# 802.11 WiFi

- WiFi services are defined in the IEEE 802.11 standard
- IEEE: Institute of Electrical and Electronics Engineers

# Wireless Network Types

**WPAN:** Wireless Personal Area Network

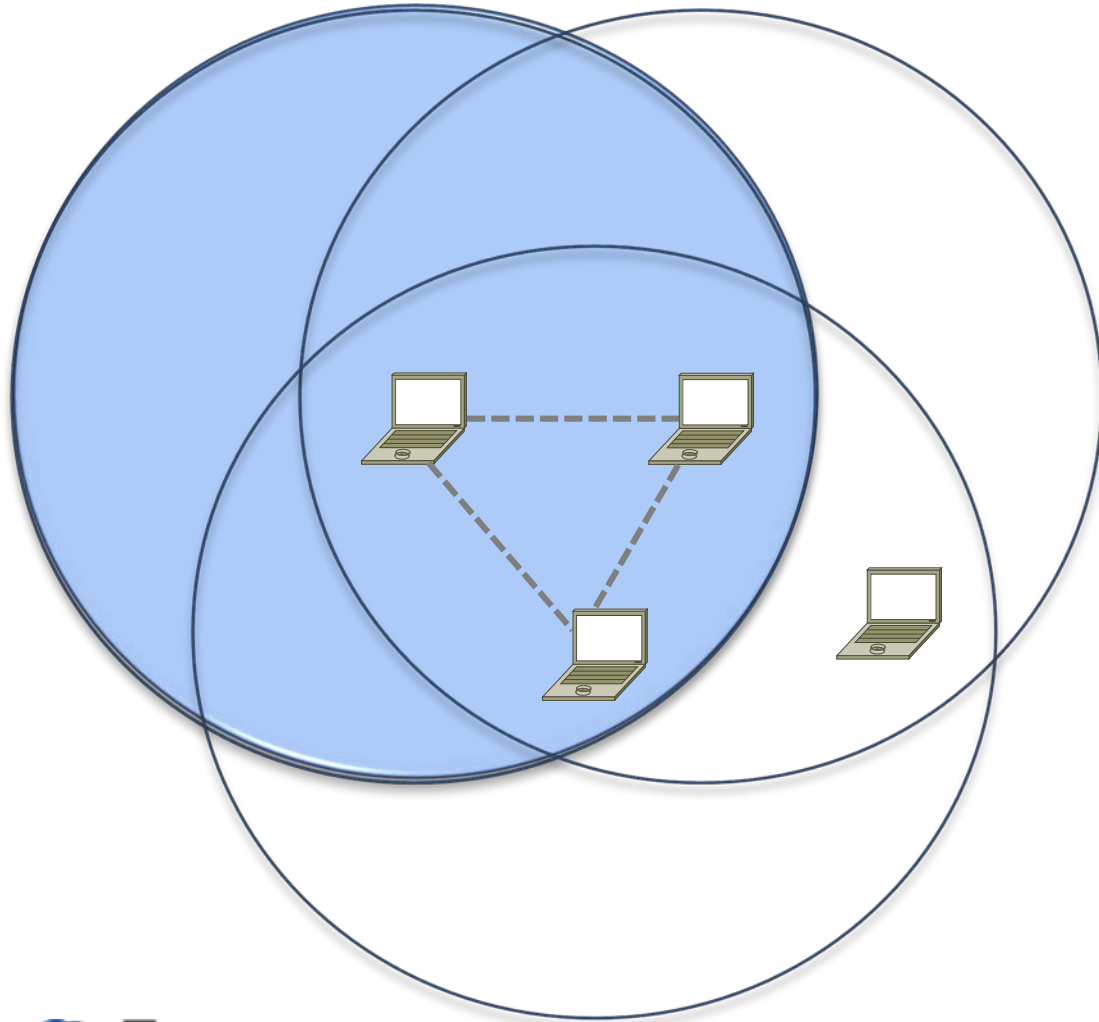- Devices are within 10 meters of each other
- Bluetooth is often used

**WLAN:** Wireless Local Area Network

- Provides access to a campus (typically wired) network, without the need for a cable
- Devices within 100m of a Wireless Access Point

