



Network



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Final 2023 – credit

-is the network that physically Connects an end system to the first router.
 - a) Access network
 - b) Internet
 - c) Network core
 - d) Wired network
- In a router,..... is the rate at which packets can be Transfer from input to output links.
 - a) switching rate
 - b) transmission rate
 - c) propagation rate
 - d) None of them
-is the highest level of the DNS hierarchy and knows how to reach servers responsible for a given domain.
 - a) DNS root servers
 - b) Local DNS server
 - c) Authoritative DNS server
 - d) TLD servers
- "Receiving a from the network layer, extracting the data and delivering it to the correct socket" is.....process
 - a) Demultiplexing
 - b) Multiplexing
 - c) Encapsulation
 - d) Nonc of them
- In the router the destination IP address is looked up in a forwarding table to determine the appropriate output port.
 - a) Switching fabric
 - b) Routing process
 - c) Input port
 - d) Output port
- An example of top level domain is
 - a) .org DNS
 - b) user defined DNS
 - c) Root DNS
 - d) None



- How many RTTs are there in the interval from a client's first contact to email server by initiating a TCP session till the client can begin sending the email message itself?
 - a) 1
 - b) 2
 - c) 3
 - d) 4
-protocol supports multiple objects to be sent in multipart Message
 - a) POP3
 - b) DNS
 - c) SMTP
 - d) IMAP
- HTTP response status codes for bad is
 - a) 400
 - b) 404
 - c) 505
 - d) 200
- To browse your e-mail inbox , the following protocol should run
 - a) OSPF
 - b) SMTP
 - c) IMAP
 - d) RPF
- DNS cache poisoning is a type of attacks
 - a) Spoofing
 - b) DDos
 - c) Dos
 - d) All are true
- Caching DNS is done on the level of
 - a) Root DNS
 - b) Local DNS
 - c) TLD DNS
 - d) authoritative DNS
- caching DNS can be used for
 - a) speed up connectivity
 - b) maximum network efficiency
 - c) security
 - d) all are true
- UDP socket number identified by
 - a) Source & destination port numbers



- b) Source & destination IP address
- c) Destination IP address & port numbers
- d) Source IP address & port numbers
- To check the correctness of data received, is used
 - a) ACK
 - b) Checksum
 - c) Socket number
 - d) Port number
- Which of the following are changes between HTTP 1.1 and HTTP/2?
 - a) HTTP/2 allows objects in a persistent connection to be sent in a client-specified priority order.
 - b) HTTP/2 provides enhanced security by using transport layer security (TLS)
 - c) HTTP/2 has many new HTTP methods and status codes.
 - d) all of them
- The is the time needed to perform an integrity check, lookup packet information in a local table and move the packet from an input link to an output link in a router.
 - a) Queuing delay
 - b) Transmission delay
 - c) Propagation delay
 - d) Processing delay
- demultiplexing is using 4-tuple: source and destination IP addresses, and port numbers.
 - a) UDP
 - b) TCP
 - c) Both of them
 - d) None of them
- is used to provide e-mail web based interface
 - a) DNS
 - b) SMTP
 - c) IMAP
 - d) HTTP
- In global routing protocols, all routers have complete topology and link cost information
 - a) True
 - b) False
- Checksum field is found in TCP header only
 - a) True
 - b) False



- When computing the Internet checksum for two numbers, a single flipped bit will always result in a changed checksum.
 - True
 - False
- The statement "HTTP is stateless" means that: An HTTP client does not remember anything about what happened during earlier steps in interacting with any HTTP server.
 - True
 - False
- FDM and TDM are two approaches for implementing circuit switching
 - True
 - False
- A cookie is a code used by a server to access information the server had earlier stored about an earlier interaction with this web browser.
 - True
 - False
- The sequence number field contains the index of the first byte in the segment data.
 - True
 - False
- TLD servers responsible for a domain and knows how to contact authoritative name servers.
 - True
 - False
- Multiplexing process uses header info to deliver received segments to correct socket
 - True
 - False
- Forwarding is the global action of moving arriving packets from router's input link to appropriate outer output link.
 - True
 - False
- Applications with P2P architectures have client processes & server processes
 - True
 - False



