

# Getting Broadband

## FCC Consumer Facts

### What Is Broadband?

Broadband or high-speed Internet access allows users to access the Internet and Internet-related services at significantly higher speeds than those available through “dial-up” Internet access services. Broadband speeds vary significantly depending on the particular type and level of service ordered and may range from as low as 200 kilobits per second (kbps), or 200,000 bits per second, to 30 megabits per second (Mbps), or 30,000,000 bits per second. Some recent offerings even include 50 to 100 Mbps. Broadband services for residential consumers typically provide faster downstream speeds (from the Internet to your computer) than upstream speeds (from your computer to the Internet).

### How Does Broadband Work?

Broadband allows users to access information via the Internet using one of several high-speed transmission technologies. Transmission is digital, meaning that text, images, and sound are all transmitted as “bits” of data. The transmission technologies that make broadband possible move these bits much more quickly than traditional telephone or wireless connections, including traditional dial-up Internet access connections.

Once you have a broadband connection to your home or business, devices such as computers can be attached to this broadband connection by existing electrical or telephone wiring, coaxial cable or wireless devices.

### What Are The Advantages of Broadband?

Broadband allows you to take advantage of new services not available or not convenient to use with a dial-up Internet connection. One such service is Voice over Internet Protocol (VoIP), an alternative to traditional voice telephone service that may be less costly for you depending on your calling patterns.

Some VoIP services only allow you to call other people using the same service, but

### What Are The Advantages of Broadband? (cont’d.)

others allow you to call anyone who has a telephone number – including local, long distance, mobile and international numbers.

Broadband makes “telemedicine” possible: patients in rural areas can confer online with medical specialists in more urban areas and share information and test results very quickly.

Broadband helps you efficiently access and use many reference and cultural resources, such as library and museum data bases and collections. You also need broadband to best take advantage of many distance learning opportunities, like online college or university courses, and continuing or senior education programs. Broadband is an important tool for expanding educational and economic opportunities for consumers in remote locations.

In addition to these new services, broadband allows you to shop online and Web surf more quickly and efficiently. Downloading and viewing videos and photos on your computer are much faster and easier. With broadband you can access the Internet by turning on your

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## What Are The Advantages of Broadband? (cont'd.)

computer without needing to dial up your Internet Service Provider (ISP) over a telephone line, which permits you to use the Internet without tying up your telephone line. As of December 2010, nearly 170 million broadband connections were deployed in the United States.

## What Types of Broadband Are Available?

Broadband can be provided over different platforms:

- Digital Subscriber Line (DSL);
- Cable Modem;
- Fiber;
- Wireless; and
- Satellite.

The broadband technology you choose will depend on a number of factors. These include how broadband Internet access is packaged with other services (like voice telephone and home entertainment), price and service availability.

## Digital Subscriber Line (DSL)

DSL is a wireline transmission technology that transmits data faster over traditional copper telephone lines already installed to homes and businesses. DSL-based broadband provides transmission speeds ranging from several hundred Kbps to millions of bits per second. The availability and speed of your DSL service may depend on the distance from your home or business to the closest telephone company facility.

## Digital Subscriber Line (DSL) (cont'd.)

The following are types of DSL transmission technologies:

- **Asymmetrical Digital Subscriber Line (ADSL)** – used primarily by residential customers, such as Internet surfers, who receive a lot of data but do not send much. ADSL typically provides faster speed in the downstream direction than the upstream direction. ADSL allows faster downstream data transmission over the same line used to provide voice service, without disrupting regular telephone calls on that line.
- **Symmetrical Digital Subscriber Line (SDSL)** – used typically by businesses for services such as video conferencing. Downstream and upstream traffic speeds are equal. Faster forms of SDSL, typically available to businesses, include **High-data-rate Digital Subscriber Line (HDSL)** and **Very High-data-rate Digital Subscriber Line (VDSL)**.

To find out if DSL is available to your home, contact your local telephone companies or your state's public service commission.

## Cable Modem

Cable modem service enables cable operators to provide broadband using the same coaxial cables that deliver pictures and sound to your TV set.

Most cable modems are external devices that have two connections, one to the cable wall outlet and the other to a computer. They provide transmission speeds of 1.5 Mbps or more.

