INDIAN SCHOOLMUSCAT

CLASS XI

INFORMATION TECHNOLOGY(802)

Chapter - 2 : Networking and Internet

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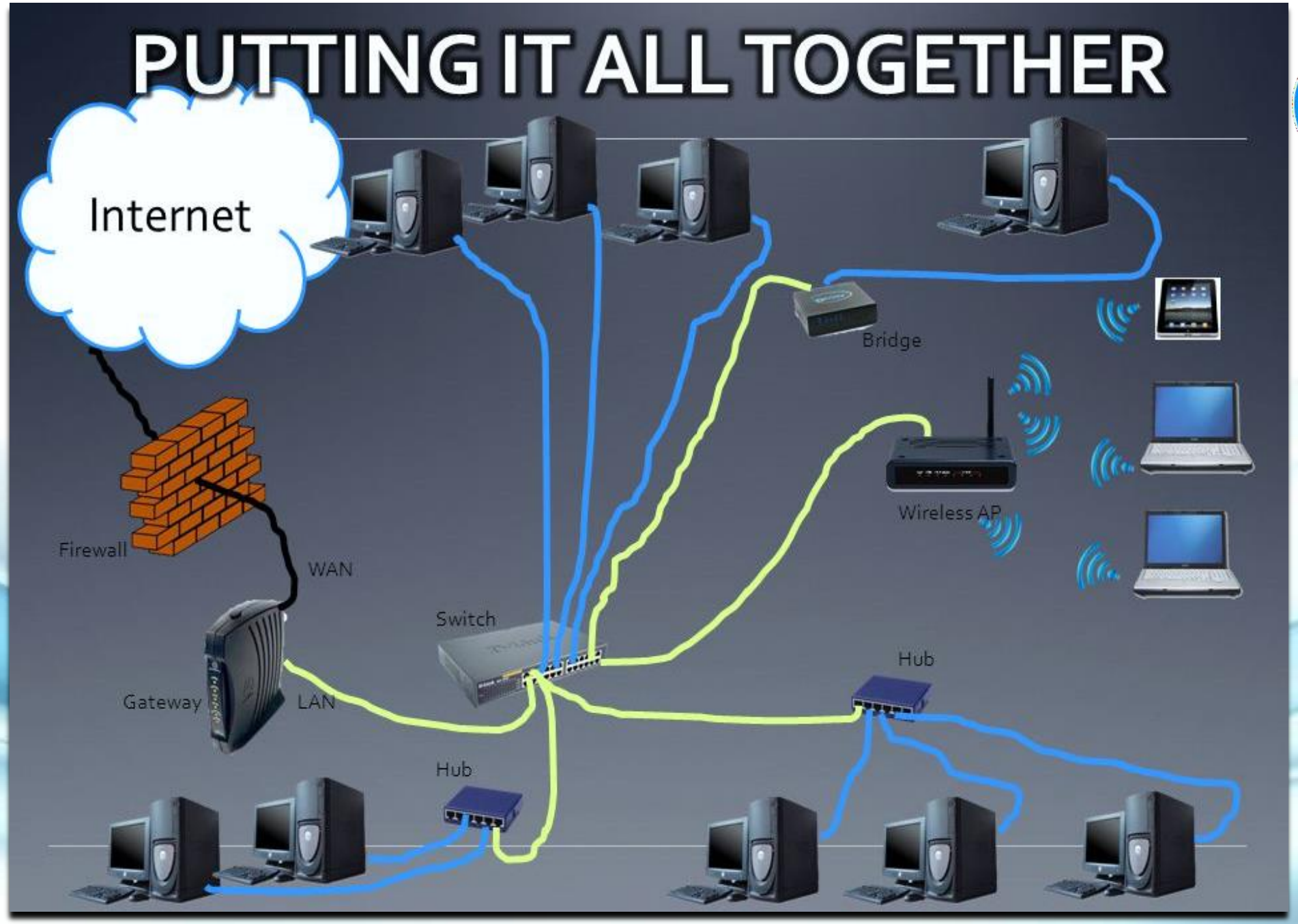
PUTTING IT ALL TOGETHER



Internet

A wide network of networks i.e. interconnection of WANS form the global Internet. It is neither owned by any single individual nor by any single organization.