Final 2023 – general

- Which Port does HTTP typically use?
 - a) 80
 - b) 443
 - c) 22
 - d) 8080
- What is the purpose of HTTP protocol?
 - a) To translate friends over the internet
 - b) to format with pages
 - c) to provide a way for web browsers and servers to communicate
 - d) To encrypt web traffic
- Which HTTP method is used to retrieve a resource from a server?
 - a) GET
 - b) POST
 - c) PUT
 - d) DELETE
- Which HTTP status code indicates that the requested resource could not be found on the server?
 - a) 200
 - b) 404
 - c) 500
 - d) 503
- what is persistent HTTP?
 - a) A version of HTTP that uses the resistant connections between the client server
 - b) A version of HTTP that support multi connections per one request
 - c) A version of HTTP that only supports secure connections
 - d) A version of HTTP that only supports certain types of content
- which HTTP version first introduced persistent connections
 - a) HTTP/1.0
 - b) HTTP/1.1
 - c) HTTP/2
 - d) HTTP/3
- What does SMTP stand for?
 - a) simple Mail Transfer Protocol
 - b) Secure Mail Transfer Protocol
 - c) Simple Message Transfer Protocol
 - d) Secure Message Transfer Protocol
- Which port does SMTP typically use?



- a) 25
 - b) 80
 - c) 110
 - d) 443
- What is the primary difference between UDP and TCP?
 - a) UDP is connection-oriented while TCP is connectionless
 - b) **UDP is faster than TCP but less reliable.**
 - c) UDP provides error-checking and flow control while TCP does not.
 - d) UDP is more secure than TCP
 - the purpose of UDP is to provide.....
 - a) Reliable, ordered delivery of packets
 - b) network security by blocking malicious traffic
 - c) data encryption while transmitted on a network
 - d) **quick data transmission with minimal overhead**
 - Which of the following applications is likely to use UDP?
 - a) Email
 - b) Web browsing
 - c) **Video streaming**
 - d) File transfer
 - How does a TCP Establish a Connection between two devices?
 - a) **By using Three-way Handshake**
 - b) By broadcasting a connection request to all devices on the network
 - c) By Sending a connection request to the default gateway
 - d) By using a Four-way Handshake
 - TCP Provide the following Service
 - a) Congestion Control
 - b) Connection Setup
 - c) Flow Control
 - d) **All are true**
 - What is true about IMAP?
 - a) **provides retrieval, deletion, folders of stored messages on server**
 - b) port 260
 - c) provides retrieval, deletion, folders of stored messages on local host
 - d) all are true
 - UDP Provide the following Service
 - a) Congestion Control
 - b) Connection Setup
 - c) Flow Control
 - d) **Un-Ordered Delivery**
 - What is true about multiplexing



- a) Done at sender side
 - b) Based on socket number
 - c) Based on packet header
 - d) All are true
- UDP Socket identified by
 - a) source/destination port numbers
 - b) source/destination IP address
 - c) destination IP address/port number
 - d) source IP address/port number
- The Following are true about transport layer except....
 - a) Provide logical communication between hosts
 - b) Uses TCP – UDP protocols
 - c) Adds segment header
 - d) Enhances network layer services
- To check the correctness of data received, Is used
 - a) ACK
 - b) CheckSum
 - c) Socket Number
 - d) Port Number
- What is a CheckSum?
 - a) A Unique identifier for a file
 - b) A Method of detecting errors in data transmission
 - c) A password used to encrypt data
 - d) A type of compression algorithm
- What is the purpose of IMAP?
 - a) To send emails
 - b) To receive emails
 - c) To encrypt emails
 - d) To block spam emails
- What device is responsible for forwarding?
 - a) Switch
 - b) Router
 - c) Hub
 - d) Modem
- What is forwarding?
 - a) The process of transmitting data to its destination
 - b) The process of determining the optimal path for data transmission
 - c) The process of encrypting data for secure transmission
 - d) The process of compressing data for faster transmission
- What is difference between routing and forwarding?



