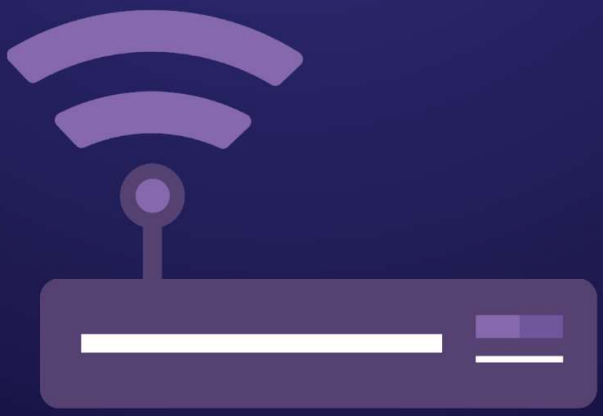
# Network



What is the primary purpose of a router in the network core?

A. Encrypt data

B. Forward packets

C. Perform network diagnostics

D. Provide internet access

In the network core, what is the purpose of a forwarding table?

A. To encrypt data packets

B. To store incoming data packets

C. To determine the output link for each packet

D. To manage network congestion

What factor primarily contributes to packet queueing in routers?

A. Router speed

B. Network congestion

C. Data encryption

D. Insufficient bandwidth

In the context of packet transmission, what does the term "store-and-forward" mean?

A. The packet is transmitted immediately upon arrival

B. The entire packet must arrive at the router before it can be transmitted on the next link

C. Only part of the packet is stored before forwarding

D. The packet is stored for future transmission

What happens when the arrival rate of packets exceeds the transmission rate of a link?

A. Packets are immediately transmitted

B. Packets are queued or dropped

C. The link switches to a higher bandwidth

D. The network shuts down temporarily

What is the term used for the time it takes for a packet to be fully transmitted onto a link?

A. Processing delay

B. Transmission delay

C. Queueing delay

D. Propagation delay

What is one cause of packet loss in a network?

A. Packet retransmission

B. Full router buffers

C. Data encryption errors

D. Low signal strength

What is the main role of the transport layer in a network?

A. Data encryption

B. Process-to-process data transfer

C. Routing packets

D. Physical data transmission

What is the purpose of the application layer in the Internet protocol stack?

A. Encrypt data

B. Transfer bits over a physical medium

C. Provide network applications like email and web browsing

D. Manage routing protocols

In which layer of the Internet protocol stack is IP addressing used?

A. Application layer

B. Transport layer

C. Network layer

D. Physical layer

What causes queueing delay in routers?

A. Data encryption

B. High packet arrival rates

C. Router processing speed

D. Low bandwidth links

What is the main purpose of layering in the Internet protocol stack?

A. To reduce data transmission errors

B. To simplify network design and maintenance

C. To enhance encryption capabilities

D. To increase data transmission speed

Which layer is responsible for ensuring end-to-end communication between processes?

A. Application layer

B. Network layer

C. Transport layer

D. Link layer

What happens when a packet arrives at a full router buffer?

A. It is transmitted immediately

B. It is dropped

C. It is rerouted

D. It is encrypted

Which Internet layer is responsible for routing data between different networks?

A. Transport layer

B. Network layer

C. Data link layer

D. Application layer

What is propagation delay?

A. Time to process a packet at a router

B. Time it takes for a packet to travel across a physical link

C. Time a packet spends in a queue

D. Time taken to fully transmit a packet

What does the term "throughput" refer to in networking?

A. The time taken for data to travel across the network

B. The amount of data successfully transmitted over a period of time

C. The number of packets lost during transmission

D. The encryption strength used in data transmission

What is the role of a content provider network?

A. To manage global ISPs

B. To deliver services and content close to end-users

C. To secure data transmission between ISPs

D. To handle encryption and decryption of packets

Which layer in the OSI model deals with the interpretation of data, such as encryption and compression?

