

## The Growing Broadband Services Industry

Broadband in general refers to data transmission where multiple pieces of data are sent simultaneously to increase the effective rate of transmission. In network engineering this term is used for methods where two or more signals share a medium.

Broadband is often called high-speed Internet, because it usually has a high rate of data. In general, any connection to the customer of 256 kbit/s (0.256 Mbit/s) or more is considered broadband Internet.

The International Telecommunication Union Standardization Sector (ITU-T) recommendation I.113 has defined broadband as a transmission capacity that is faster than primary rate ISDN, at 1.5 to 2 Mbit/s. The FCC definition of broadband is 200 kbit/s (0.2 Mbit/s) in one direction, and advanced broadband is at least 200 kbit/s in both directions.

The OECD has defined broadband as 256 kbit/s in at least one direction and this bit rate is the most common baseline that is marketed as "broadband" around the world. There is no specific bitrate defined by the industry, however, and "broadband" can mean lower-bitrate transmission methods. Some Internet Service Providers (ISPs) use this to advantage, in marketing lower-bitrate connections as broadband.

As the bandwidth delivered to end-users increases, the market expects that video on demand services streamed over the Internet will become more popular, though at the present time such services generally require specialised networks. The data rates on most broadband services still do not suffice to provide good quality video, as MPEG-2 quality video requires about 6 Mbit/s for good results.

Adequate video for some purposes becomes possible at lower data rates, with rates of 768 kbit/s and 384 kbit/s used for some video conferencing applications. The MPEG-4 format delivers high-quality video at 2 Mbit/s, at the high end of cable modem and ADSL performance. The Ogg Tarkin format is intended to deliver similar performance.

One of the great challenges of broadband is to provide service to potential customers in areas of low population density, such as to farmers and ranchers. In cities where the population density is high, it is easy for a service provider to recover equipment costs, but each rural customer may require thousands of dollars of equipment to get connected.

A similar problem existed a century ago when electrical power was invented. Cities were the first to receive electric lighting, as early as 1880, while in the United States some remote rural areas were still not electrified until the 1940's, and even then only with the help of federally-funded programs like the Tennessee Valley Authority (TVA).

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### About the Author

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