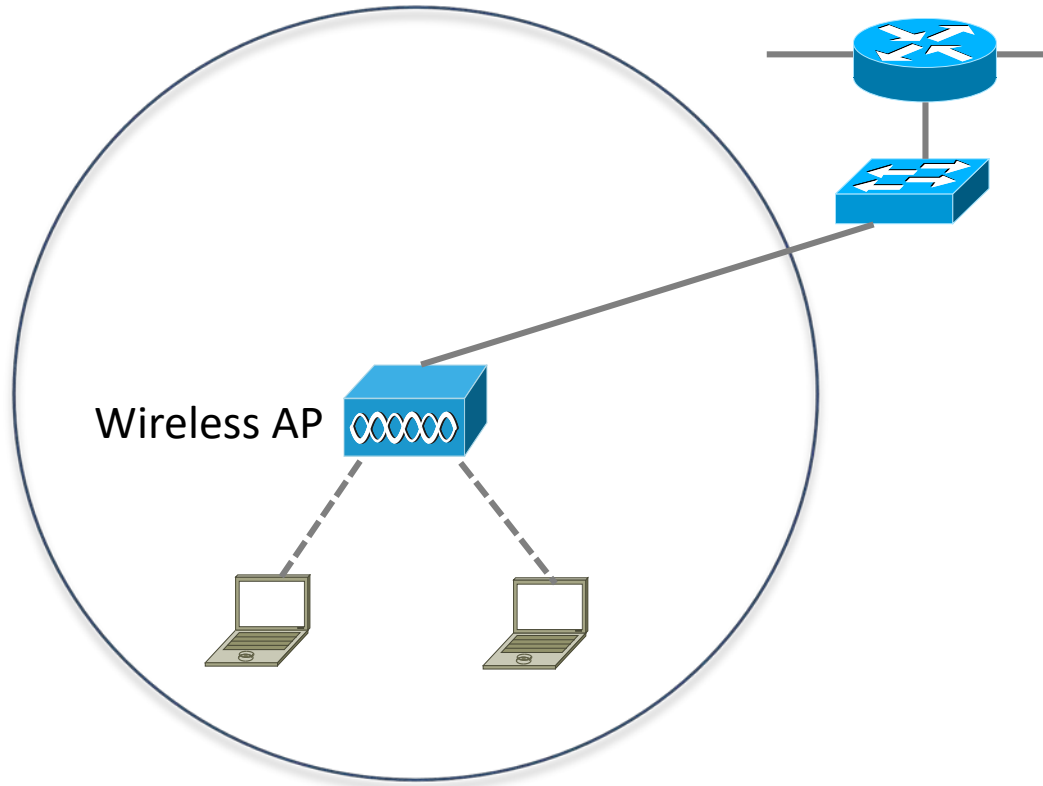**WMAN:** Wireless Metropolitan Area Network
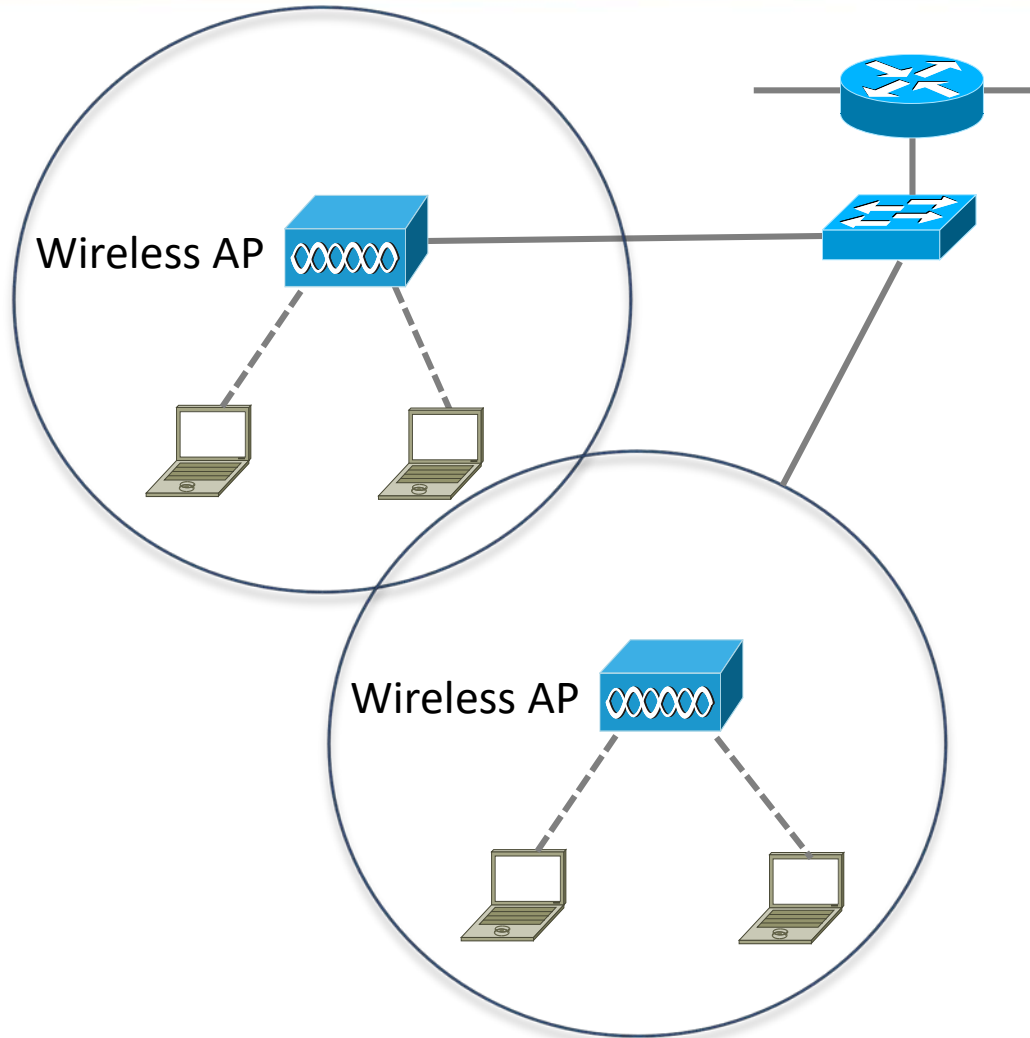
- Covers a large area such as a city

