Q1 Virtual Circuit is the comp network providing a highly reliable medium of transfer. It is a cross-terminal b/w circuit switched network and a datagram network.

Characteristics:

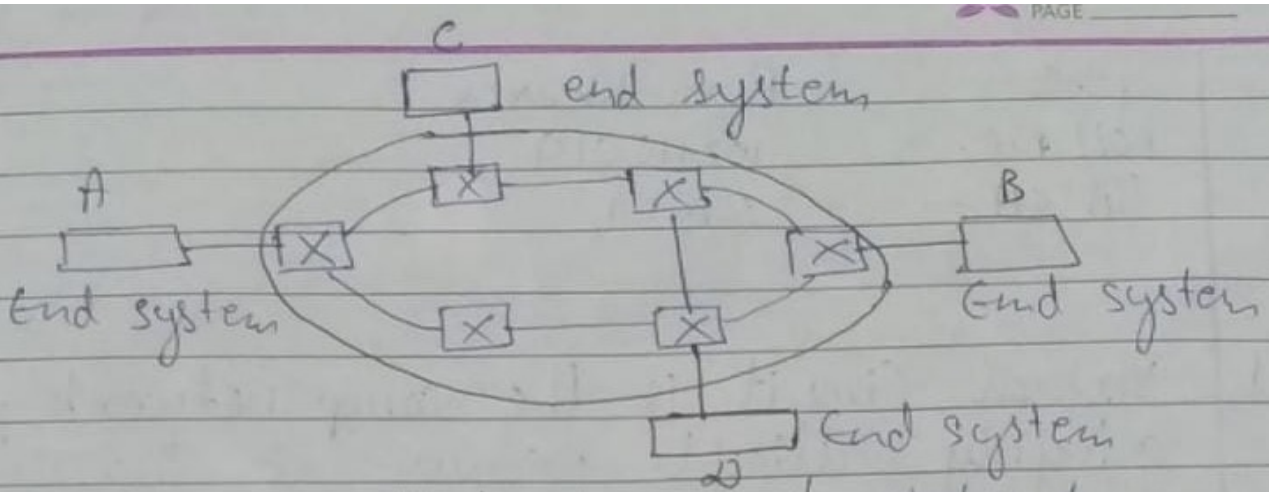
① Setup and teardown phases in addition to the data transfer phase
② Resource can be allocated during the setup phase.
③ The address in the header has local jurisdiction, not end to end jurisdiction

Advantage:

① Packets are delivered to reciever in the same order sent by the sender.
② Here there is no need of overhead in each packet.
③ Single global packet overhead is used in virtual circuit.

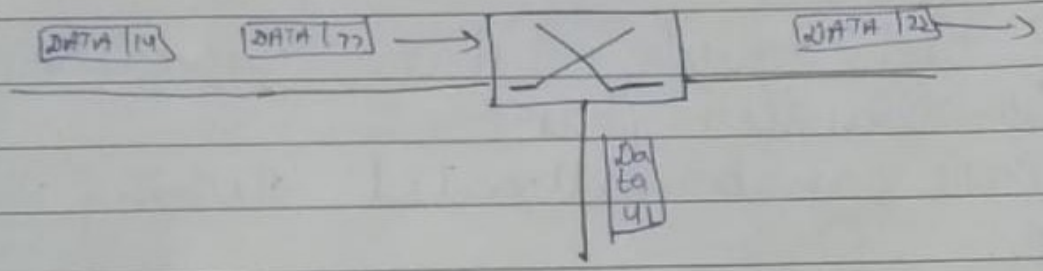
Disadvantage:

① It only provide connection oriented service.
② We have to always add a new connection set up for transmission.