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## Cable Modem (cont'd.)

You can still watch cable TV while using a cable modem service. Transmission speeds vary depending on the type of cable modem, cable network and traffic load. Speeds are comparable to or exceed typical residential DSL.

To find out if cable modem service is available to your home, contact your local cable companies, local cable franchising authority (which may be part of your municipal or county government) or your state's public service commission.

## Fiber

Fiber optic technology converts to light electrical signals carrying data and sends the light through transparent glass fibers about the diameter of a human hair. Fiber transmits data at speeds far exceeding current DSL or cable modem speeds, typically by tens or even hundreds of Mbps. The actual speed you experience, however, will vary depending upon a variety of factors, such as how close to your computer the service provider brings the fiber and how the service provider configures the service, including the amount of bandwidth used. The same fiber providing your broadband can also simultaneously deliver voice (VoIP) and video services, including video-on-demand.

Some network operators (mostly telephone companies) are offering fiber-based broadband in limited areas and providing bundled voice, Internet access and video services.

To find out if fiber is available to your home, contact your local telephone companies or your state's public service commission.

## Wireless

Wireless fidelity (WiFi) is a "short range" technology that is often used in conjunction with a customer's DSL or cable modem service to connect end-user devices, such as PCs, laptops and smartphones, located within the customer's home or business to the Internet. In these cases, WiFi allows users to move WiFi-enabled devices

## Wireless (cont'd.)

around within their homes or businesses without installing additional inside wiring, but the actual "connection" to the service provider is via the customer's DSL or cable modem service. WiFi technology can also be "networked" to provide wider geographic coverage, and when configured this way, may be used by some service providers in offering broadband service. WiFi is widely available in airports, city parks, restaurants, bookstores and other public places called "hotspots," allowing those who are away from their homes or businesses to access the Internet.

Fixed wireless technologies using longer range directional equipment can provide broadband service in remote or sparsely populated areas where other types of broadband would be too costly to provide. Speeds are generally comparable to DSL service speeds. An external antenna is usually required. With newer services now being deployed (WiMax), a small antenna located inside a home near a window is usually adequate, and higher speeds are possible.

Mobile wireless broadband services, such as 3G, are also widely available from mobile broadband service providers, including cell phone companies and others. In addition, many mobile broadband providers are now beginning to deploy technologies, such as Long Term Evolution (LTE), which promise faster upload and download speeds and wider coverage than 3G technologies, and are upgradeable to full 4G capability in the future. Accessing mobile wireless broadband services may require a special card with a built-in antenna that plugs into a user's laptop computer. Other end-user devices, such as smartphones, already have built-in capabilities. Mobile wireless broadband services have typically provided lower speeds than either wired or fixed wireless alternatives.

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## Wireless (cont'd.)

To find out if wireless broadband is available to your home, contact your local wireless telephone companies or your state's public service commission. You can also visit the following website that lists fixed-wireless Internet service providers operating in some areas of your state: [www.wispdirectory.com/](http://www.wispdirectory.com/).

## Satellite

Just as satellites orbiting the earth provide necessary links for telephone and television service, they can also provide links for broadband services. Satellite broadband is another form of wireless broadband and is particularly useful for serving remote or sparsely populated areas.

Downstream and upstream speeds for satellite broadband depend on several factors, including the provider and service package purchased, the consumer's line of sight to the orbiting satellite, and the weather. Satellite service can be disrupted in extreme weather conditions. Typically a consumer can expect to receive (download) at a speed of about 1 Mbps and send (upload) at a speed of about 200 kbps. These speeds may be slower than DSL and cable modem, but the download speed is still much faster than the download speed with dial-up Internet access. New facilities, scheduled for deployment in 2012, are expected to support consumer broadband services for several million customers at speeds up to 12 Mbps for downloads and 3 Mbps for uploads.

Obtaining satellite broadband can be more costly or more involved than obtaining DSL or cable modem. A user must have:

- a two or three foot dish or base station – the most costly item;
- a satellite Internet modem; and
- a clear line of sight to the provider's satellite.

To find out if satellite broadband is available to your home, contact broadband satellite companies or your state's public service commission.