- a) Routing determines the optimal path for data transmission, while forwarding sends the data to its destination
 - b) Routing sends data to its destination, while forwarding determines the optimal path for data transmission
 - c) They are the same thing
 - d) Both are used for data encryption
- What is the main role of transport layer?
 - a) The layer responsible of physical transmission of data
 - b) The layer responsible for routing data packets
 - c) The layer responsible for end-to-end communication between hosts
 - d) The layer responsible for encryption of data
 - In demultiplexing process, Host uses to direct segment to appropriate socket
 - a) IP Address
 - b) Port Number
 - c) IP Address & Port Number
 - d) MAC Address & Port Number

Some related questions – MCQ

- Status code 404 means:
 - a) server Error
 - b) resource Not Found
 - c) forbidden Access
 - d) temporary Redirect
- which status code indicates a permanent redirect?
 - a) 302
 - b) 307
 - c) 301
 - d) 303
- HTTP/2 compared to HTTP/1.1 maintains:
 - a) Completely new methods
 - b) New status codes
 - c) Most header fields unchanged
 - d) A completely different protocol
- The main limitation of HTTP/2 over TCP is:
 - a) Loss of packet stalls all transmissions
 - b) Increased server load
 - c) Reduced security
 - d) Slower transmission speeds
- Which of this is not a guided media?



- a) Fiber optical cable
 - b) Coaxial cable
 - c) Wireless LAN
 - d) Copper wire
- Which of the following delay is faced by the packet in travelling from one end system to another?
 - a) Propagation delay
 - b) Queuing delay
 - c) Transmission delay
 - d) All of the mentioned
 - For a 10Mbps Ethernet link, if the length of the packet is 32bits, the transmission delay is(in microseconds)
 - a) 3.2
 - b) 32
 - c) 0.32
 - d) 320
 - The time required to examine the packet's header and determine where to direct the packet is part of ?
 - a) Processing delay
 - b) Queuing delay
 - c) Transmission delay
 - d) Propagation delay
 - In the transfer of file between server and client, if the transmission rates along the path is 10Mbps, 20Mbps, 30Mbps, 40Mbps. The throughput is usually _____
 - a) 20Mbps
 - b) 10Mbps
 - c) 40Mbps
 - d) 50Mbps
 - The total nodal delay is given by _____
 - a) $d_{\text{nodal}} = d_{\text{proc}} - d_{\text{queue}} + d_{\text{trans}} + d_{\text{prop}}$
 - b) $d_{\text{nodal}} = d_{\text{proc}} + d_{\text{trans}} - d_{\text{queue}}$
 - c) $d_{\text{nodal}} = d_{\text{proc}} + d_{\text{queue}} + d_{\text{trans}} + d_{\text{prop}}$
 - d) $d_{\text{nodal}} = d_{\text{proc}} + d_{\text{queue}} - d_{\text{trans}} - d_{\text{prop}}$
 - Transmission delay does not depend on _____
 - a) Packet length
 - b) Distance between the routers
 - c) Transmission rate
 - d) Bandwidth of medium
 - Propagation delay depends on _____

$$\begin{aligned}\text{Transmission Rate} &= L / R = 32 / 10 \\ &= 3.2 \text{ microseconds}\end{aligned}$$