A. Presentation layer

B. Network layer

C. Data link layer

D. Application layer

What is the key function of a traceroute program?

A. Measure Internet throughput

B. Measure delay and route information between source and destination

C. Encrypt packet headers

D. Secure network connections

What does the term "bottleneck link" refer to in networking?

A. The fastest link in the network

B. The link with the lowest transmission capacity on a network path

C. A faulty link in the network

D. A link that encrypts all data

How does the Internet handle millions of access ISPs that must be interconnected?

A. By connecting all ISPs directly

B. By using regional and global ISPs to interconnect access ISPs

C. By encrypting all ISP connections

D. By using packet-sniffing tools

What role does an Internet exchange point (IXP) play in network structure?

A. Encrypting data transmitted between ISPs

B. Facilitating interconnection between ISPs

C. Dropping invalid packets

D. Managing bandwidth allocation

What layer of the Internet protocol stack does Ethernet operate in?

A. Application layer

B. Transport layer

C. Network layer

D. Link layer

What is an IP spoofing attack?

A. Injecting packets with false source addresses

B. Encrypting data packets to prevent interception

C. Increasing the transmission speed of packets

D. Decreasing packet loss through encryption

In network security, what is the purpose of a firewall?

A. Encrypting transmitted data

B. Blocking unauthorized access to or from a private network

C. Retransmitting lost packets

D. Compressing data for faster transmission

What is the function of a virtual private network (VPN)?

A. Encrypt data in transit

B. Provide public access to private networks

C. Increase bandwidth capacity

D. Compress data packets

Which Internet layer is responsible for transferring frames between devices on a network?

A. Physical layer

B. Link layer

C. Network layer

D. Transport layer

What is a denial of service (DoS) attack?

A. Dropping packets in transit

B. Overwhelming a server with bogus traffic to make it unavailable

C. Encrypting packets with false keys

D. Dropping a router connection

1. Which component is used for digital signatures to ensure integrity and prevent tampering of data?

   A. Firewalls

   B. Confidentiality protocols

   C. Integrity checks

   D. VPNs

Router forwarding tables determine which output link packets should take.

True

False

Queueing delays in routers occur when packet arrival rates are higher than the output link capacity.

True

False

Propagation delay depends on the length of the physical link and the speed of propagation.

True

False

Packet loss occurs when packets are dropped due to a lack of space in the router's buffer.

True

False

The network layer is responsible for process-to-process data transfer.

False ( transport layer)

True

Throughput refers to the rate at which data is successfully transmitted from sender to receiver.

True

False

A firewall encrypts all incoming and outgoing packets to secure the network.

True

False (Firewalls block unauthorized access but do not encrypt packets)

In a packet-switched network, entire packets must arrive at a router before they can be forwarded to the next link.

True

False

An Internet exchange point (IXP) is used to facilitate connections between different ISPs.

True

False

IP spoofing involves changing the destination address of a packet.

True

False (IP spoofing changes the source address not the destination)

A denial of service (DoS) attack aims to overload a server, making it unavailable to legitimate users.

True

False

The link layer is responsible for the physical transmission of data over a network.

True

False (The link layer handles frame transmission between devices)

Packet queuing occurs when the transmission rate of a link exceeds the arrival rate of packets.

True

False (Queueing occurs when the arrival rate exceeds the transmission rate)

In network security, authentication ensures that only authorized users can access the network.

True

False

Digital signatures can prevent unauthorized tampering of data during transmission.

True

False

Traceroute is used to identify the physical location of an attacker in a network.

True

False (Traceroute measures delay and route, not physical location of attackers)

The OSI model includes layers such as the presentation and session layers, which are not present in the Internet protocol stack.

True

False

The physical layer is responsible for converting data packets into electrical signals for transmission.

True

False

The transport layer is responsible for ensuring reliable data transmission between processes.

True

False

In a network, the bottleneck link refers to the link with the highest capacity.

True

False (The bottleneck link refers to the link with the lowest capacity)