# Ad Hoc Networks



- Two or more wireless stations communicate directly with each other
- IBSS Independent Basic Service Set

# Infrastructure Mode

Wireless AP

- Stations communicate via a Wireless Access Point (AP)
- This can provide access to a wired network

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# Infrastructure Mode



- Multiple Access Points can be deployed to provide the required coverage area

Wireless AP

Wireless AP

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# Ad-Hoc vs Infrastructure Mode

- Wireless stations work in either Ad-Hoc or Infrastructure Mode
- They can not operate in both at the same time

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# WiFi Direct

- WiFi Direct allows devices to be connected to an Access Point and also be part of a peer-to-peer wireless network

- It does not operate in Ad-Hoc IBSS mode, it is an extension to Infrastructure Mode

- WPS WiFi Protected Setup enables connection setup by pushing a button

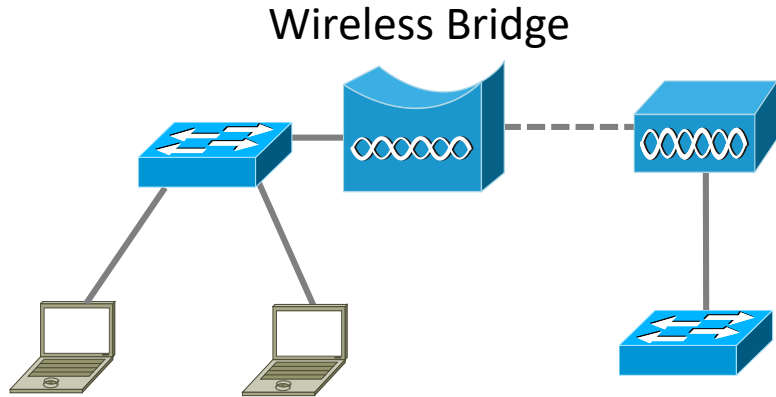- It is WPAN Wireless Personal Area Network

# WiFi Direct Predefined Services

- Miracast to wireless external monitor
- DLNA Digital Living Network Alliance allows devices to stream music and video
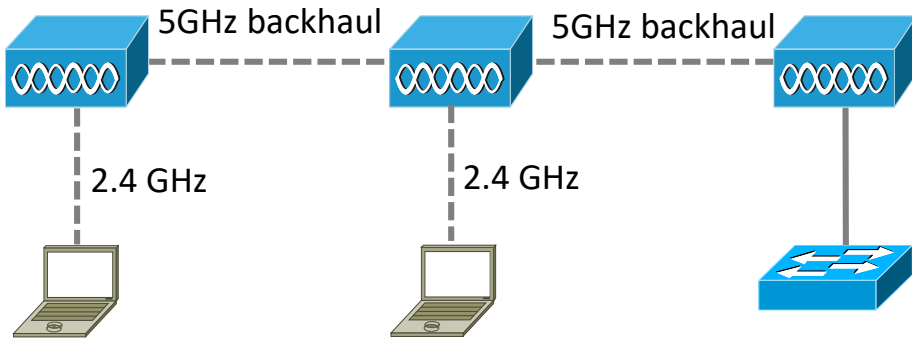- Direct Print

# Wireless Bridges


Wireless Bridge

- Wireless Bridges can be used to connect areas which are not reachable via cable to the network

# Mesh Networks



5GHz backhaul    5GHz backhaul

2.4 GHz    2.4 GHz

- Another option to spread the coverage area of a WLAN is Mesh

- One AP radio is used to serve clients

- The other radio connects to the backhaul network

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