

Module 1

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Mod1
Revision

Topology: Mesh, Star, Bus, Ring

Mesh: Each Node connected to each other → (Hub)

Star: Each Node connected to a central controller

Bus: Each Node connected to a central cable (uses drop lines and taps)

Ring: Each node connected to two devices on either side. (connection is done physically or logically)
(Repeaters are used)

Hybrid: Mix of other topology.

Types: PAN, LAN, WAN, MAN

Circuit Switching:

★ Dedicated connection between two end systems.

- * Switch make it active or inactive.
- * Resources are reserved and used till data transfer is over
- * High Capacity Line: 3 comm at same time.

Packet Switching:

- * Data → Fixed No. of Packets
- * No resource allocation
- * If other packets are processing, no matter what if new packet was received it must wait.
- * Routers - store and forward packets

Even though there are multiple packets for same data, each packets are considered separately

OSI Model: Physical, Datalink, Network, Transport, Session, Presentation, Application Layers → All 3 together called as Application Layer in TCP/IP model

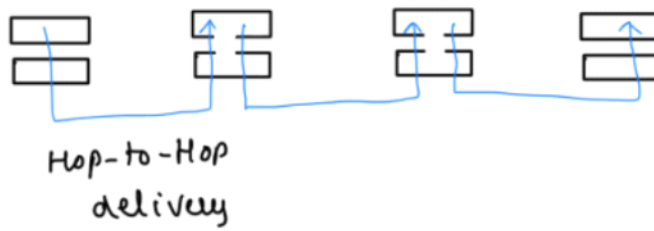
Physical Layer:

- ★ Movement of individual bits from one hop to other on physical medium

Datalink Layer:

- ★ Facilitates data transfer between two devices on same network.
- ★ Responsible for breaking / reassembly of frames
- ★ Handle error.
- ★ Provide reliable comm.
- ★ Provide error detection and correction.
- ★ Implement flow control.
- ★ Support point-to-point, broadcast comm.

- ★ " simplex, duplex and full duplex comm.



Network Layer:

- ★ Responsible for data transfer between 2 different networks.
- ★ Host-to-Host Communication
- ★ It uses IP.
- ★ IP : defines format and Structure of addresses used.
- ★ Responsible for routing packets from source to destination.

- * Connectionless Protocol; No Flow Control, No error control.
- * Defines logical addressing.
- * Fragment **Packets**.



Source to destination delivery

Transport Layer:

- * Responsible of delivery of message from one process to another.
- * End-to-End delivery
- * Provides acknowledgement of successful data transmission

- ★ Breaking up as segments.
- ★ Receiving device responsible for reassembly }
- ★ Performing error control, flow control.
- ★ Service Point Addressing: Add Port Address as header.

Session Layer:

- ★ Responsible for dialog control and synchronization.
- ★ Establish connection, maintenance of sessions and authentication for security.
- ★ a process to establish, use and terminate.
- ★ Synchronization: Add checkpoints (synchronization points) to identify and resynchronize data again.
- ★ Responsible for Logon and password validation
- ★ Defines how to start, control and end conversations.

Presentation Layer:

- ★ Translation : ASCII
- ★ Encryption / Decryption :
 - Cipher Text : Encrypted Data
 - Plain Text : Decrypted Data
 - Key Value is used for encryption and decryption.
- ★ Compression : Reduce number of bits.

Application Layer:

- ★ Responsible for providing services to the users.

TCP/IP Model: Physical , Datalink , Network , Transport ,
Application Layers .