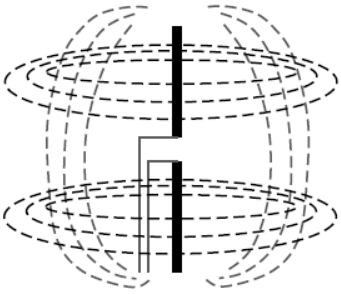
Antennas:

- Wireless routers have different types of antennas, some routers have antennas built in.
- Sometimes the WIFI routers will have a choice of antenna you can attach to the router.
- Antennas come in many sizes & shapes, each with its own gain value & intended purpose.
- There are many specific types of antennas, but three basic types are used most of time.
- Most business class APs require external antennas to make them fully functioning units.

Omnidirectional Antennas:

- An omnidirectional antenna sends a signal out equally in all directions around it.
- Using omnidirectional antennas has benefit of creating connections in any direction.
- You don't have to do as much planning to connect with multiple neighbors or buildings.
- Omnidirectional Antenna If there is enough signal between nodes, they should connect.
- All-direction strength of antennas comes with drawback of transmitting weaker signal.
- Since signal is going in all directions, it spreads out & gets weaker with distance very fast.
- If the nodes or clients, PC, Laptop or end point are far away, they may not connect well.
- In Wireless the Omni-directional antennas are used in point-to-multipoint configurations.
- Where they distribute the wireless signal to other computers or devices in your WLAN.
- So, basically, a Wireless access point (AP) would use an omni-directional antenna.
- Provide 360-degree coverage & are ideal in houses, office, conference rooms & outside.



Directional Antennas:

- Next type of antenna is known as directional--it sends out a signal in a more focused way.
- This Type of Antennas, Directional antennas focus the radio signal in a given direction.
- Using directional antennas has benefit of increasing distance signal travel in one direction.
- Power that would be sent out in all directions with omnidirectional nodes is now focused.
- This type of Directional antennas is commonly used in point-to-point configurations.
- This type of Directional antennas is commonly used in connecting two distant buildings.
- Also, this Directional Antennas sometimes point-to-multipoint connecting two WLANs.
- Few, examples of directional Wi-Fi antennas include Yagi and parabolic dish antennas.

Directional

MIMO Antenna:

- The MIMO is wireless terms, which stand for multiple input, multiple output.
- Basically, The MIMO is an antenna technology for wireless communications.
- In which multiple antennas are used at both the source and the destination.
- Antennas at each end of communications circuit are combined to minimize errors.
- Antennas at each end of communications circuit are combined optimize data speed.
- MIMO uses to make use of reflected signals to provide gains in channel robustness.
- MIMO uses to make use of reflected signals to provide gains in channel throughput.
- MIMO is uses multiple transmitters & receivers to transfer more data at the same time
- In this Up to eight transmit and receive antennas can be used to increase throughput.