

NAME: MALIK ZOHAIB MUSTAFA
ENROLLMENT NO: 01-134192-030
CLASS: BS(CS)-4B

ASSIGNMENT NO 3

QUESTION NO 1:

Why is it useful to have more than one possible path through a network for each pair of stations?

ANSWER:

It is useful to have more than one possible path through a network for each pair of stations because to enhance reliability, accuracy and security, for this there is possible to enhance the speed.

QUESTION NO 2:

What are the four generic architectural components of a public communications network? Define each term.

ANSWER:

SUBSCRIBER:

The devices that attach to the network. It is still the case that most subscriber devices to public telecommunications networks are telephones, but the percentage of data traffic increases year by year

SUBSCRIBER LINE:

The link between the subscriber and the network, also referred to as the subscriber loop or local loop. Almost all local loop connections use twisted-pair wire. The length of a local loop is typically in a range from a few kilometers to a few tens of kilometers.

EXCHANGES:

The switching centers in the network. A switching center that directly supports subscribers is known as an end office. Typically, an end office will support many thousands of subscribers in a localized area.

TRUNKS:

The branches between exchanges. Trunks carry multiple voice frequency circuits using either FDM or synchronous TDM.

QUESTION NO 3:

What is the principal application that has driven the design of circuit-switching networks?

ANSWER:

Circuit-switching technology has been driven by those applications that handle voice traffic

QUESTION NO 4:

What are the advantages of packet switching compared to circuit switching?

ANSWER:

A packet-switching network can perform data-rate conversion. Two stations of different data rates can exchange packets because each connects to its node at its proper data rate.

Packet-switching network has a better performance as compared to circuit switching.

QUESTION NO 5:

Explain the difference between datagram and virtual circuit operation

ANSWER:

In the datagram approach, each packet is treated independently, with no reference to packets that have gone before. In the virtual circuit approach, a preplanned route is established before any packets are sent.

QUESTION NO 6:

What is the significance of packet size in a packet-switching network?

ANSWER:

Packet size in a packet-switching network result in an efficient network design.

QUESTION NO 7:

What types of delay are significant in assessing the performance of a packet-switching network?

ANSWER:**Propagation delay:**

The time it takes a signal to propagate from one node to the next. This time is generally negligible. The speed of electromagnetic signals through a wire medium, for example, is typically

Transmission time:

The time it takes for a transmitter to send out a block of data. For example, it takes 1 s to transmit a 10,000-bit block of data onto a 10-kbps line.

Node delay:

The time it takes for a node to perform the necessary processing as it switches data

QUESTION NO 8:

How does frame relay differ from X.25?

ANSWER:

The key differences between frame relay and a X.25 packet-switching service are as follows:

Call control signaling, which is information needed to set up and manage a connection, is carried on a separate logical connection from user data. Thus, intermediate nodes need not maintain state tables or process messages relating to call control on an individual per-connection basis.

Multiplexing and switching of logical connections takes place at layer 2 instead of layer 3, eliminating one entire layer of processing.

There is no hop-by-hop flow control and error control. End-to-end flow control and error control are the responsibility of a higher layer, if they are employed at all

QUESTION NO 9:

What are the relative advantages and disadvantages of frame relay compared to X.25?

ANSWER:

The advantage of frame relay is that we have streamlined the communications process. The protocol functionality required at the user-network interface is reduced, as is the internal network

processing. As a result, lower delay and higher throughput can be expected. Studies indicate an improvement in throughput using frame relay, compared to X.25, of an order of magnitude or more [HARB92]. The ITU-T Recommendation I.233 indicates that frame relay is to be used at access speeds up to 2 Mbps. However, frame relay service at even higher data rates is now available.

QUESTION NO 10:

Differentiate between guided media and unguided media

ANSWER:

GUIDED MEDIA	UNGUIDED MEDIA
The signal energy propagates through wires in guided media.	The signal energy propagates through air in unguided media.
Guided media is used for point to point communication.	Unguided media is generally suited for radio broadcasting in all directions.
Discrete network topologies are formed by the guided media	Continuous network topologies are formed by the unguided media.
Signals are in the form of voltage, current or photons in the guided media	Signals are in the form of electromagnetic waves in unguided media.
Examples of guided media are twisted pair wires, coaxial cables, optical fiber cables.	Examples of unguided media are microwave or radio links and infrared light.