

Learning the basics of LAN, WAN, and Wi-Fi networks. Draw a simple diagram of a home network.

Meaning of a Wi-Fi

Wi-Fi is a wireless networking technology that allows devices such as computers (laptops and desktops), mobile devices (smart phones and wearables), and other equipment (printers and video cameras) to interface with the Internet.

How does Wi-Fi work?

Wi-Fi uses radio waves to transmit information between your device and a router via frequencies. Two radio-wave frequencies can be used, depending on the amount of data being sent: 2.4 gigahertz and 5 gigahertz. A hertz is just a measurement of frequency. The higher the frequency, the greater the amount of data transmitted per second.

But how exactly sharing the data happens? The first step in the process is initiated by the user. When the user accesses the Internet on your device (say you open a LinkedIn), it converts the information you have requested into binary code, the language of computers. So, when you click on this article, your request is translated into a bunch of 1s and 0s. If you are using Wi-Fi, these 1s and 0s are translated into wave frequencies by the Wi-Fi chip embedded in your device. The frequencies travel across the radio channels mentioned earlier and are received by the Wi-Fi router that your device is connected to. The router then converts the frequencies back into binary code and translates the code into the Internet traffic that you requested, and the router receives that data through a hardwired Internet cable. (see the picture below).

Source -

The process repeats itself until you have loaded this article—or anything that requires the Internet. All of this happens quite fast, much faster than the time you have taken to read above words. The speed depends on quality of router. E.g In 54 Mbps (megabits per second), 54 million 1s and 0s are taken in or sent out in a single second

BTW, full meaning of Wi-Fi is 'Wireless Fidelity'.

A LAN is a network that connects computers and devices in a limited geographical area, such as a home, office, or building.

****Advantages:**

- High data transfer speeds.
- Lower setup and maintenance costs.
- Easy resource sharing (printers, files).

****Disadvantages:**

- Limited range.
- Can be vulnerable to security threats if not properly managed.

A WAN spans a large geographical area, often connecting multiple LANs. The internet is the largest example of a WAN.

****Advantages:**

- Covers vast distances, allowing global connectivity.
- Enables communication between different geographic locations.

****Disadvantages**

- Higher setup and maintenance costs.

-Slower speeds compared to LANs due to distance and network complexity.

