

## **Broadband Definition by FCC**

The FCC defines broadband as a connection providing download speeds of at least 100 megabits per second (Mbps) and upload speeds of at least 20 Mbps. This definition was established in 2024

## **Fiber Optic**

Fiber optic internet offers some of the fastest speeds available, with many providers offering plans up to 1 Gigabit per second (1000 Mbps). Some providers even offer multi-gigabit plans, with speeds reaching 2 Gigabits, 5 Gigabits, or even higher. The actual speeds you experience can be affected by factors like your router, your device, and whether you're using a wired or wireless connection.

Typical Fiber Optic Speeds:

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### **1 Gigabit (1000 Mbps):**

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This is a very common and widely available fiber speed, offering a great balance of speed and value.

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### **Multi-Gigabit Plans:**

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Some providers offer plans with 2 Gbps, 5 Gbps, or even faster speeds, ideal for very large households or users with extremely high bandwidth needs.

Factors Affecting Actual Speeds:

- **Wired vs. Wireless:**

Wired connections (Ethernet) generally provide the fastest speeds, as they are not affected by factors like distance from the router or wireless interference.

- **Wi-Fi Standard:**

If using Wi-Fi, the Wi-Fi standard (e.g., Wi-Fi 6, Wi-Fi 5) and your distance from the router will affect your speeds.

- **Device Capabilities:**

Your devices (computers, phones, etc.) also have limitations on how fast they can process and receive data.

## **Why Fiber Optic is Preferred:**

- **Symmetrical Upload and Download Speeds:**

Fiber optic internet is known for providing symmetrical speeds, meaning your upload speeds are as fast as your download speeds, which is beneficial for activities like video conferencing, online gaming, and cloud storage.

- **Reliability:**

Fiber optic cables are less susceptible to interference and signal degradation compared to other technologies like DSL or cable.

Providers and Plans:

- **Google Fiber:** Offers a 1 Gig plan and also has plans with faster speeds in select areas.
- **AT&T Fiber:** Offers a variety of plans, including a 5 Gig plan in some areas.
- **T-Mobile Fiber:** Offers a 2 Gig plan with whole-home Wi-Fi.
- **Frontier Fiber:** Offers a 5 Gig plan.
- **Metronet:** Also offers a 5 Gig plan.
- **Other Providers:** Many other providers offer fiber internet plans with varying speeds and pricing.

When choosing a fiber plan, consider your household's internet usage and the number of devices that will be connected simultaneously to ensure you select a plan that meets your needs.

## Coaxial Cable

Typical Speed Range:

- **100 Mbps to 1 Gbps:** This is the general range for most cable internet connections using coax.
- **Higher Speeds (potentially):** The [DOCSIS 3.1](#) standard can support multi-gigabit speeds (over 1 Gbps), but this depends on the ISP's infrastructure and the specific modem/router used.
- **Lower Speeds (potentially):** Some older coax systems or those experiencing significant congestion might offer speeds below 100 Mbps.

## Coax vs. Fiber:

While coax can deliver high speeds, it's generally understood that fiber optic internet offers the potential for even greater bandwidth and symmetrical speeds (equal upload and download speeds). However, fiber is not always available, and coax remains a popular and reliable option for many users, particularly in areas where fiber infrastructure is not yet in place.

In conclusion: Coax cable can provide fast internet, with speeds ranging from 100 Mbps to 1 Gbps, and potentially higher with the latest technology and infrastructure. However, factors like the DOCSIS version, ISP infrastructure, network congestion, and equipment used can all influence the actual speeds experienced by the user.

- **Comparison to Cable/Fiber:**

5G home internet speeds can compete with cable and DSL internet, and in some cases, even approach fiber-optic speeds (though fiber generally offers higher top speeds).

## **5G Cell Service Internet Speeds**

5G cell service can offer a wide range of internet speeds, typically ranging from 100 Mbps to 300 Mbps for home internet service, with some plans potentially reaching gigabit speeds (1000 Mbps) in select areas. Peak download speeds can theoretically reach up to 10 Gbps, but real-world performance varies based on factors like location, network congestion, and the specific 5G technology used (e.g., mmWave vs. sub-6 GHz).

Here's a more detailed breakdown:

- **Typical 5G Home Internet Speeds:**

Most 5G home internet services deliver speeds between 100 Mbps and 500 Mbps.

- **Verizon 5G Home Internet:**

Verizon's 5G Home Internet Plus plan boasts download speeds of up to 1,000 Mbps (1 Gigabit) in some locations, with average download speeds of 300 Mbps.

- **T-Mobile 5G Home Internet:**

T-Mobile's All-In or Amplified Home Internet plans offer typical download speeds between 134 Mbps and 415 Mbps, with upload speeds typically ranging from 12 to 55 Mbps.

- **Factors Affecting Speed:**

- **5G Technology:** mmWave 5G offers the fastest speeds but has limited range and penetration, while sub-6 GHz 5G offers a wider coverage area but with lower speeds.
- **Distance from Tower:** Being closer to a 5G tower generally results in faster speeds.
- **Network Congestion:** Like any network, 5G speeds can be affected by the number of users connected to the same cell tower.
- **Time of Day:** Peak usage times can lead to slower speeds.

## **Starlink Satellite Service**

### **Network Performance**

Typical speeds range from **25-220 Mbps download**, with most users seeing over 100 Mbps, and **5-20 Mbps upload**. Latency is typically **25-50 ms on land** and around **100+ ms over open water**, supporting smooth video calls, streaming, online gaming, and remote work.