

HOW Wi-Fi WORKS

Wi-Fi lets your devices connect to the internet wirelessly using radio waves.

THE 5 SIMPLE STEPS

1 ROUTER CONNECTS TO THE INTERNET



Your Internet Service Provider (ISP) sends the internet to your home or office through a cable or fiber connection. Your router receives this connection.

2 ROUTER CREATES A WI-FI NETWORK



The router's wireless radio broadcasts a Wi-Fi network name (SSID) around it that devices can see and connect to.

3 YOUR DEVICE CONNECTS



Your device finds the Wi-Fi network, you enter the password, and your device and router authenticate and create an encrypted connection.

4 DATA TRAVELS USING RADIO WAVES



Your device converts data into radio signals that travel through the air to the router. The router converts it back into digital data.

5 DATA REACHES THE INTERNET



The router sends your request to the internet. The server sends the information back. The router receives it and sends it wirelessly to your device.

THE JOURNEY OF DATA

YOUR DEVICE



You open a website or app.

WI-FI CONNECTION



Data is sent as radio signals to the router.

ROUTER



Router processes the data and sends it to the internet.

INTERNET



Data travels to the right server.

SERVER



The server sends the information back.

BACK TO YOU



Router sends data back wirelessly to your device, and you see the result!

WI-FI FREQUENCY BANDS



2.4 GHz

- Better range
- Penetrates walls better
- More congestion
- Lower speeds



5 GHz

- Higher speeds
- Less congestion
- Shorter range
- Blocked by walls



6 GHz

- More capacity
- Very fast speeds
- Less interference
- Shorter range

✓ Your device and router choose the best band for a stable connection.

WHY WI-FI SPEED VARIES



DISTANCE

Farther from the router = weaker signal.



OBSTACLES

Walls, floors, metal objects can weaken signals.



CONGESTION

Many devices or nearby networks can slow it down.



HARDWARE

Newer devices and routers give better performance.

KEY TAKEAWAYS

- ✓ Wi-Fi uses radio waves to wirelessly connect your devices to a network.
- ✓ A router connects your local network to the internet and communicates with your devices.
- ✓ Data travels in both directions: Device ↔ Router ↔ Internet ↔ Server.
- ✓ Wi-Fi commonly operates on 2.4 GHz, 5 GHz and 6 GHz bands.
- ✓ Distance, obstacles, congestion and hardware affect Wi-Fi performance.
- ✓ Wi-Fi is not the internet. It is a wireless connection method.

FAQs

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| Q Is Wi-Fi the same as the internet? | No. Wi-Fi is how your device connects to a network. The internet is a global network of networks. |
| Q Does Wi-Fi use radio waves? | Yes. Wi-Fi transmits data using radio-frequency signals. |
| Q Why does Wi-Fi slow down far away from the router? | Signal gets weaker with distance and obstacles, reducing speed and stability. |
| Q Is 5 GHz Wi-Fi better than 2.4 GHz? | 5 GHz can be faster with less interference, but 2.4 GHz has better range. |
| Q Can Wi-Fi work without the internet? | Yes. Devices can connect to each other on a local Wi-Fi network without internet. |