**Internet Technologies**

**What is fixed wireless broadband?**

Fixed wireless broadband is [high-speed internet access](https://www.lifewire.com/what-highspeed-internet-choices-are-available-2483358) in which connections to [service providers](https://www.lifewire.com/internet-service-provider-isp-2625924) use radio signals rather than cables. Several different forms of fixed wireless broadband are available to residential and business customers.

Internet users who might prefer fixed wireless include people in areas that lack [fiber optic cable](https://www.lifewire.com/fiber-optic-cable-817874), [DSL](https://www.lifewire.com/digital-subscriber-line-817527) or cable television lines. They can still enjoy [broadband](https://www.lifewire.com/definition-of-broadband-816297) internet access via a wireless service that can beam the connection straight to where it needs to go.

Fixed wireless services usually support speeds upward of 30 [Mbps](https://www.lifewire.com/bits-per-second-kbps-mbps-gbps-818122). Like most other internet access technologies available for home users, fixed wireless internet providers usually do not enforce data caps. However, due to the technology involved, fixed wireless internet service is often more expensive than traditional technologies such as DSL.

### **Fixed Wireless Internet Equipment and Setup**

Fixed wireless broadband services use transmission towers (sometimes called ground stations) that communicate with one another and with the subscriber's location. These ground stations are maintained by internet providers, similar to cell phone towers.

Subscribers install transceiver equipment in their home or building to communicate with the fixed wireless ground stations. Transceivers consist of a small dish or rectangular-shaped antenna with attached radio transmitters.

Unlike [satellite internet](https://www.lifewire.com/definition-of-satellite-internet-817782) systems that communicate in outer space, fixed wireless dishes and radios communicate only with ground stations.

### **Limitations of Fixed Wireless**

Compared to other forms of broadband internet, fixed wireless internet traditionally involves these limitations:

* The service often requires line of sight access between the subscriber and a ground station. Obstructions from hills or trees prevent it from being installed in some locations. Rain or fog can sometimes adversely affect the quality of the service.
* The cost per Mbps of [bandwidth](https://www.lifewire.com/what-is-bandwidth-2625809) for subscribers tends to be higher than other forms of broadband.
* Unlike mobile internet services such as cellular and [WiMax](https://www.lifewire.com/wimax-wireless-networking-818321), fixed wireless service is tied to one physical [access point](https://www.lifewire.com/how-many-devices-can-share-a-wifi-network-818298) per subscriber and does not support roaming.

Many people mistakenly believe fixed wireless connections suffer from [network latency](https://www.lifewire.com/latency-on-computer-networks-818119) problems that cause poor performance. While high latency is an issue for satellite internet, fixed wireless systems do not have this limitation. Customers routinely use fixed wireless for online gaming, [VoIP](https://www.lifewire.com/voice-over-internet-protocol-816496), and other applications that require low network delays.

<https://www.lifewire.com/fixed-wireless-broadband-internet-access-818318>

**What is FTTH?**

Fiber to the home (FTTH), also called "fiber to the premises" (FTTP), is the installation and use of [optical fiber](https://searchtelecom.techtarget.com/definition/optical-fiber) from a central point directly to individual buildings such as residences, apartment buildings and businesses to provide unprecedented high-speed Internet access. FTTH dramatically increases the connection speeds available to computer users compared with technologies now used in most places.

While FTTH promises connection speeds of up to 100 megabits per second ([Mbps](https://searchnetworking.techtarget.com/definition/Mbps)) -- 20 to 100 times as fast as a typical [cable modem](https://searchsecurity.techtarget.com/definition/cable-modem) or DSL (Digital Subscriber Line) connection -- implementing FTTH on a large scale will be costly because it will require installation of new cable sets over the "last links" from existing optical fiber cables to individual users. Some communities currently enjoy "fiber to the curb" (FTTC) service, which refers to the installation and use of optical fiber cable to the curbs near homes or businesses, with a "copper" medium carrying the signals between the curb and the end users.

<https://searchnetworking.techtarget.com/definition/fiber-to-the-home>

# **What is DSL?**

Of the many internet connection options that you have, DSL, or digital subscriber line, is one of the oldest of the Internet technologies. It’s the predecessor to dialup, and is superior in almost every way. *It’s the original high speed internet*.

Like dialup, DSL uses the phone line to transfer data. However, unlike dialup, DSL operates at a much higher frequency, so the data doesn’t interfere with the voice data, meaning that you can use the phone and internet at the same time. In most cases you’ll use a filter too, supplied by the ISP, to separate the voice from internet data to prevent one bleeding into the next.

DSL is fast, too – much, much faster than dial up. DSL speeds begin at 128 Kbps, which is over twice that of dialup, and are as high as 8 Mbps, which is over 1100x faster than dialup. This is competitive with entry to small level cable internet service, too, both in terms of speed and price.

## How DSL Works

How DSL works is pretty simple —

Your DSL service provider will give you a special modem that only works for DSL connections, and in many cases only their specific connection (in other words it’s not compatible with other ISPs). You [plug your computer into the modem](http://www.plugthingsin.com/internet/what-is-a-modem/), and the modem plugs into a splitter to separate the voice from internet data as I mentioned above.

