DSL - Digital Subscriber Line

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What is DSL?

Digital Subscriber Line (DSL) is a technology that provides digital data transmission over the existing wires of local telephone network.

• DSL service is delivered simultaneously with regular telephone on the same telephone line.

• Digital Subscriber Line (DSL) is a broadband high-speed Internet technology that brings high-bandwidth information to home and offices over ordinary copper telephone lines.This is possible because DSL uses a higher frequency.

• Digital data is transmitted directly to the computer, as is, exploiting the maximum bandwidth and the wide range of unused frequencies available in the existing copper wire of telephone networks for high-speed broadband communication.

Characteristics

- Distance- sensitive technology.
- Internet connection is always ON.
- Simultaneous use of the phone line for voice as well as data traffic.
- Internet Connection is highly reliable and secure.
- High Speed (Mbps) for a regular modem is 56 Kbps max

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Types of DSL

There are two main types of DSL:

- **ADSL(Asymmetric Digital Subscriber Line)**
- **SDSL(Symmetric Digital Subscriber Line)**

Other types of DSL include:

- **VDSL(Very high-bit-rate Digital Subscriber Line)**
- **RADSL(Rate Adaptive Digital Subscriber Line)**
- **HDSL(High bit/data rate Digital Subscriber Line)**
- **ISDN DSL(Integrated Service Digital Network)**

Asymmetric Digital Subscriber Line (ADSL):

• The transfer of data from the internet to PC is much faster than the transfer from PC to internet.

• Downstream speeds for ADSL range from 1.59 Mbps, while upstream speeds are up to 1.5 Mbps, for a distance of 18,000 feet from the service providers premises.

• Most home and small business users typically use ADSL.

Symmetric Digital Subscriber Line (SDSL)

- Splits the upstream and downstream frequencies evenly, providing equal speeds to both uploading and downloading data transfer. This connection may provide 2 Mbps upstream and downstream.
- Does not allows to use the phone at the same time.
- It is mostly preferred by small organizations.

DSL Devices

• DSL is a modem pair. One DSL modem is located at the customer premises and another DSL Access Multiplexer (DSLAM) is at the Central Office (CO).

• These two modems create a Digital Subscriber Line or DSL.

• DSL modems transmit data at the rate of up to 160 Kbps over copper lines, up to 18000 feet.

• DSLAM at the Central Office or the Access Provider is the one that actually makes the DSL happen .

• It accepts connections from various customers and aggregates them into a single high capacity connection to the Internet.

• In addition, the DSLAM also does IP routing and Dynamic IP address assignment.

Applications

•DSL is typically used by telephone companies to offer data, video, and voice services over these existing copper telephone lines. DSL does not displace or disrupt the operation and quality of the existing analog telephone service offered on telephone lines, so that both analog phone and broadband services can be simultaneously offered.

Interactive Video – movies on demand , video on demand , video conferencing.

• High-speed Data communication – Internet access, Telecommuting,

Remote LAN access ,specialized network access.

Advantages

• DSL service is always ON and we can still use the phone for voice calls.

• Broadband speed is much faster than dial up service.

• Fixed monthly billing, regardless of time usage.

• Digital data is directly transmitted to computer as digital data which uses much wider bandwidth for transmitting.

- No Additional Wiring – A DSL connection makes use of your existing telephone wiring, so you will not have to pay for expensive upgrades to your phone system.
- Cost-Effective – DSL internet is a very cost-effective method and is best in connectivity
- Availability of DSL modems by the service providers.
- Users can use both telephone lines and the internet at the same time. And it is because the voice is transferred on other frequencies and digital signals are transferred on others.

Disadvantages

- As you move away from the central office , the connection becomes slower.
- This results is distortion of signal.
- DSL connection works better when the PC in question is nearer to the provider’s office.
- DSL connection receives data faster, but it lacks speed during transmission.
- Availability is an issue in remote areas.

THANK YOU!