

Technology for Librarians 101

Usage and Implementation – ISP/Connections

Definition of ISP

An **Internet service provider (ISP)** is an organization that provides services for accessing, using, or participating in the [Internet](#). Internet service providers may be organized in various forms, such as commercial, [community-owned](#), [non-profit](#), or otherwise [privately owned](#).

Internet services typically provided by ISPs include [Internet access](#), [Internet transit](#), [domain name](#) registration, web hosting, [colocation](#).

Source: http://en.wikipedia.org/wiki/Internet_service_provider

For listings of the ISP's and the type of Internet service they provide in your area – go to <http://broadbandmap.nebraska.gov>

Understanding Megabits and Megabytes

Broadband speed is measured in megabits per second (Mb or Mbps). A bit is the smallest unit of digital data.

- 1 byte = 8 bits
- 1000 bytes = 1 Kilobyte (Kbits or Kbps)
- Dial up speed connections are no more than 56 Kbits per second
- Gigabit speeds are becoming the new standard for economic development and institutional use

Download speed	Approximate time to download 3 megabyte pop song
56 Kbps	7 minutes
200 Kbps	2 minutes
768 Kbps	30 seconds
1.5 Mbps	15 seconds
3 Mbps	8 seconds
6 Mbps	4 seconds
10 Mbps	2 seconds

Source: *Does Broadband Boost Local Economic Development* by Jed Kolko, Public Policy Institute of California, http://www.ppic.org/content/pubs/report/R_110JKR.pdf

Broadband providers provide market connection speeds in ranges as it is difficult to estimate how fast a specific connection will be at a specific time. ISP's know they can provide a certain bandwidth to handle certain amounts of data - what they cannot predict is precisely when the data will be travelling and when specific demands will be on the network.

An example of a Broadband package ranges might be:

- 2 Mbps to 6 Mbps
- 6 Mbps to 10 Mbps
- 10 Mbps to 15 Mbps

In reality – there is no difference between uploading data and downloading data except for the direction of transferring data. The faster your Internet connection, the faster your uploading and downloading capability.

Test Your Internet Speed by clicking on
<http://broadbandmap.nebraska.gov>

Types of Broadband Internet Service

Broadband Technology	Download Speed Range	Connection
Dial-up	Up to 56 Kbps	Phone Line
DSL	768 Kbps – 6 Mbps	Phone Line
Satellite	400 Kbps – 2 Mbps	Wireless Satellite
3G	50 Kbps – 1.5 Mbps	Wireless
Cable Modem	1 Mbps – 1Gbps	Coaxial Cable
WiMax	Up to 128 Mbps	Wireless
Fiber	Up to 1 Gbps	Fiber optics
4G/LTE	Currently up to 10 Mbps	Mobile Wireless

Source: <http://broadband.about.com/od/speedissues/a/Broadband-Internet-Speeds-Explained.htm>

How much Broadband speed do I need?

Download Speed	Application
768 K – 1.5 Mbps	Basic email, web browsing, VOIP
1.5 Mbps – 3 Mbps	Streaming music, Standard Definition Video (SD), Remote Surveillance, Telecommuting
3 Mbps – 6 Mbps	File Sharing (small/medium files), IPTV (Internet Protocol Television)
6 Mbps – 10 Mbps	Online Gaming, Video on Demand (i.e. Netflix)
10 Mbps – 25 Mbps	Telemedicine, Remote Education, IPTV High Definition (HD)
25 Mbps – 50 Mbps	HD Video Surveillance
50 Mbps – 100 Mbps	Video Conferencing (Multiple users), Remote Supercomputing
> 100 Mbps	Real-Time Data Collection, Real-Time Medical Image Consultation

Source: <http://broadband.about.com/b/2011/10/01/broadbandspeedtable.htm>



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