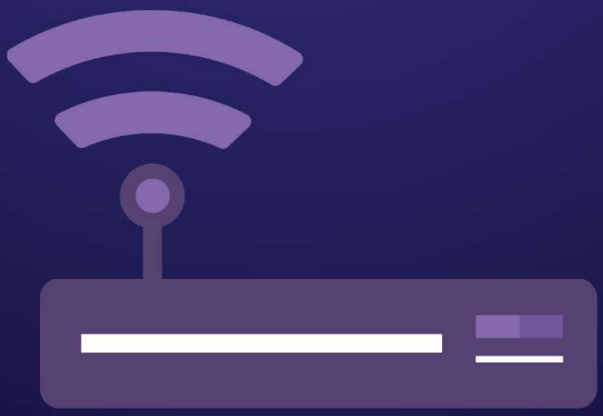
Network



What is the primary role of the transport layer in networking?

A) Provides physical connection

B) Enables application-level multiplexing and reliable data transfer

C) Manages IP addresses

D) Routes packets across networks

Which of the following protocols provides connectionless transport?

A) TCP

B) UDP

C) FTP

D) HTTP

In a network analogy, what does the transport protocol represent in the "household analogy"?

A) Postal service

B) Envelopes

C) Hosts

D) People within the house

What is the primary purpose of demultiplexing in the transport layer?

A) To reassemble IP fragments

B) To handle data from multiple sources

C) To deliver received segments to the correct application socket

D) To control data flow speed

What is a key characteristic of TCP in the transport layer?

A) It's connectionless

B) It provides unreliable data transfer

C) It provides reliable, in-order data transfer

D) It's primarily used for live streaming

How does UDP handle packets?

A) Ensures ordered, reliable delivery

B) Provides "best effort" without guarantees on delivery or order

C) Provides delay and bandwidth guarantees

D) Uses flow control mechanisms

Which layer service relies on port numbers to identify different application processes?

A) Physical layer

B) Network layer

C) Transport layer

D) Data link layer

Which feature is not provided by the UDP protocol?

A) Error detection with checksums

B) Congestion control

C) Connection setup

D) Flow control

What is the purpose of the sequence number in TCP?

A) To identify application data

B) To indicate the next byte of data expected by the receiver

C) To identify the sender's IP address

D) To reorder datagrams

Which protocol is used primarily for loss-tolerant applications, such as streaming media?

A) TCP

B) IP

C) UDP

D) ARP

How does TCP achieve flow control?

A) By using checksum validation

B) By advertising a receive window size

C) By managing port numbers

D) By implementing segment sequence numbers

Which component ensures the transport layer can direct segments to the correct process on a host?

A) IP address

B) Physical address

C) Port number

D) Subnet mask

In TCP, what is the role of the ACK segment?

A) To establish a connection

B) To request retransmission of data

C) To acknowledge receipt of data

D) To indicate an error

Which transport layer protocol is used for DNS queries?

A) TCP

B) FTP

C) UDP

D) HTTP

What type of congestion control does TCP use?

A) Reactive only

B) Proactive only

C) AIMD (Additive Increase, Multiplicative Decrease)

D) Rate-based congestion control

The transport layer provides logical communication between application processes on different hosts.

True

False

TCP provides connectionless, unreliable data transfer.

True

False

UDP does not use flow control or congestion control mechanisms.

True

False

TCP segments are delivered in order to the receiving application.

True

False

In the transport layer, multiplexing is the process of directing received data to the correct process.

True

False

UDP is preferred for time-sensitive applications due to its minimal delay in data transmission.

True

False

TCP includes a three-way handshake for connection setup.

True

False

The sequence number in TCP is only used for establishing connections.

True

False

TCP flow control prevents a sender from overwhelming the receiver's buffer.

True

False

Transport layer protocols operate between the data link and physical layers.

True

False

Multiplexing allows multiple application processes to share a single communication channel.

True

False

UDP guarantees data delivery to the receiving application.

True

False

TCP retransmits lost packets to ensure reliable data transfer.

True

False

The transport layer is responsible for IP address assignment.

True

False

In a TCP connection, an ACK is sent after receiving each packet.

True

False

UDP uses connection-oriented communication, similar to TCP.

True

False

The transport layer enhances network services by allowing host-to-host communication.

True

False

TCP's flow control mechanism is implemented through its receive window field.

True

False

Congestion control is a feature of UDP.

True

False

TCP connections can only be established if both parties acknowledge the connection setup.

True

False