## Getting Broadband

Contact a provider in your area, which can be a local telephone company or other provider for DSL and fiber, a cable company for cable modem, a wireless or satellite company for wireless broadband. There are differences among broadband services, and the equipment of one provider may not work in another area or with another provider. Check with your broadband service provider for information on compatibility. Providers sometimes offer promotions or discounts on necessary equipment.

Prior to ordering service, check with the service provider to find out the cost and transmission speeds promised. Be aware that the actual transmission speeds you experience depend on many factors and may be less than the maximum potential speed stated by your provider. When you receive your contract, be aware of the fine print and the conditions of service. After receiving the service, contact your provider regarding any problems. Investigate obtaining service through a different provider if you are not pleased with your current service or provider.

A satellite provider may be able to provide broadband service to your home, even if other types of broadband services are not available in your community. If you are unable to obtain broadband service in your area, there may be several courses of action available to you.

- You may want to contact your local library and see if it has applied for the federal E-rate program, which subsidizes broadband to libraries and schools.
- You could contact local government officials such as your mayor, county executive, or town or county council members and ask what they can do to attract broadband service providers to your area. Because it is typically expensive to extend a broadband network to a new area, the more individuals that you can find

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## Getting Broadband (cont'd.)

to presubscribe to a provider's service, the more likely it is that a broadband provider will choose to serve your area. Your county may be able to offer a broadband provider video franchise rights, making building out a broadband network more attractive to potential providers.

- You also may want to talk with your state government or state public service commission to see what is being done or can be done to get broadband to your area. For contact information for your state public service commission, go to [www.naruc.org/commissions.cfm](http://www.naruc.org/commissions.cfm), or see the attached list.

## Filing a Complaint with the FCC

If you experience a problem with your broadband service, first try to resolve it with your provider. If you cannot resolve the problem directly, you can file a complaint with the FCC. There is no charge for filing a complaint. You can file a complaint using an on-line form found on the FCC website at [www.fcc.gov/complaints](http://www.fcc.gov/complaints). You can also file your complaint with the FCC's Consumer Center by calling 1-888-CALL-FCC (1-888-225-5322) voice or 1-888-TELL-FCC (1-888-835-5322) TTY; faxing 1-866-418-0232; or writing to:

Federal Communications Commission  
Consumer and Governmental Affairs Bureau  
Consumer Inquiries and Complaint Division  
445 12<sup>th</sup> Street, S.W.  
Washington, DC 20554.

## What to Include in Your Complaint

The best way to provide all the information the FCC needs to process your complaint is to complete fully the online complaint form. When you open the

## What to Include in Your Complaint (cont'd.)

online complaint form, you will be asked a series of questions that will take you to the particular section of the form you need to complete. If you do not use the online complaint form, your complaint, at a minimum, should indicate:

- your name, address, email address and phone number where you can be reached;
- the telephone or account numbers that are the subject of your complaint;
- the names and phone numbers of any companies involved with your complaint;
- the amount of any disputed charges, whether you paid them, whether you received a refund or adjustment to your bill, the amount of any adjustment or refund you have received, an explanation if the disputed charges are related to services in addition to residential or business services; and
- the details of your complaint or any additional relevant information.

### For More Information

If you are unable to obtain broadband services, or need help collecting any of the information you need about them, you can contact the FCC's Consumer Center using the information provided for filing a complaint. For information about other telecommunications issues, visit the FCC's Consumer and Governmental Affairs Bureau website at [www.fcc.gov/consumer-governmental-affairs-bureau](http://www.fcc.gov/consumer-governmental-affairs-bureau), or contact the Consumer Center. To contact your state public service commission, go to [www.naruc.org/commissions.cfm](http://www.naruc.org/commissions.cfm), or see the attached list.