It has made it possible to exchange information and communicate with remote nodes.

Internet continued….

One can access the Internet using several means such as leased line, dial-up access, and wireless connectivity. The machines on the Internet are known as hosts. The machine that initiates a request is called client and the machine that processes a client request is called server.

Applications of Internet

There are several applications of Internet such as e-mail, file transfer, remote login, and World Wide Web (WWW).

Electronic Mail (E-Mail):

An email may be a written text and may include multimedia attachment consisting of text, audio, image, or video. Sender of the e-mail may send it to one or more intended recipients.

Electronic Mail (E-Mail): continued…

Sending and receiving of mails can take place through web based e-mail application also called webmail application, (such as, Gmail, Windows Live Hotmail, and *Yahoo*), or a desktop based e-mail applications (such as, Microsoft outlook, Thunderbird, mail application on mobile phone).

Electronic Mail (E-Mail): continued…

Transferring mail over the Internet is governed by a set of rules known as email protocols such as SMTP (Simple Mail Transfer Protocol) and POP3 (Post Office Protocol).

Applications of Internet

File Transfer:

Transferring files from one machine to another through a TC P based network is done using FTP (File Transfer Protocol).

File Transfer Protocol is based on client server architecture.Using FTP, local host (client) can download or upload files to and from remote host (server).

Applications of Internet

Remote Login (TELNET):

TELNET stands for TErminaL NETwork. It is a client server based application that allows the user working on one system to access a remote system. For initiating remote login, the user (client) should specify the address of remote system, and should authenticate himself/herself using username and password mechanism.

Remote Login (TELNET): continued…

On successful login, the client can access the remote system.

TELNET service is often used for accessing data on the remote host, or executing on the server the applications installed on it (server).

Applications of Internet

World Wide Web (WWW):

World Wide Web (WWW), commonly known as web, is a repository of information on machines spread all over the Internet and linked to each other. The information is organized in the form of documents called web pages.

