Introduction to Information Technology

CSC109

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The Internet & Internet Services

1. Introduction;
2. History of Internet;
3. Internetworking Protocol;
4. The Internet Architecture;
5. Managing the Internet;
6. Connecting to Internet;
7. Internet Connections;
8. Internet Address;
9. Internet Services;
10. Uses of Internet;
11. Introduction to Internet of Things (IoT),
12. Wearable Computing and Cloud Computing,
13. Introduction to E-commerce,
14. E-governance, and
15. Smart City and GIS

Website Processing

1. Every website is hosted on a server (physical or virtual) and these servers have a public IP address.
2. when a request is made by the client machine for a particular website the browser sees what protocol is being requested
3. http uses port 80 for any traffic, while https uses port 443 for its traffic.
4. Browser then checks whether the website was visited before by checking its cache,
5. if it was visited before it loads the website from that cache
6. if it was not visited before then browser sends it to query the DNS of the local machine which returns with an IP address.
7. Once this IP address is received browser then establishes a connection using TCP/IP
8. Display the web page

Connecting To Internet

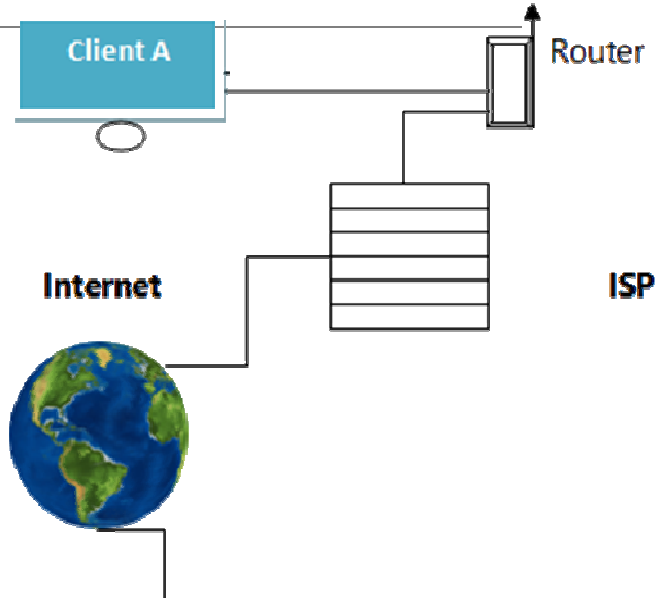
(1) a TCP/IP enabled computer,

(2) web browser software,

(3) Subscription with an ISP,

(4) Connection with ISP

(5) a modem or Network Interface Card (NIC)

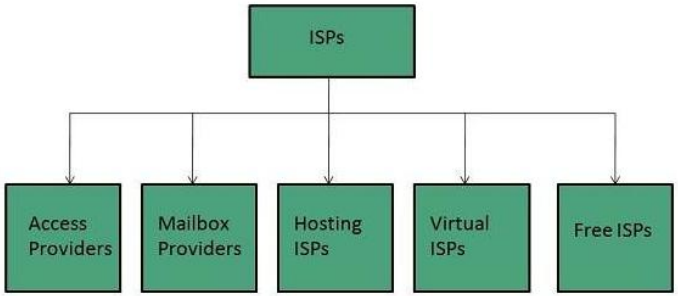


Internet "Governing" Bodies

- **Internet Society (ISOC);** Membership Orgn, responsible for development of Standard and Protocolcs
- **Internet Architecture Board(IAB);** Advisor body of ISOC, development of internet architecture.
- **Internet Engineering Task Force (IETF):** A body of several thousands or more volunteers network designers, Operators, Vendors and research. Meet three times a year, responsible for evolution of internet,
- **Steering Group (IESG);** Approves Standards, review standards submitted by IETF.
- **Internet Research Task Force (IRTF);**
- **Internet Assigned Number Authority(IANA);**
- **Internet Network Information Center (InterNIC);**
- **World Wide Web Consortium (W3C);**

Internet Connections

The ISPs provide Internet connections of different types.



Bandwidth and cost are the two factors

The speed of Internet access depends on the bandwidth. The speed of Internet access increases with the increase in bandwidth.

Speed also depends upon types of connections (Dial-up connection, broadband connection)

Internet Connection Types

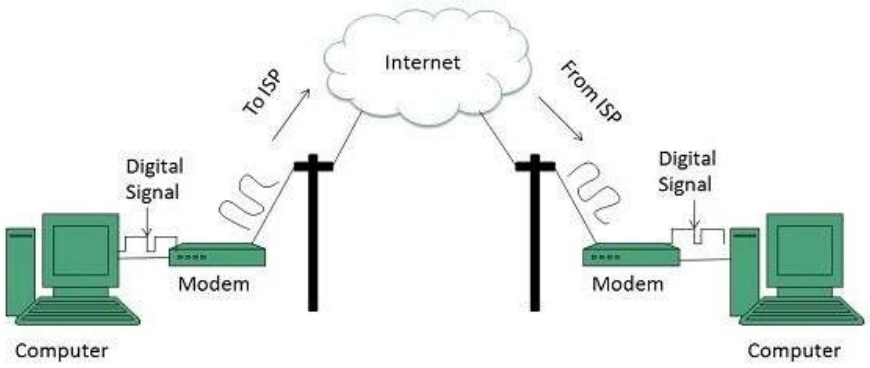
1. Dial-up Connection

Dial-up connection uses telephone line to connect PC to the internet. It requires a modem to setup dial-up connection.

communication program that instructs the modem to make a call to specific number provided by an ISP.