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*For this or any other consumer publication in an accessible format (electronic ASCII text, Braille, large print or audio), please write or call us at the address or phone number below, or send an email to [FCC504@fcc.gov](mailto:FCC504@fcc.gov).*

*To receive information on this and other FCC consumer topics through the Commission's electronic subscriber service, visit [www.fcc.gov/cgb/contacts/](http://www.fcc.gov/cgb/contacts/).*

*This document is for consumer education purposes only and is not intended to affect any proceedings or cases involving this subject matter or related issues.*



## State and Territory Public Service Commission Contact Information

**Alabama:** 100 North Union St., Suite 850, Montgomery, AL 36104, Tel: 334-242-5218,  
Fax: 334-242-0509

**Alaska:** 701 West 8th Ave., Suite 300, Anchorage, AK 99501, Tel: 907-276-6222, Fax: 907-276-0160

**Arizona:** 1200 West Washington St., Phoenix, AZ 85007, Tel: 602-542-2237, Fax: 602-542-3977

**Arkansas:** 1000 Center Building, Little Rock, AR 72201, Tel: 501-682-2051, Fax: 501-682-5731

**California:** California State Building, 505 Van Ness Ave., San Francisco, CA 94102, Tel: 415-703-2782,  
Fax: 415-703-1758

**Colorado:** 1560 Broadway, Suite 250, Denver, CO 80202, Tel: 303-894-2000, Fax: 303-894-2065

**Connecticut:** 10 Franklin Square, New Britain, CT 06051, Tel: 860-827-1553, Fax: 860-827-2806

**Delaware:** 861 Silver Lake Blvd., Cannon Building, Suite 100, Dover, DE 19904,  
Tel: 302-739-4247, Fax: 302-739-4849

**District of Columbia:** 1333 H Street NW, 2nd Floor, Washington, DC 20005, Tel: 202-626-5100,  
Fax: 202-638-1785

**Florida:** 2540 Shumard Oak Blvd., Gerald Gunter Building, Tallahassee, FL 32399, Tel: 850-413-6344,  
Fax: 800-511-0809

**Georgia:** 244 Washington St., Atlanta, GA 30334, Tel: 404-656-4501 or 800-282-5813,  
Fax: 404-656-2341

**Guam:** 414 West Soledad Ave., GCIC Building, PO Box 862, Hagatna, Guam 96910, Tel: 671-472-1907,  
Fax: 671-472-1917

**Hawaii:** 465 South King St., Kekuanao'a Building, Honolulu, HI 96813, Tel: 808-586-2020,  
Fax: 808-586-2066

**Idaho:** 472 West Washington St., PO Box 83720, Boise, ID 83720-0074, Tel: 208-334-0300,  
Fax: 208-334-3762

**Illinois:** 160 North LaSalle St., Suite C-800, Chicago, IL 60601, Tel: 312-814-2850, Fax: 312-814-1818

**Indiana:** National City Center, 101 West Washington St., Suite 1500 East, Indianapolis, IN 46204,  
Tel: 317-232-2701, Fax: 317-232-6758

**Iowa:** 350 Maple St., Des Moines, IA 50319-0069, Tel: 515-281-5979, Fax: 515-281-8821

**Kansas:** 1500 S.W. Arrowhead Rd., Topeka, KS 66604, Tel: 785-271-3100, Fax: 785-271-3354

**Kentucky:** 211 Sower Blvd., Frankfort, KY 40601, Tel: 502-564-3940, Fax: 502-564-3460

**Louisiana:** Galvez Building 12th Floor, 602 North Fifth St., Baton Rouge, LA 70802, Tel: 225-342-4999  
or 800-256-2397, Fax: 225-342-2831

**Maine:** 242 State St., 18 State House Station, Augusta, ME 04333, Tel: 207-287-3831,  
Fax: 207-287-1039

**Maryland:** 16th Floor, 6 St. Paul St., Baltimore, MD 21202-6806, Tel: 410-767-8000, Fax: 410-333-6495

**Massachusetts:** One South Station, 2nd Floor, Boston, MA 02110, Tel: 617-305-3500,  
Fax: 617-345-9102

**Michigan:** 6545 Mercantile Way, Lansing, MI 48911, Tel: 517-241-6180, Fax: 517-241-6189

**Minnesota:** 121 Seventh Place East, Suite 350, St. Paul, MN 55101-2147, Tel: 651-296-7124,  
Fax: 651-297-7073

**Mississippi:** 501 North West St., Woolfolk State Office Building, Jackson, MS 39201-1174,  
Tel: 601-961-5400, Fax: 601-961-5842

**Missouri:** 200 Madison St., Governor Office Building, Jefferson City, MO 65101, Tel: 573-751-3234,  
Fax: 573-751-1847

