Different Flavors Of Dsl Essay, Research Paper

With the continuous demand for better and faster Internet performance, service providers have flooded the market with numerous high-speed Internet products. Consumers are faced with the decision to remain with the slow speed of dial-ups and modems or move up to one of the high-speed products. One such product is the Digital Subscriber Line, better known as DSL. There are several variations of DSL, but we will be focusing on ADSL, G.Lite, and VDSL.

DSL is a technology for bringing high-bandwidth information to homes using existing copper telephone lines. It was developed to allow the telephone companies to be able to fully utilize the millions of twisted copper wires that comprise the POTS– “Plain Old Telephone Service”– network of the Public Switched Telephone Network (PSTN). According to ADSL.com there are 750 million plus existing copper wires in the telephone infrastructure today. With the development of this new technology, telephone companies can receive great benefits by reusing these existing copper wires. In addition, both the telephone companies and consumers can bypass the cost of installing new dedicated fiber cables to the curb (FTC).

DSL works by using the traditional phone service (POTS), which connects your home to a telephone company. This connection allows users to exchange voice information by converting an acoustic signal (the voice) into an electrical equivalent (analog wave). This existing analog wave transmission only uses a small portion (about 4KHz) of the available 1MHz frequencies for voice transmission. The remaining frequencies can be used for transmitting data. The only limitation is that you must be within 18,000 feet of the CO (Central Office).

DSL is a technology that assumes digital data does not require a change from analog form and back. By sending digital data back and forth from your PC to the phone company, your computer does not have to modulate and demodulate the information as it does when using a modem. This allows digital data to be transmitted from your computer to the phone company, achieving a much wider bandwidth. The signal is separated (modulated) so that both the computer and the telephone can be used simultaneously without interruption.

Typically, the layout of a DSL network can be split into two parts: The customer’s premises and the central office (CO). The customer’s PC is connected to a DSL modem, which is then connected to the POTS (Plain Old Telephone System). Data and voice are then split as they are transmitted to the CO. Voice goes to the PSTN (Public Switched Telephone Network) and data goes to the DSLAM (DSL Access Multiplexer). Data is then routed to the Carrier Network, the ISP (Internet Service Provider) and on to the Internet.

Speeds of DSL can vary greatly depending on the proximity of your home to the central office. Homes in close proximity may be able to receive data rates up to 6.1 megabits per second, enabling continuous transmission of motion, video, audio and 3-D effects. Typically, however, single connections will provide downstream rates of 1.544 Mbps to 512 Kbps and an upstream rate of approximately 128 Kbps.

Just as speed rates can vary, the types of DSL available also varies. ADSL (Asymmetric Digital Subscriber Line) is the most familiar and widely available. The term Asymmetrical reflects the fact that the amount of bandwidth dedicated to downstream traffic is not equal to the amount dedicated to upstream traffic. Thus, the design of ADSL is meant to exploit the one-way nature of most multimedia communications on the Internet. The reasoning behind this design is that the amount of data received from Internet applications in downloading is greater than the data normally received when sending. For this reason, downstream data rates range from 512 kbps to around 6 mbps and upstream rates are limited to around 1 mbps. ADSL is usually preferred in small businesses and in residential locations where downstream speeds are more important than upstream speeds.

G.Lite or Splitterless DSL, also known as “ADSL Lite” or Universal DSL was developed for its ease and speed of installation. G.Lite uses the advantage of remotely splitting the telephone line at the phone company’s central office (CO). It can handle the same speeds as the ADSL of up to 6mbps downstream and 1 mbps upstream. The main difference between ADSL and G.Lite is that the phone company is not required to visit the customer’s premises for installation. After the telephone company is set up to support G.Lite all they need to do is grant access to the customer and send out the necessary hardware and software to the customer’s premises. By doing this, phone companies are not limited by the number of customers that can be setup within a given time frame. G.Lite is not attractive to small businesses but the user-friendly equipment often appeals to the common Internet user who wants to do the installation on his/her own.

Finally, VDSL (Very high data rate DSL) is just around the corner. This new version of DSL is still in development, but appears to have some great potential. It promises to offer transfer rates around 55 mbps downstream and around 2 mbps upstream using the same copper wires as other forms of DSL. The distance is quite restrictive, and requires the users to fall between 300 meters to 1.4 km from the CO. VDSL is being developed for bringing a high-speed infrastructure closer to the customer’s premises. This is an attractive alternative from using FTTC (Fiber to the Curb) or FTTN (Fiber to the Neighborhood), but will not be available for the majority of the market until it can figure out how to break out of this 4,000-foot radius restriction.

Although the future promises new and better Internet technologies, DSL is the current choice for high-speed Internet access. It has dramatically affected today’s telecommunications technology and should prove to assist in communications advancements. In an interview with a Southwestern Bell Representative, we were informed that they are undergoing a 6 billion dollar project to deliver DSL to about 80 percent of the market by 2001. Due to the current restriction of 18,000 feet, SW Bell is attempting to place remote central offices to accommodate the demand to provide DSL service to rural communities. Once this is complete, we believe that prices for a digital subscriber line will decrease while the use of dial-up connections will become obsolete.

Today, the technology for high-speed Internet access and network-to-network connections is more accessible than ever before. DSL technology is expanding the use of these services to areas that had previously been accessible only through expensive and hard to manage T1 connections. DSL is quickly bringing high-speed connections to individuals and homes, but seems to be lacking the adequate Information Technology personnel or expertise to easily install and maintain the equipment. DSL will be playing a crucial role in the next ten or more years as the telephone companies enter new markets for delivering video and multimedia information. The success of these new services will depend on reaching as many subscribers as possible during the next few years. It should prove to be quite successful in bringing movies, television, video catalogs, corporate LANs, and the Internet into homes and businesses. The future holds a market for DSL where the bandwidth will be increasing, the graphics will be intensifying, the video will be crisp, and the speed will be phenomenal. DSL will literally transform the existing public information network from one limited to voice, text, and low resolution graphics to a powerful system capable of bringing multimedia, including full motion video, to everyone’s home this century.

“Benefits of DSL”. http://www.gofordsl.com/benefdsl.htm.

“DSL – How It Works”. http://www.whatis.com

“What is DSL?”. http://www.3com.com/solutions/dsl/dsl\_what\_is\_dsl.html

“What is DSL?”. http://www.efficient.com/tlc/whatdsl.html

“zNET DSL High Speed Internet Access”. http://www.znet.com/dsl.html.