- a) Packet length
 - b) Transmission rate
 - c) Distance between the routers
 - d) Speed of the CPU
- In a network, If P is the only packet being transmitted and there was no earlier transmission, which of the following delays could be zero?
 - a) Propagation delay
 - b) Queuing delay
 - c) Transmission delay
 - d) Processing delay
 - The sharing of a medium and its link by two or more devices is called _____
 - a) Fully duplexing
 - b) Multiplexing
 - c) Microplexing
 - d) Duplexing
 - Multiplexing is used in _____
 - a) Packet switching
 - b) Circuit switching
 - c) Data switching
 - d) Packet & Circuit switching
 - Which multiplexing technique used to transmit digital signals?
 - a) FDM
 - b) TDM
 - c) WDM
 - d) FDM & WDM
 - In TDM, slots are further divided into _____
 - a) Seconds
 - b) Frames
 - c) Packets
 - d) Bits
 - Data communication system within a building or campus is _____
 - a) LAN
 - b) MAN
 - c) WAN
 - d) PAN
 - _____ is the multiplexing technique that shifts each signal to a different carrier frequency
 - a) FDM
 - b) TDM

- c) WDM
- d) FDM & WDM
- Coaxial cable consists of _____ concentric copper conductors.
 - a) 1
 - b) 2
 - c) 3
 - d) 4
- In _____ systems, resources are allocated on demand.
 - a) packet-switching
 - b) circuit switching
 - c) line-switching
 - d) frequency switching
- Allows more users to use network and resource sharing
 - a) packet-switching
 - b) circuit switching
 - c) line-switching
 - d) frequency switching
- end-to-end resources allocated to reserved for call between Source and Dest and no sharing
 - a) packet-switching
 - b) circuit switching
 - c) line-switching
 - d) frequency switching
- _____ provides delay measurement from source to router along end-end internet path forward dest
 - a) Ping
 - b) Traceroute
 - c) Ping & Traceroute
 - d) None
-rates (bit / time unit) at which bits transferred between sender/receiver
 - a) Bandwidth
 - b) Bottleneck link
 - c) Throughput
 - d) None
-link on end-end that constrains end-end throughput
 - a) Bandwidth
 - b) Bottleneck link
 - c) Throughput
 - d) None



- Attackers makes resources unavailable to legitimate traffic by overwhelming resource with bogus traffic.
 - Virus
 - Worm
 - Spyware Malware
 - DoS
- Send packet with false source address
 - Virus
 - Worm
 - IP Spoofing
 - DoS
- Which is not a application layer protocol?
 - HTTP
 - SMTP
 - FTP
 - TCP
- The packet of information at the application layer is called _____
 - Packet
 - Message
 - Segment
 - Frame
- Which one of the following is an architecture paradigms?
 - Peer to peer
 - Client-server
 - HTTP
 - Both Peer-to-Peer & Client-Server
- Electronic mail uses which Application layer protocol?
 - SMTP
 - HTTP
 - FTP
 - SIP
- To deliver a message to the correct application program running on a host, the _____ address must be consulted.
 - IP
 - MAC
 - Port
 - None of the Mentioned
- _____ address is a unique address for every device.
 - IP
 - MAC



- c) Port
- d) None of the mentioned
- The _____ translates internet domain and host names to IP address.
 - a) domain name system
 - b) routing information protocol
 - c) network time protocol
 - d) internet relay
- Which one of the following protocol delivers/stores mail to receiver server?
 - a) simple mail transfer protocol
 - b) post office protocol
 - c) internet mail access protocol
- When displaying a web page, the application layer uses the _____
 - a) HTTP protocol
 - b) FTP protocol
 - c) SMTP protocol
 - d) TCP protocol
- The default connection type used by HTTP is _____
 - a) Persistent
 - b) Non-persistent
 - c) persistent & non-persistent
 - d) None of the mentioned
- The time taken by a packet to travel from client to server and then back to the client is called _____
 - a) STT
 - b) RTT
 - c) PTT
 - d) JTT
- RTT Stand For _____
 - a) Round Trip Time
 - b) Rate Transmission Time
 - c) None
- The HTTP request message is sent in _____ part of three-way handshake.
 - a) First
 - b) Second
 - c) Third
 - d) Fourth



