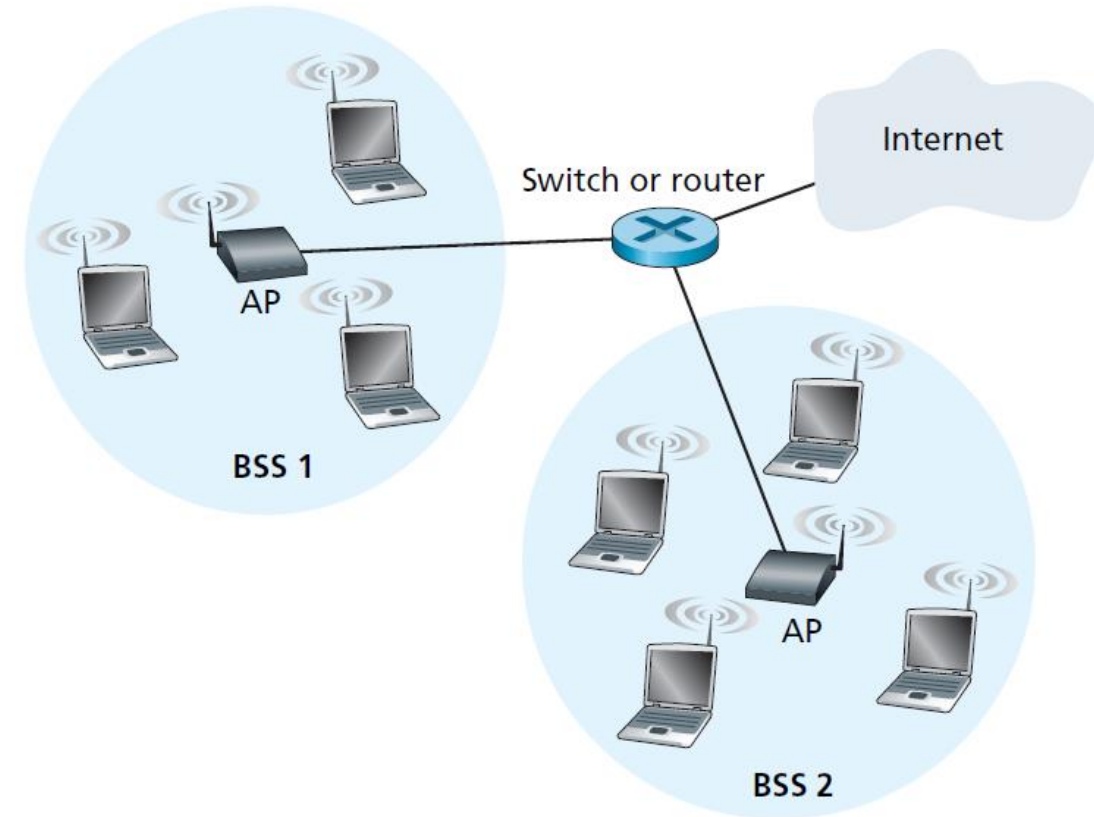


Figure 6.7 ♦ IEEE 802.11 LAN architecture