The lines will run from your wall to outside to the ISP hub. The lines that are used to send data back and forth are, in most cases, ADSL lines. This means Asynchronous DSL, which in English means that one side of the line (download) is bigger than the other side (upload). The end result is fast downloads and slow to moderate speed uploads (that’s what most people care about anyway).

One important thing to note is that the farther away your connection is from the ISP hub, the worse the quality and speed of your connection will be. There is a cap of 18,000 feed (3+ miles) that service providers won’t exceed. So that means if you’re on the far end of the connection, you’ll have poorer service than those that are closer, and if you’re out of range you won’t be able to have DSL access at all.

## Equipment You Need for DSL Internet

You don’t need a lot of equipment for DSL internet. Most of it will be supplied by your ISP anyway.

**DSL Modem** – This is a special modem for DSL internet only. The internet provider usually supplies this, and sometimes the [router](http://www.plugthingsin.com/internet/what-is-a-router/) too. Keep in mind that one modem might not work with other ISPs, so if you change services you’ll probably need to switch. Also worth noting is that the modem from the ISP is usually leased, so it might be worth looking into buying your own.

**Line Splitter** – The line splitter plugs into your phone line, and has two connections – one for your phone and the other for the DSL. This separates the data from one connection to the next, which helps to speed things up.

You don’t have to have an existing phone service, but you will need to have the phone jack and wiring. If you don’t have phone service you’ll be given a dry loop or naked DSL line, which is essentially phone access without the dial tone.

Internet service providers will usually send out a self install kit which will include the modem, splitter and install disk. You can install everything yourself (pretty easy), or pay someone to come out and install it for you for a fee – usually $50 to $200.

## Pros and Cons to DSL Internet – Dialup vs. DSL vs. Cable

There are both pros and cons to DSL internet, especially when compared to dialup and cable internet connections.

### DSL Pros

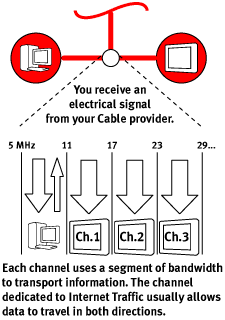
* DSL is much faster than dialup, and for not much more money. For the price it’s competitive with entry level cable internet.
* DSL is cheap — $15 to $30 will get you 1.5 to 8 Mbps.
* You don’t have to share your internet connection with your neighbors like you do cable. So you don’t have to worry so much about “peak usage periods” and your internet slowing down.

### DSL Cons

* The quality of your DSL service heavily depends on the distance from you and the internet service provider’s hub. The farther away you are, the poorer and/or slower the internet connection. The maximum limit that ISPs have the cables run is about 18,000 feet, or a little over 3 miles. Many ISPs don’t even push the maximum due to the lack of quality at the very end.
* DSL service isn’t available everywhere, which goes in hand in hand with the distance problem. You probably won’t find a DSL provider stationed out in the boonies, so if that’s where you live you probably won’t be able to get DSL service out there.

<http://www.plugthingsin.com/internet/dsl/>

## WHAT IS CABLE INTERNET ACCESS?

When you get a television signal from your cable company, all of the video and audio information for a particular channel takes up a "slice" of bandwidth. It is possible to take one of these channels and use it for Internet access, and none of the other channels will be affected. Not all cable systems are capable of this, however.

Cable companies take a slice of bandwidth and use it to exchange data with your computer. They divide this channel into two subchannels for upstream and downstream data. They expect a lot more downstream data, because most people download a lot more than they upload. In some cases, cable companies can only send data through the cable, but not receive messages from you. If this is the case, you need to use a conventional modem to request information, and cable companies send it to you at high speed through the cable system.

#### What is DOCSIS™?

Cable modems can be DOCSIS certified or proprietary. DOCSIS stands for Data Over Cable Service Interface Specifications. A DOCSIS certified modem is preferable, as it will work with any DOCSIS compliant cable system. DOCSIS modems are generally easier to support because a lot of documentation is available and many cable companies adhere to the standard. A proprietary modem is less desirable, because it will only work with the system for which it was designed. All USR cable modems are DOCSIS compliant.

#### Are there limitations of cable Internet access?

There are a few things to be aware of when using a cable modem. There may be over 500 homes in your area using the same "channel" for Internet access. If everyone tries to access the Internet at the same time, your download speeds could slow to a crawl. Your cable company can remedy this by dedicating another channel to Internet access.

Another thing to be aware of is the fact that all cable modem users in your area are on the same network cluster, and may be able to browse others people's computers. You should use always use a firewall, but you especially need to run one when you have a cable modem. A firewall is software that monitors network traffic and prevents unauthorized users from accessing your computer. Firewall software can be downloaded and run on a computer itself, or it can be built into a router. For more about firewalls and routers, read the [networking education](https://www.usr.com/usr-root/education/networking/) section.

#### How do I get Cable Internet Access?

If you already have cable TV, call your cable provider and ask if cable Internet access is available. If your cable provider uses a DOCSIS compliant system, you may be able to purchase your own cable modem and get a reduced monthly rate.

<https://www.usr.com/education/broadband/what-cable-internet-access/>