

Wireless Principles

Network Topology

BSS (Basic Service Set)

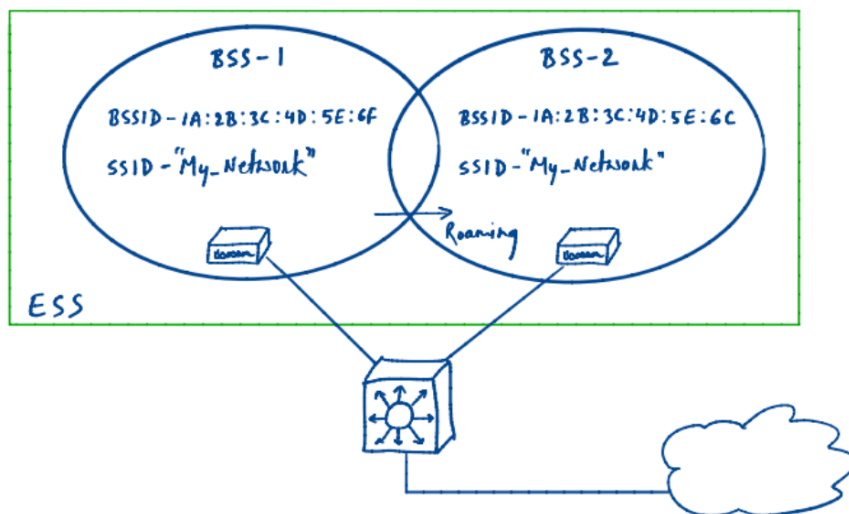
- Set of rules devices has to follow to be a part of wireless n/w
- **BSSID**
 - MAC address of AP (Unique)
- **SSID**
 - Name of wireless n/w (Non-unique)
- **BSA (Basic Service Area) / Cell**
 - Area where AP is accessible
- **Association**
 - Membership with BSS
 - Device called Station (STA)

DS (Distribution System)

- Connect multiple n/w with single AP
- 2 buildings using antenna (line of sight)

ESS (Extended Service Set)

- Connect multiple APs with L3 switch
- Roaming - Jumping from 1 n/w to other



IBSS (Independent BSS)

- Wireless devices don't need to authenticate before connecting
- Also called Ad-hoc n/w
- Like - hotspot where mobile independently connect to each other

WGB (Workgroup Bridge)

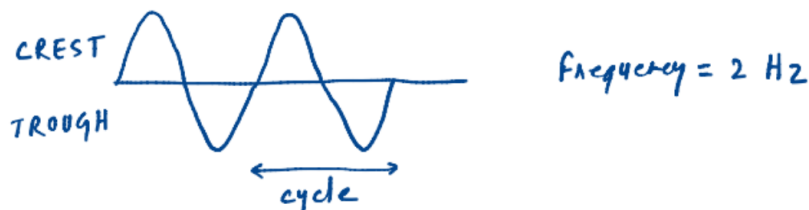
- Wireless n/w adapter
- Make wired devices (printer) to connect in wireless n/w

Outdoor Bridge

- Antenna transmit signal in 1 direction
- Types
 - Point-to-point
 - Point-to-multipoint (omnidirectional)
 - Transmit signal equally in all directions

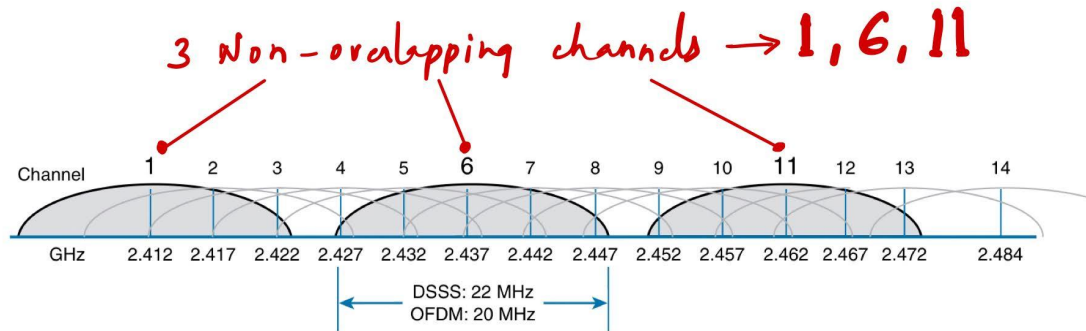
RF (Radio Frequency)

- Range - 10 KHz - 10 GHz
- **Electromagnetic signal**
 - Transmitter sends AC to antenna
 - Electric and magnetic signals are generated
 - Propagates at right angle
- **Bandwidth**
 - Max rate of data flow
- **Frequency**
 - Cycle/sec (Hz)



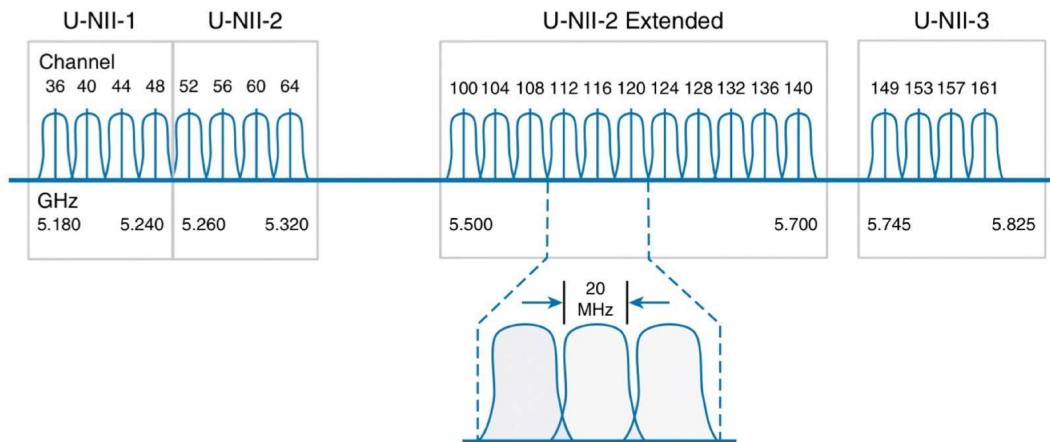
	2.4 GHz	5 GHz
Range	300 ft.	90 ft.
Interference	↑	↓
Bandwidth	↓	↑

Channel layout



Channel Layout in the 2.4-GHz Band

All non-overlapping channels



Channel Layout in the 5-GHz Band

Encryption

- Authentication
 - User identity
- Authorization
 - User access
- Privacy / Confidentiality
 - Data is encrypted before sending and decrypted after receiving
- Integrity
 - If data is altered on the way or not

- MIC - a security tool to verify altered data