Dial-up connection uses either of the following protocols:

- Serial Line Internet Protocol (SLIP)
- Point to Point Protocol (PPP)



2. ISDN

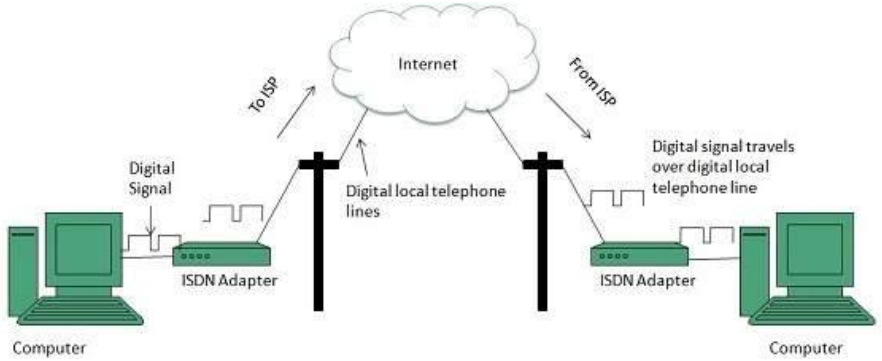
ISDN is Integrated Services Digital Network. It establishes the connection using the phone lines which carry digital signals instead of analog signals.

It can transmit voice, data and control information over an existing single telephone line.

There are two techniques to deliver ISDN services:

Basic Rate Interface (BRI)

Primary Rate Interface (PRI)



Key points:

Internet access is faster using ISDN than Dial-up access.

commonly used for business purposes

costlier than Dial-up connection

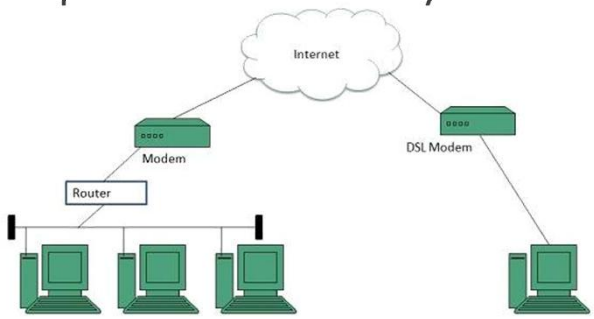
ISDN services are largely being replaced by high speed broadband connection.

4. DSL (Digital Subscriber Line)

It is a form of broadband connection as it provides connection over ordinary telephone lines.

Following are the several versions of DSL technique available today:

- Asymmetric DSL (ADSL)
- Symmetric DSL (SDSL)
- High bit-rate DSL (HDSL)
- Rate adaptive DSL (RDSL)
- Very high bit-rate DSL (VDSL)
- ISDN DSL (IDSL)



All of the above mentioned technologies differ in their upload and download speed, bit transfer rate and level of service.

Data transmission speed of DSL ranges from 128 Kbps to 8.448 Mbps.

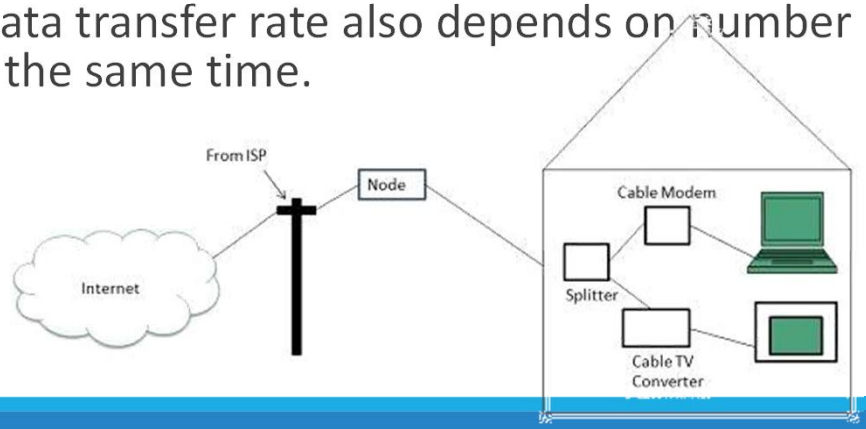
4. Cable Modem

A cable modem is used to access this service, provided by the cable operator.

It uses coaxial cable which is capable of transferring data at much higher speed than common telephone line.

The Cable modem comprises of two connections: one for internet service and other for Cable TV signals.

Since Cable TV internet connections share a set amount of bandwidth with a group of customers, therefore, data transfer rate also depends on number of customers using the internet at the same time.



Internet Address

A computer connected to the Internet must have a unique address in order to communicate across the Internet.

ISP provides unique Internet Protocol (IP) address to every computer connected to the Internet

IP address is a string of numbers consisting of four parts, each part range from 0 to 255