

Considering Broadband Access

By [Fred W. Holzager](#)

Fair Lawn is a *wired* town. With the proliferation of boutique coffee shops, you may have thought this expression meant that the townspeople drank too much espresso. Nowadays, however, it also carries a different connotation—methods for Internet access.

The Fair Lawn School System recently made the decision to upgrade its access methods from multiple dial-ups to Digital Subscriber Line. Digital Subscriber Line, or DSL as it is commonly called, allows for computer communications to coexist on the phone line with voice communications. In other words, you can talk and connect to the Internet over the same phone line at the same time.

Depending on your situation, the DSL, although more expensive than dial-up, may be more economical. Some users subscribe to America Online, Prodigy and other dial-up Internet Service Providers (ISPs). Even though the price for dial-up is cheaper, once you factor in the time it adds to download files, access websites and communicate over the 'Net, in general, you may discover that it, in fact, may be less expensive to actually have DSL. There is a basic principle in economics called "Opportunity Cost." It refers to the "price" that you pay in terms of the alternatives to what you "buy." The point is that the time you save by spending the additional money on DSL may compensate for the time lost by using the slower dial-up connection. It's simple: Time is money.

Other access methods are over cable television lines and via satellite links. Satellite, as many may be aware, is subject to a performance hit during inclement weather. Cable, on the other hand, is a reliable alternative to DSL and is often perceived as its direct competitor. One of the factors affecting which to choose may be the general availability of either service. Most people can get cable service, thus, they often qualify for a service such as Optimum OnLine. DSL, however, is not always available to everyone. It has the physical limitation of the client being located within 18,000 feet of the Central Office and running their phone line over copper wires. So, it is possible for your neighbor to have DSL, while you cannot. This also means that changing your phone number, while remaining at the same location, will not change your ability to get DSL service.

DSL and cable lend themselves well to home networks. Both use a network card to connect the computer to the Internet through the modem. One difference with DSL is that every phone on the same phone line must have a filter to remove the "noise" generated by DSL on the wire. DSL uses three channels on the phone wire: one for voice, one for upload, and one for download. It is because of the two additional "streams" that the noise exists. They are also the reason you may see different speeds quoted for download and upload speeds (*e.g.*, 768Kbps/128Kbps). It is important to understand that your actual download and upload speeds may vary. The numbers shown are optimal.

If you visit the [Verizon](#) web pages, you will see their example of the DSL speeds compared to dial-up connections:

Super High-Speed Internet Access		
Dial-up vs. Verizon Online DSL: A quick comparison		
Application	Dial-up	Verizon Online DSL
Download 1MB family reunion photos	Over 4 min.	About 25 sec.
Download 1.5 MB huge research proposal	Over 6 min.	About 40 sec.
Download 2.5 MB MP3 music	Over 10 min.	About 60 sec.
Download 6 MB sports/news video clip	Over 25 min.	About 2.5 min.

Speed comparisons are based on the following throughput comparisons: 32 Kbps for 56 Kbps modem and 320 Kbps for 768 Kbps DSL.

As the chart above indicates, the download times will vary based on the compression technology used. A video clip is not in as compressed a format as a photo may be, so one may download in 1/10 the speed of a dial-up connection, whereas another may download in 1/6 the time.

Dial-up is common inasmuch as it has been around for a long time. However, DSL and cable connections are quickly being made available to travelers that require Internet access in hotels and other locations such as convention halls and libraries. It should be noted that not all high speed access for institutions is provided over DSL or cable, many use T-1s and enterprise level connections provided by a range of commercial carriers. A T-1 or T-3 connection is a high speed "trunk" which provides Internet access over a number of channels. A T-1 provides a total bandwidth (speed) of 1.544 megabits per second (Mb/s); A T-3 provides a total bandwidth of 44.736 Mb/s. If you can imagine DSL being equal to roughly one channels (upload at up to 128kilobits per second—actual performance will be less), then T-1 would be 24 channels and T-3 would be 632 channels. Even though the cost may not be proportional, the pricing for a T-1 or T-3 is typically beyond the price range of a residence or small business.

Fortunately, for the small business that cannot afford the full T-1 with 24 channels, there is another "product" available which offers partial access to the T-1 capacity. It is called a "Fractional T-1." It is available in increments from 1 or 2 through to 23 channels. If you think this is for you or if you are interested in learning more about the items discussed above, feel free to contact Holzsager Technology Services, Inc. at (201) 797-5050 or by e-mail at info@tech4now.com. For general information about other services for your home or office, kindly visit www.tech4now.com, there you may retrieve additional information bulletins and articles to help you use technology to your fullest advantage.