Unit-6 Notes- Application Layer

It is the top most layer of OSI Model. Manipulation of data(information) in various ways is done in this layer which enables user or software to get access to the network. Some services provided by this layer includes: E-Mail, file transferring, distributing the results to user, directory services, network resources, virtual terminals etc.

The Application Layer contains a variety of protocols that are commonly needed by users. One widely-used application protocol is HTTP(HyperText Transfer Protocol), which is the basis for the World Wide Web. When a browser wants a web page, it sends the name of the page it wants to the server using HTTP. The server then sends the page back.

Other Application protocols that are used are: File Transfer Protocol(FTP), Trivial File Transfer Protocol(TFTP), Simple Mail Transfer Protocol(SMTP), TELNET, Domain Name System(DNS) etc.

Services of Application Layer

1. **E-Mail Services:** This layer provides the basis for E-mail forwarding and storage. e-mail needs special considerations: the senders and recipients are people, not machines or processes. The people aspect has resulted in e-mail systems having both a user interface component customized for e-mail, and a layer 7 transportation library and protocol designed especially for e-mail. E-mail messages have highly structured format - messages may include 'to' list, 'from', date, time, carbon copy list, expiry date, importance level, etc.

2. **Network Virtual Terminal:** It allows a user to log on to a remote host. The application creates software emulation of a terminal at the remote host. User's computer talks to the software terminal which in turn talks to the host and vice versa. Then the remote host believes it is communicating with one of its own terminals and allows user to log on. An application layer allows a user to log on to a remote host. To do so, the application creates a software emulation of a terminal at the remote host. The user's computer talks to the software terminal, which in turn, talks to the host. The remote host thinks that it is communicating with one of its own terminals, so it allows the user to log on.

3. **Directory Services:** This layer provides access for global information about various services. An application contains a distributed database that provides access for global information about various objects and services.

4. **File Transfer, Access and Management (FTAM):** It is a standard mechanism to access files and manages it. Users can access files in a remote computer and manage it. They can also retrieve files from a remote computer. An application allows a user to access files in a remote computer, to retrieve files from a computer and to manage files in a remote computer. FTAM defines a hierarchical virtual file in terms of file structure, file attributes and the kind of operations performed on the files and their attributes. File transfer and remote file access are two of the most common network applications (e.g. NFS and FTAM, not just FTP). Remote file access is similar to transfer except that only pieces of files are read or written. e.g. file servers Techniques used for transfer and access are very similar, so we will not make much of a distinction between them until we see file replication. For simplicity we will assume that files are located on file server machines with users on client machines wanting to transfer files in whole, or part, for reading or writing.

A public network is a network to which anyone can connect. The best, and perhaps only pure, example of such a network is the Internet. A private network is any network to which access is restricted. A corporate network or a network in a school are examples of private networks. The main difference between public and private networks, apart from the fact that access to a private network is tightly controlled and access to a public network is not, is that the addressing of devices on a public network must be considered carefully, whereas addressing on a private network has a little more latitude. As already discussed, in order for hosts on a network to communicate by using TCP/IP, they must have unique addresses. This number defines the logical network each host belongs to and the host's address on that network. On a private network with, say, three logical networks and 100 nodes on each network, addressing is not a particularly complex task. On a network on the scale of the Internet, however, addressing is very complex.

If you are connecting a system to the Internet, you need to get a valid registered IP address. Most commonly, you would obtain this address from your ISP. Alternatively, for example, if you wanted a large number of addresses, you could contact the organization responsible for address assignment in your geographical area. You can determine who the regional numbers authority for your area is by visiting the IANA website.