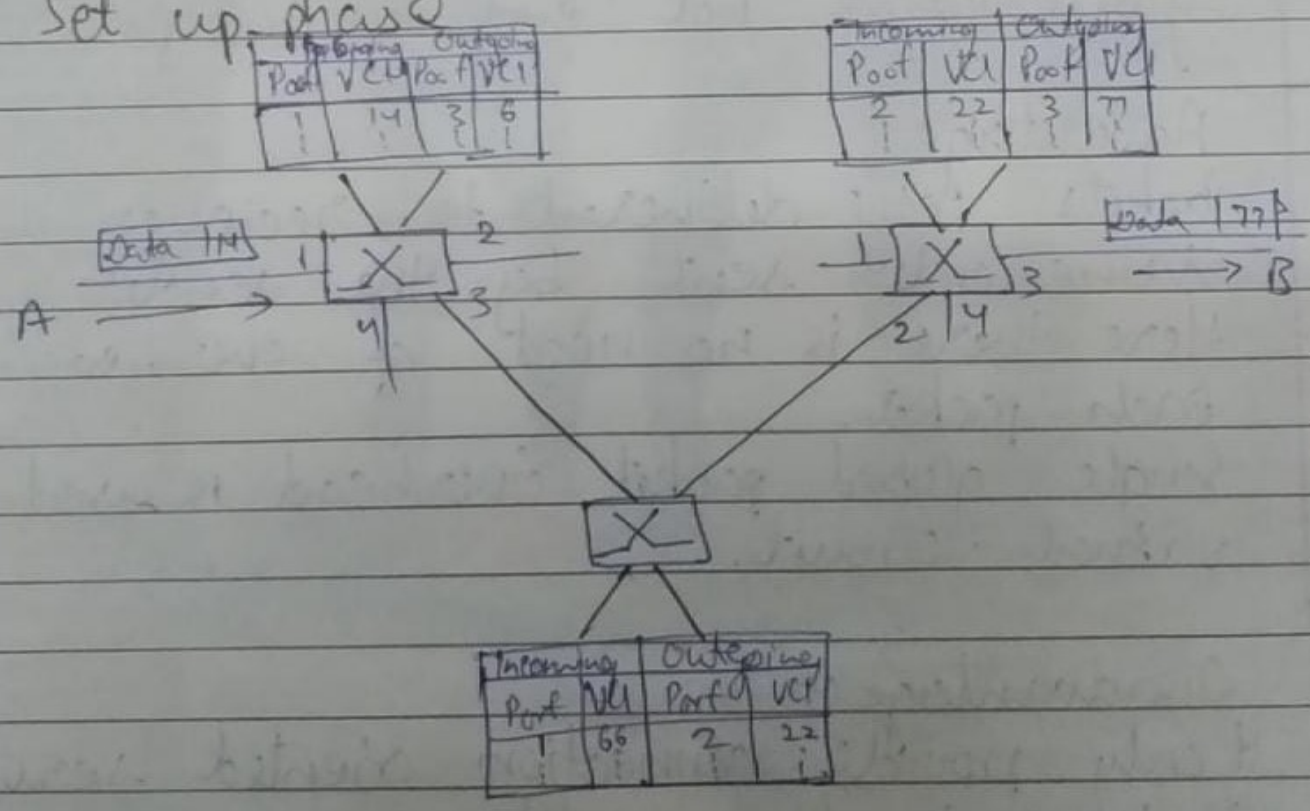


∴ Virtual circuit Network

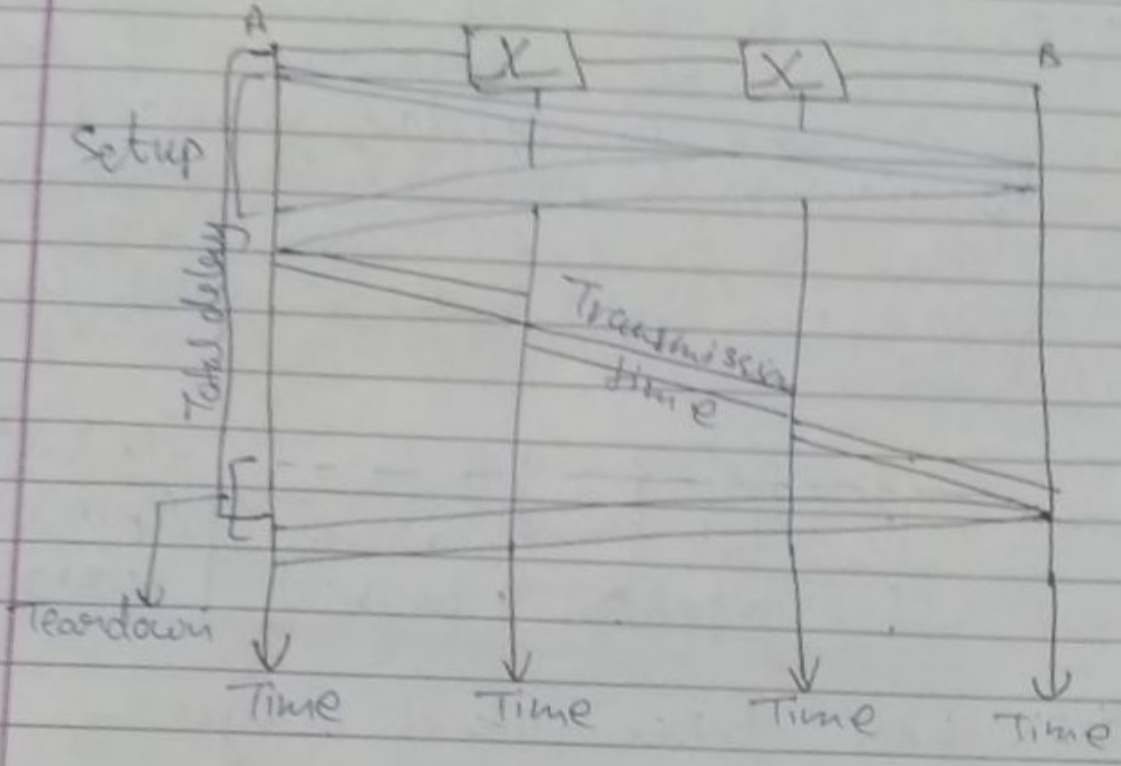
→ Data transfer phase



→ Set up phase



→ Tear - down phase



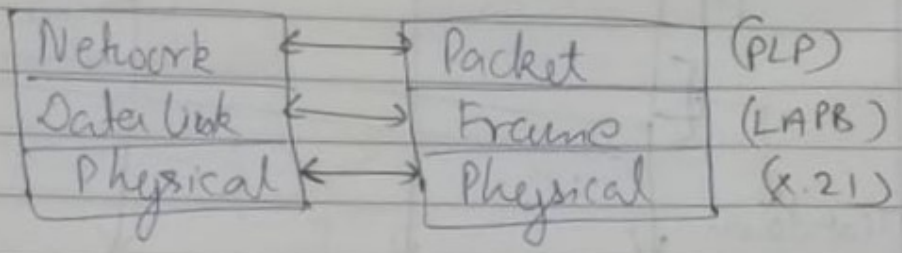
Q2 Frame Relay

It is a packet- switching network protocol that is designated to work at data link layer of the network. It is used to connect LAN and transmit data across WANs. It is better point to point network for connecting multiple node that require seperate dedicated links to be established b/w each pairs of nodes.

Advantage : High speed, scalable, reduce network congestion.

Disadvantage : Lacks error control mechanism delay in packet transfer.

ii) X.25 is a protocol that follows various logical channels to make use of same physical line for sending message/ information in a network. It encompasses the three layer of the Open System Interconnection (OSI) reference model for networking



X.25 has three protocol layer :-

1) Physical layer
It lays out the physical, electrical and functional characteristic that interface b/w the computer ~~characteristics that~~ terminal and link to the packet switched node.

2) Data link layer
It control information for transmission over link is attached to packets from packets layer to form LAPB frame (Link Access Procedure Balanced.)