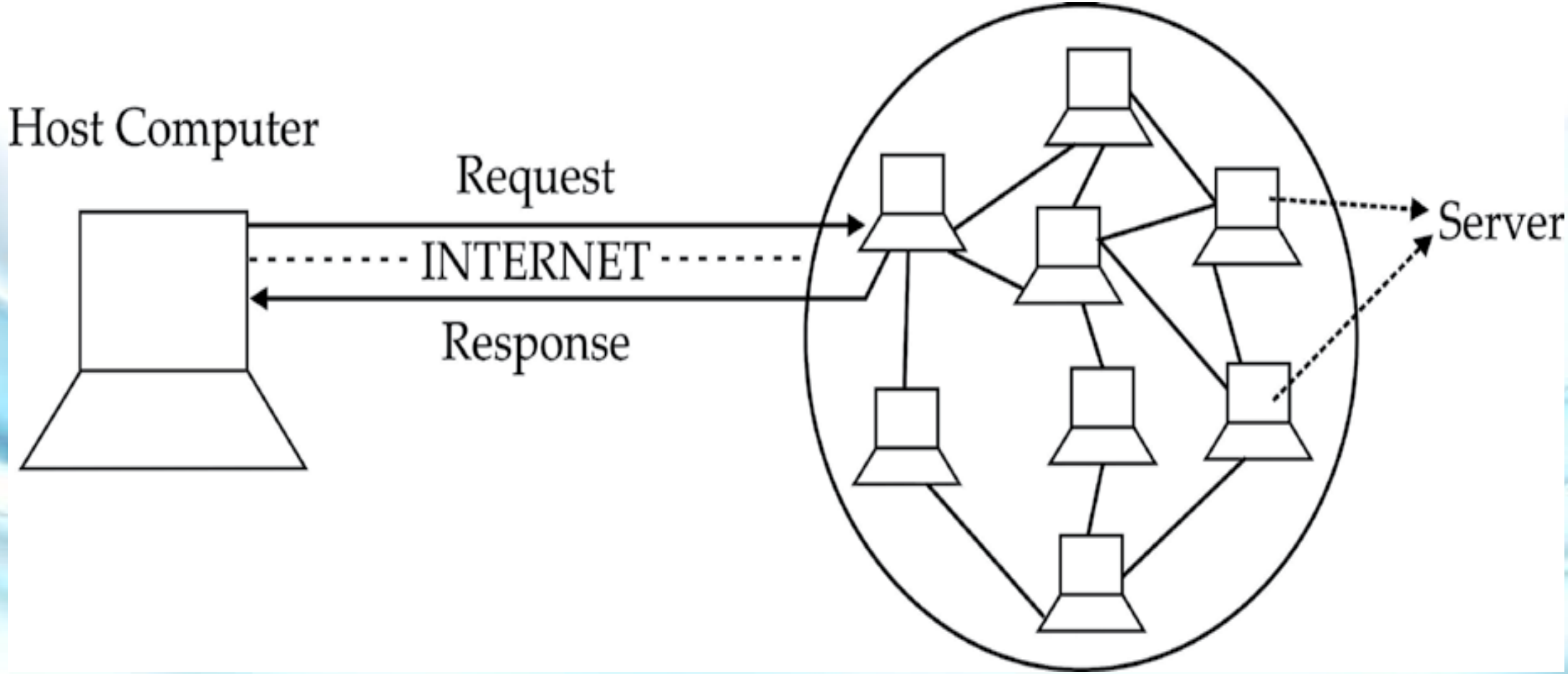
World Wide Web (WWW): Continued…

A web page may contain text, images, audio, videos, and information for linking the web pages in the form of hyperlinks.

WWW uses distributed client server architecture based on HTTP (Hyper Text Transfer Protocol).

The client request is relayed through Internet to the appropriate server, which sends back the reply through Internet to the host system.

WWW and Internet



TCP/IP Model

The TC P/IP (Transmission Control Protocol/Internet Protocol) is often called the glue which holds Internet and WWW (collection of servers where information is stored)together.

When we are dealing with the Internet, we are essentially dealing with the TC P/IP model.

TCP/IP Model continued…

The simple task of sending the data from one place to another through network requires several sub-tasks such as specifying sender and receiver's network and physical address, dividing the message into smaller fragments so that they can be easily transmitted over Internet, taking appropriate measures for error and flow control, and taking necessary action on receiving the message.

TCP/IP Model (4 – Layers)

APPLICATION LAYER (HTTP, FTP, SMTP, …)
TRANSPORT LAYER (TCP, UDP, …)
INTERNET LAYER (IP,ICMP,ARP,…)
LINK LAYER (Ethernet, Wifi, …)

APPLICATION LAYER

APPLICATION LAYER: Data/message is created at the sender's end at Application layer. At the receiving end it is examined and processed (possibly displayed) at Application layer. This layer is also responsible for enveloping the message to be sent with the header. Several protocols such as HTTP, SMTP, POP3, and TELNET (remote login) operate on this layer.

TRANSPORT LAYER

TRANSPORT LAYER: Application layer passes the message to the Transport layer which appends the information about the source and destination ports of the processes at two ends. At the ends, the ports process the message. Mainly two end-to end protocols operate at this layer, namely TCP and UDP.

TRANSPORT LAYER Continued…

TCP (Transmission Control Protocol) is a reliable connection-oriented protocol needed when timely and error free delivery of data is important.

UDP (User Datagram Protocol) is an unreliable connectionless protocol needed in a scenario such as exchange of short messages and client server request-reply messages, where immediate response is more important rather than assured delivery.

TRANSPORT LAYER Continued…

Further, transport layer divides the message into a number of fragments, called segments, depending upon the maximum transmission size permitted.
In TCP, each segment will carry the sequence number denoting its relative position in the message, so that, the message can be assembled at the receiver end by the transport layer at recipient's end.

Any Questions?