- In the process of fetching a web page from a server the HTTP request/response takes _____ RTTs.
 - a) 2
 - b) 1
 - c) 4
 - d) 3
- The first line of HTTP request message is called _____
 - a) Request line
 - b) Header line
 - c) Status line
 - d) Entity line
- The _____ method when used in the method field, leaves entity body empty
 - a) POST
 - b) SEND
 - c) GET
 - d) PUT
- The HTTP response message leaves out the requested object when _____ method is used
 - a) GET
 - b) POST
 - c) HEAD
 - d) PUT
- Multiple objects can be sent over a TCP connection between client and server in a persistent HTTP connection.
 - a) True
 - b) False
- one object can be sent over a TCP connection between client and server in a non-persistent HTTP connection.
 - a) True
 - b) False
- HTTP is _____ protocol
 - a) application layer
 - b) transport layer
 - c) network layer
 - d) data link layer
- HTTP client requests by establishing a _____ connection to a particular port on the server.
 - a) UDP
 - b) TCP



- c) BGP
- SMTP use TCP Port 25
 - a) True
 - b) False
- When the mail server sends mail to other mail servers it becomes _____
 - a) SMTP server
 - b) SMTP client
 - c) Peer
- When the mail receiving mail servers it becomes _____
 - a) SMTP server
 - b) SMTP client
 - c) Peer
- If you have to send multimedia data over SMTP it has to be encoded into _____
 - a) Binary
 - b) Signal
 - c) ASCII
 - d) Hash
- Expansion of SMTP is _____
 - a) Simple Mail Transfer Protocol
 - b) Simple Mail Transmission Protocol
 - c) None
- The underlying Transport layer protocol used by SMTP is _____
 - a) TCP
 - b) UDP
 - c) Either TCP or UDP
 - d) IMAP
- Simple mail transfer protocol (SMTP) utilizes _____ as the transport layer protocol for electronic mail transfer
 - a) TCP
 - b) UDP
 - c) DCCP
 - d) SCTP
- _____ protocols used to send and receive mails on the internet.
 - a) SMTP
 - b) POP
 - c) IMAP
 - d) All
- An email client needs to know the _____ of its initial SMTP server



- a) IP address
 - b) MAC address
 - c) URL
 - d) Name
- _____ unreliable data transfer and connection less
 - a) TCP
 - b) UDP
 - c) HTTP
 - d) SSL
 - _____ connection oriented and reliable data transfer.
 - a) TCP
 - b) UDP
 - c) HTTP
 - d) SSL
 - RTT in non-persistent HTTP = _____
 - a) 3RTT+ Transfer time
 - b) RTT+1
 - c) 2RTT+Transfer time
 - d) 1 RTT
 - SMTP is use persistent HTTP connections requires message header and body.
 - a) True
 - b) False
 - SMTP message must be 7-bit ASCII
 - a) True
 - b) False
 - _____ keep all messages on one place at server and allows user to organize messages in folders.
 - a) SMTP
 - b) POP
 - c) IMAP
 - d) ALL
 - IMAP is stand for _____
 - a) Internet Mail Access Protocol
 - b) Internet Message Access Protocol
 - c) None
 - _____ time for a small packet to travel from client to server and back .
 - a) STT
 - b) RTT
 - c) PTT

- d) JTT
- Web Cache is used for reduced response time for client request and reduced traffic
 - a) True
 - b) False

Written Questions (Oral Questions)

1- What is the definition of Routing queuing delay?

.....
.....
.....
.....

2- What is the RFC?

.....
.....

3- What is IETF?

.....
.....

4- What is the difference between HTTP/1.1, HTTP/2 , HTTP/3?

.....
.....
.....
.....
.....

5- What is the difference between Forwarding and Routing?

.....
.....
.....

6- What is the difference between DoS and Sniffing and Spoofing?