3.) Packet layer : It defines the format of data packet and provides external virtual circuit service.

c) ATM → Asynchronous Transfer Mode

It is switching technique used by telecommunication network to encode data into small packets called cell. Cell are transmitted asynchronously and the network is connection oriented. It can carry multiple types of traffic with end to end quality of service. It is independent of a transmission medium. It can be of two format types :-

- UNI header
- NNI header

It's applications :-

(1) ATM WANS
(2) Multimedia virtual private network and managed services
(3) Frame relay backbone
(4) Residential broadband networks
(5) Carrier infrastructure for telephone and private line networks

Q3. Soft Switch Architecture

It uses software on standard hardware to control phone calls. Softswitch Architecture refers to software and digital programming

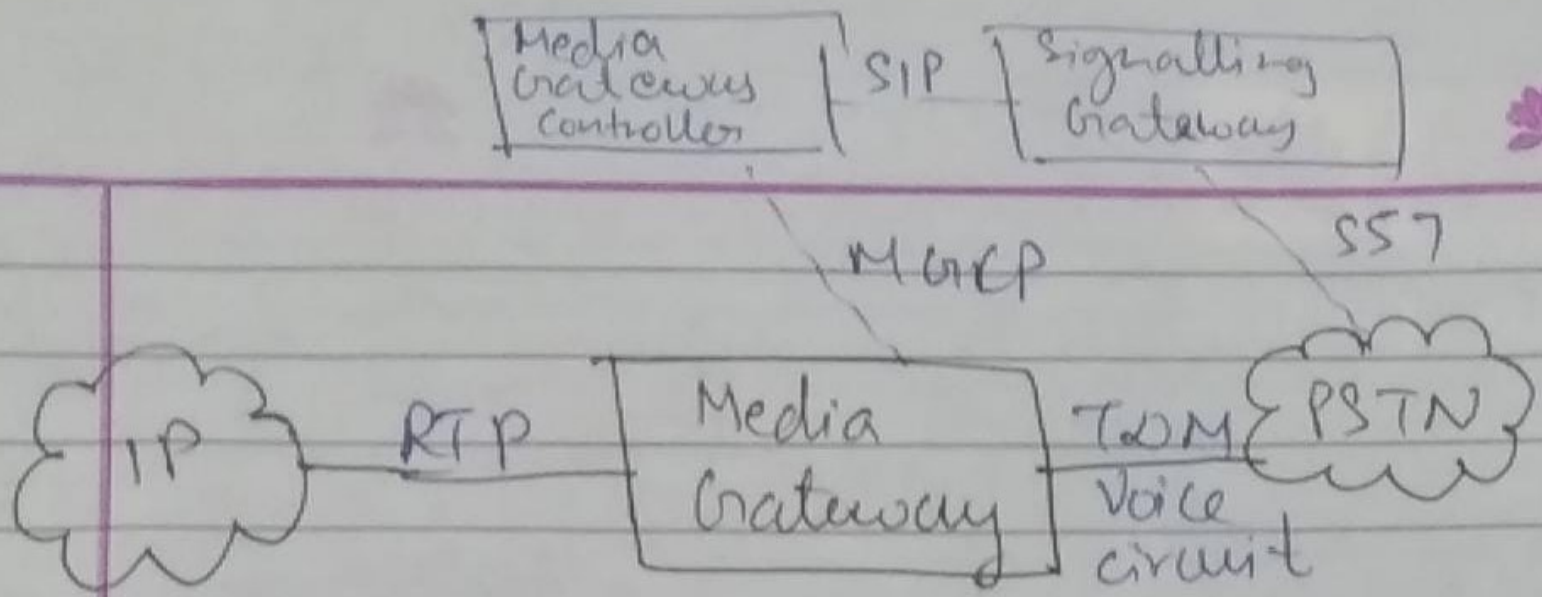
It allows for soft switches to function. It is a piece of software that enables data switching. The architecture behind this comprises numerous components, including gateways and other application servers.

In a typical softswitch implementation the control plane is decoupled from the transport plane and the system is decomposed into 3 distinct functional elements: a signaling gateway, a media gateway and media gateway controller.

Signaling gateway: These network IP signaling protocol such as SIP and H.323 with legacy SS7.

Media gateway:
It terminates TDM circuits and packetizes the media streams for IP transport using RTP or SRTP

Media gateway controller:
It instructs the media gateway, media servers and application servers to set up and tear down calls. It is also referred to as a softswitch, call controller.



∴ Softswitch Architecture