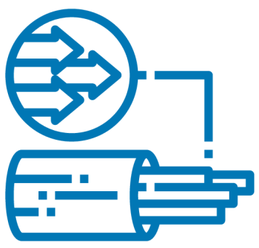
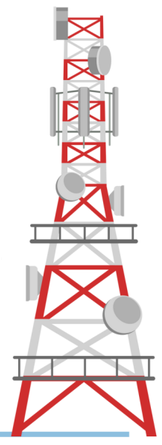
Broadband

What Is It?

Broadband is the transmission of high-speed instant-connectivity data that enables Internet access beyond traditional dial-up access. This sends data, video, and voice across long distances to connect millions of homes and businesses across the world. Examples include DSL, Cable, Fiber Optic, Wireless (5G), and Satellite.



What is the Impact?

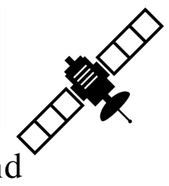


Broadband allows people to access the internet quickly and reliably, enabling things like video calls, streaming, online shopping, and remote work without slow loading times. It has transformed daily life by connecting communities and making information instantly available.

What Does It Cost?

90% of Americans have a broadband connection and spend an average of more than $60 per month on a broadband subscription. Investments in broadband telecommunications infrastructure total tens of billions of dollars every year.

Space



Broadband infrastructure is primarily made up of the conduit pathways, cables, and equipment that connect homes and businesses to the data network of the internet. Optical fibers and copper cable broadband stretch for millions of miles across the nation and seas. Satellite broadband utilizes radio waves between hundreds of satellites and ground antennas.

Point

Counterpoint

- Broadband provides high-speed internet access for streaming, working, and gaming.
  - Cost of access may limit low-income households from using high-speed internet.
- Broadband improves education and job opportunities across the nation through online resources.
  - High-speed broadband remains unavailable in many rural parts of the nation, and is called the Digital Divide.
- Advances in broadband enable faster data transfer, supporting innovation.
  - Constantly improving broadband telecommunications may necessitate costly and infrastructure upgrades.
- Competition and innovation has lowered high-speed broadband prices for consumers.
  - Regionally, some broadband providers still have de-facto monopolies.
- Broadband improves access to news and information and enables online education, remote work, and cloud computing.
  - Increased online data collection has led to serious privacy concerns, while internet surveillance technology has been abused by governments.

How Does It Work?

1. Data transmission begins when a website or online service sends digital data signals through the internet.

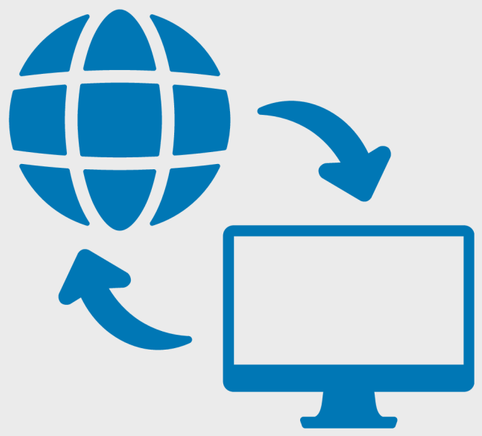
2. The digital signal is sent to a transmitter, which encodes and transmits it using fiber optic, coaxial cable, DSL, satellite, or wireless networks.

3. The internet Service Provider (ISP) routes the data to the correct location using high-speed backbone networks, often made from fiber optic cables, where the signals are converted into light to travel most efficiently.

4. The data is delivered from the ISP to the home or business, usually through fiber optic or copper cables, but sometimes through wireless transmissions like cell towers or satellite internet.

5. The modem translates the signal into internet data, and the router distributes it to connected devices. Broadband and Wi-Fi are not the same. Broadband provides the high-speed internet connection, while Wi-Fi wirelessly distributes that connection to devices.

6. This entire process happens almost instantly, allowing you to access websites with a single click, play multiplayer video games in real-time with others, and make high-definition video calls.



Did You Know?

Undersea fiber-optic cables carry over 99% of global internet traffic, connecting continents at nearly the speed of light and powering everything from streaming to financial transactions.

What's Next?

The future of broadband includes expanding fiber-optic networks, faster 10G speeds, and widespread satellite internet coverage for remote areas.