.....
.....
.....

7- What is the main feature of Vanilla TCP?

8- What is TLS?

MidTerm 2024/2025

- 1- is the time for a small packet to travel from client to server and back.

 - a) RTT
 - b) HOL
 - c) RFC
 - d) GDPR

2- In, different channels transmitted in different frequency bands.

 - a) HFC
 - b) FDM
 - c) CMTS
 - d) DSL

3- define the format, order of messages sent and received among network entities, and actions taken on message transmission.

 - a) Routers
 - b) Protocols
 - c) Switches
 - d) Servers

4- In transmission order of requested objects based on client specified object priority. It pushes unrequested objects to client, divide them into frames, and then schedule them.

 - a) HTTP 1.1
 - b) HTTP 1.2
 - c) HTTP 2.1
 - d) HTTP 2

- 5- In end-end resources allocated to, reserved for call between source and destination
- Queueing
 - TDM
 - Packet-Switching
 - Circuit Switching
- 6- A packet switch receives a packet and determines the outbound link to which the packet should be forwarded, When the packet arrives other packet is halfway done being transmitted on this outbound link and four other packet are waiting to be transmitted, Packets are transmitted in order of arrival , Suppose all packets are 1500 bytes and the link rate is 2.5 Mbps . What is the queueing delay for the packet?
- 21.6 ms
 - 19.2 ms
 - 16.8 ms
 - 2.4 ms
- 7- attacks intercept DNS queries, returning bogus replies
- ICANN
 - DoS
 - Spoofing
 - DDoS
- 8- In Fiber attaches homes to ISP router , homes share access network to cable headend
- DSL
 - Packet Transmission Delay
 - TDM
 - Cable-Based Access
- 9- provides retrieval, deletion and folders of stored messages on the Email server.
- IMAP
 - ICANN
 - POP
 - SMTP
- 10- A small object may have to wait for transmission behind a large object.
This is called blocking.

- a) ICANN
- b) GDPR
- c) HOL
- d) FCFS

11- is the rate (bits/time unit) at which bits are being sent from sender to receiver

- a) Throughput
- b) Queueing delay
- c) Transmission delay
- d) Nodal processing

12- Consider sending over HTTP/2 a Web page that consists of one video clip, and five images. Suppose that the video clip is transported as 2000 frames and each image has three frames. If all the video frames are sent first without interleaving, How many "Frame Times" are needed until all five images are sent?

- a) 2000
- b) 2015
- c) 2030
- d) 4030

13- In Use existing telephone line to central office, It has 24-52 Mbps dedicated downstream transmission rate and 3.5-16 Mbps dedicated upstream transmission rate.

- a) DSL
- b) TDM
- c) DSLAM
- d) CMTS

14- uploads new file (object) to server, it completely replaces a file at a specified URL with content in entity body of HTTP request message.

- a) POST
- b) HEAD
- c) GET
- d) PUT

15- HTTP response status code equals to When the required object is moved to a new location specified later in the message.

- a) 400
- b) 305
- c) 301
- d) 505

16- The following are fields in RR format in DNS records, except.....

- a) TTL
- b) URL
- c) Type
- d) Value

17- Users are generating data at a rate of 100 Kbps when busy, But are busy generating data only with probability $p = 0.1$, Suppose that we have 1 Gbps link, What is N, the maximum number of users that can be supported simultaneously under circuit switching?

- a) 10000
- b) 100000
- c) 1000
- d) 5000

18- In Attackers make resources(server, bandwidth) unavailable to legitimate traffic by overwhelming resource with bogus traffic.

- a) Wireshark
- b) DoS
- c) Spoofing
- d) Sniffing

19- Is the premier standards development organization for the internet.

- a) FDM
- b) HFC
- c) RFC
- d) IETF

20- SMTP uses TCP to reliably transfer email message from client to server in port

- a) 80
- b) 29
- c) 25
- d) 27