Types of network

Presented by

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Physical Layer: Lower layer or hardware layer

It is responsible for establishing physical connection.

Establishment

Maintenance

Deactivation

Information will be in form of bits

Transmission and signal converts to 0s and 1’s

Function:

Bit synchronization: At a time one bit should be transferred and by providing clock the synchronization could be achieved. Responsibility of this bit synchronization achieved by physical layer. **Physical Addressing:**

Destination hardware address will be included as header.

Error control: some sort of bits will be generated and added with original data.

N/w layer responsible for source to destination delivery of a packet across multiple networks.

Data link layer do the delivery of a packet between two systems on the same network.

Functions:

Logical addressing

Physical addressing implemented in data link layer. If packet passes the network boundary we need logical addressing to identify the source and destination.

Network layer adds a header to the packet that includes logical address of the sender and receiver.

Routing

Various networks are linked together then we need a connecting device to route the packets to correct destination.

Transport layer

It is responsible for end to end delivery of an entire message.

N/w layer controls the source to destination delivery of an individual packet. It also adds Source and Destination port number in its header and forwards the segmented data to the Network Layer.

Functions

Service port addressing

Computers run many processes at a time. So end to end delivery means but also process running in one computer to the process running in another computer. transport layer makes sure that the message is delivered to the correct process. Transport layer header should include a port address.

Segmentation and reassembly:

From session to network: message divided into segments in the source side.

From network to session: Reassemble the packets and send to session in the destination side.

- **Connection Oriented Service:** It is a three-phase process which include
  – Connection Establishment
  – Data Transfer
  – Termination / disconnection
  In this type of transmission, the receiving device sends an acknowledgement, back to the source after a packet or group of packet is received. This type of transmission is reliable and secure.
- **Connection less service:** It is a one-phase process and includes Data Transfer. In this type of transmission, the receiver does not acknowledge receipt of a packet. This approach allows for much faster communication between devices. Connection-oriented service is more reliable than connectionless Service.

Flow control: speed between sender and receiver

Error control: Transport layer is responsible for ensuring the entire message arrived at the destination without error.

Session layer:

It is a network dialog control. It establishes maintains and synchronizes the interaction between systems.

Dialog control

Synchronization: Add checkpoints inside the message.

Presentation layer(Transalation layer):

Transalation: Different systems perform different encoding systems. ASCII to EBSDIC

Encryption: carry sensitive data. Cipher text and plain text

Compression: Reduce the bits that is need to be transmit on the network.

This layer also serves as a window for the application **Application Layer:** Services to access the network and for displaying the received information to the user.(Desktop layer)


Thank you!