

# ADVANCED PACKET SWITCHING NETWORK INTERVIEW QUESTIONS

## 1.What is packet switching?

**Answer:** Packet switching is a networking technology that breaks data into small packets for transmission across a network. Each packet is independently routed to its destination, allowing for efficient utilization of network resources.

## 2.Differentiate between circuit switching and packet switching.

**Answer:** In circuit switching, a dedicated communication path is established between source and destination before data transfer, whereas in packet switching, data is divided into packets that are individually routed across the network.

## 3.Explain the concept of store-and-forward packet switching.

**Answer:** Store-and-forward packet switching involves receiving and storing entire packets before forwarding them to the next network node. This allows for error detection and retransmission if needed but introduces latency.

## 4.What is cut-through packet switching?

**Answer:** Cut-through packet switching involves forwarding packets as soon as the destination address is known, without waiting for the entire packet to be received. This reduces latency but provides limited error detection and recovery capabilities.

## 5.Discuss the advantages of packet switching over circuit switching.

**Answer:** Packet switching offers better resource utilization, scalability, and flexibility compared to circuit switching. It allows multiple communication sessions to share network resources efficiently and adapts to varying traffic patterns.

## **6.Explain the role of routers in packet-switched networks.**

**Answer:** Routers are network devices that forward packets between networks based on destination IP addresses. They use routing tables to determine the best path for packet delivery.

## **7.What is a datagram in packet switching networks?**

**Answer:** A datagram is an independent, self-contained unit of data transmitted over a packet-switched network. It includes both data and header information used for routing.

## **8.Discuss the concept of virtual circuit switching in packet switching networks.**

**Answer:** Virtual circuit switching combines aspects of both circuit switching and packet switching. It establishes a logical connection or "virtual circuit" between source and destination nodes before data transfer, but data is still transmitted in packet form.

## **9.Explain the difference between connection-oriented and connectionless packet switching.**

**Answer:** Connection-oriented packet switching, as seen in virtual circuit switching, establishes a logical connection before data transfer and guarantees ordered delivery. Connectionless packet switching, such as in IP networks, does not require a pre-established connection and treats each packet independently.

## **10.What is a forwarding table in packet-switched networks?**

**Answer:** A forwarding table, also known as a routing table, is a data structure used by routers to determine the next hop for forwarding packets based on destination addresses.

### **11.Discuss the concept of packet loss in packet-switched networks.**

**Answer:** Packet loss occurs when packets are dropped or discarded during transmission due to network congestion, errors, or buffer overflow. It can degrade network performance and affect the quality of service.

### **12.Explain the role of Quality of Service (QoS) in packet-switched networks.**

**Answer:** QoS mechanisms prioritize certain types of traffic over others to ensure that critical applications receive sufficient bandwidth and low latency. QoS techniques include traffic shaping, packet scheduling, and bandwidth reservation.

### **13.What is packet jitter, and how does it affect network performance?**

**Answer:** Packet jitter refers to variations in packet arrival times at the destination. High jitter can lead to packet loss, increased latency, and degraded quality of real-time applications such as voice and video streaming.

### **14.Discuss the concept of packet fragmentation in packet-switched networks.**

**Answer:** Packet fragmentation occurs when a packet is too large to be transmitted over a network link with a smaller Maximum Transmission Unit (MTU). The packet is divided into smaller fragments for transmission and reassembled at the destination.

### **15.Explain the difference between routing and forwarding in packet-switched networks.**

**Answer:** Routing involves determining the best path for packet delivery based on destination addresses and network topology. Forwarding refers to the actual transmission of packets along the selected path by network devices like routers.

### **16.What is multicast routing, and how does it work in packet-switched networks?**

**Answer:** Multicast routing is a technique used to efficiently deliver data from one sender to multiple receivers over a packet-switched network. It optimizes network bandwidth by replicating packets only when necessary and delivering them to specific multicast group members.

### **17.Discuss the concept of Traffic Engineering in packet-switched networks.**

**Answer:** Traffic Engineering involves optimizing network performance, utilization, and reliability by dynamically adjusting routing paths, bandwidth allocation, and Quality of Service (QoS) parameters based on traffic patterns and network conditions.

### **18.Explain the concept of MPLS (Multiprotocol Label Switching) in packet-switched networks.**

**Answer:** MPLS is a routing technique that uses labels to efficiently forward packets along predetermined paths or "label-switched paths" (LSPs) within a network. It improves packet forwarding speed and enables traffic engineering capabilities.

### **19.What are the advantages and disadvantages of packet-switched networks compared to circuit-switched networks?**

**Answer:** Advantages of packet-switched networks include better resource utilization, scalability, and flexibility, while disadvantages may include higher latency, packet loss, and complexity compared to circuit-switched networks.

## 20. How do advances in packet switching technologies contribute to the development of next-generation networks?

**Answer:** Advances in packet switching technologies, such as MPLS, QoS, and Traffic Engineering, enable the development of next-generation networks with improved performance, reliability, and support for emerging applications and services, such as cloud computing and Internet of Things (IoT).