**Montana:** 1701 Prospect Ave., PO Box 202601, Helena, MT 59620-2601, Tel: 406-444-6199,  
Fax: 406-444-7618

**Nebraska:** 300 The Atrium, 1200 N St., Lincoln, NE 68508-4927, Tel: 402-471-3101, Fax: 402-471-0254

**Nevada:** 1150 East William St., Carson City, NV 89701-3109, Tel: 775-684-6101, Fax: 775-684-6110

**New Hampshire:** 21 South Fruit St., Suite 10, Concord, NH 03301, Tel: 603-271-2431,  
Fax: 603-271-3878

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**New Jersey:** Two Gateway Center, 8th Floor, Newark, NJ 07102, Tel: 609-777-3300,  
Fax: 609-777-3330

**New Mexico:** 1120 Paseo de Peralta, PERA Building, Santa Fe, NM 87501-1269, Tel: 888-4ASK-PRC  
(888-427-5772), Fax: 505-827-4379

**New York:** Three Empire State Plaza, Albany, NY 12223, Tel: 518-474-7080, Fax: 518-474-0421

**North Carolina:** 430 North Salisbury St., Raleigh, NC 27603, Tel: 919-733-4249, Fax: 919-733-7300

**North Dakota:** 600 E Boulevard Ave., Dept 408, Bismarck, ND 58505-0480, Tel: 701-328-2400,  
Fax: 701-328-2410

**Northern Mariana Islands:** PO Box 505049, Saipan, Northern Mariana Islands 96950,  
Tel: 670-664-2206, Fax: 670-664-2211

**Ohio:** 180 East Broad St., Columbus, OH 43215, Tel: 614-466-3016, Fax: 614-466-7366

**Oklahoma:** Jim Thorpe Office Building, 2101 North Lincoln Blvd., Oklahoma City, OK 73105,  
Tel: 405-521-2211, Fax: 405-522-1623

**Oregon:** 550 Capitol St., NE, Suite 215, PO Box 2148, Salem, OR 97308, Tel: 800-522-2404

**Pennsylvania:** 400 North St., Commonwealth Keystone Building, Harrisburg, PA 17120,  
Tel: 717-787-5722, Fax: 717-787-4193

**Puerto Rico:** 235 Ave. Arterial Hostos, Capital Center, San Juan, Puerto Rico 00918,  
Tel: 787-756-0804, Fax: 787-756-0814

**Rhode Island:** 89 Jefferson Blvd., Warwick, RI 02888, Tel: 401-941-4500, Fax: 401-941-8827

**South Carolina:** 101 Executive Center Dr., Columbia, SC 29210, Tel: 803-896-5100,  
Fax: 803-896-5246

**South Dakota:** State Capitol, 500 East Capitol Ave., Pierre, SD 57501, Tel: 605-773-3201,  
Fax: 866-757-6031

**Tennessee:** 460 James Robertson Parkway, Nashville, TN 37243, Tel: 615-741-2904,  
Fax: 615-741-5015

**Texas:** 1701 North Congress Ave., Austin, TX 78711, Tel: 512-936-7000, Fax: 512-936-7003

**Utah:** 160 East 300 South, 4th Floor, Salt Lake City, UT 84111, Tel: 801-530-6716, Fax: 801-530-6796

**Vermont:** 112 State St., 4th Floor, Montpelier, VT 05620, Tel: 802-828-2358, Fax: 802-828-3351

**Virgin Islands:** PO Box 40, Charlotte Amalie, St. Thomas, Virgin Islands 00804, Tel: 340-776-1291,  
Fax: 340-774-4879

**Virginia:** 1300 East Main St., Richmond, VA 23219, Tel: 804-371-9608, Fax: 804-371-9376

**Washington:** 1300 S. Evergreen Park Dr., PO Box 47250, Olympia, WA 98504, Tel: 360-664-1160,  
Fax: 360-586-1150

**West Virginia:** 201 Brooks St., Charleston, WV 25301, Tel: 304-340-0300, Fax: 304-340-0325

**Wisconsin:** 610 North Whitney Way, Madison, WI 53705, Tel: 608-266-5481, Fax: 608-266-1401 or  
608-266-3957

**Wyoming:** 2515 Warren Ave., Suite 300, Cheyenne, WY 82002, Tel: 307-777-7427, Fax: 307-777-5700

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