جامعة الأميرة نورة بنت عبد الرحمن
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NET331:
COMPUTER NETWORKS FUNDAMENTALS

Networks and Communication Department

Chapter # 23

Question 3

- Do port addresses need to be unique? Why or why not ?Why are port addresses shorter than IP address
- ***Port addresses*** do not need to be universally unique as long as each IP address
- **Port address** pair uniquely identify a particular process running on a particular host. A
- Good example would be a network consisting of 50 hosts, each running echo server software. Each server uses the well known port number 7, but the IP address, together with the port number of 7, uniquely identify a particular server program on a particular host.
- Port addresses are ***shorter*** than IP addresses because their domain, a single system, is smaller than the domain of IP addresses, all systems on the Internet.

Question 9

- Compare the TCP header and the UDP header. List the field in the TCP header that are missing from UDP header. Give the reason for the absence.

Fields in UDP	*Fields in TCP*	*Explanation*
Source Port Address	Source Port Address	
Destination Port Address	Destination Port Address	
Total Length		There is no need for total length.
Checksum	Checksum	
	Sequence Number	UDP has no flow and error control.
	Acknowledge Number	UDP has no flow and error control.
	Header Length	UDP has no flow and error control.
	Reserved	UDP has no flow and error control.
	Control	UDP has no flow and error control.
	Window Size	UDP has no flow and error control.
	Urgent Pointer	UDP cannot handle urgent data.
	Options and Padding	UDP uses no options.

Question 10

- UDP is a message-oriented protocol. TCP is a byte-oriented protocol. If an application needs to protect the boundaries of its message, which protocol should be used, UDP or TCP?
- ***UDP*** is preferred because each user datagram can be used for each chunk of data.

Question 11

- What can you say about the TCP segment in which the value of the control field is one of the following

a. 000000

None of the control bits are set. The segment is part of a data transmission without piggybacked acknowledgment

a. 000001

The FIN bit is set. This is a FIN segment request to terminate the connection.

a. 010001

The ACK and the FIN bits are set. This is a FIN+ACK in response to a received FIN segment

Question 14

- An SNMP client residing on a host with IP address 122.45.12.7 sends a message to an SNMP server residing on a host with IP address 200.112.45.90.
- What is the pair of socket used in this communication
- The client would use the IP address **122.45.12.7**, combined with an ephemeral port number, for its **source socket address**
- And the IP address **200.112.45.90**, combined with the well-known port number **161**, as the **destination socket address.**

Question 16

- A client has a packet of 68,000 bytes. Show how this packet can be transferred by using only one UDP user datagram
- This datagram ***cannot be transferred*** using a single user datagram.

Question 21

- An IP datagram is carrying a TCP segment destined for address 130.14.16.17/16. The destination port address is corrupted and it arrive at destination 130.14.16.19/16.
- How does the receiving TCP react to this error?
- It looks as if both the destination IP address and the destination port number are corrupted. ***TCP calculates the checksum and drops the segment***.

Question 26

- In a connection, the value of *cwnd* is 3000 and the value of *rwnd* is 5000. The host has sent 2000 bytes which has not been acknowledged. How many more bytes can be sent?
- Window size= minimum (cwnd ,rwnd)
- Window size = minimum (3000 , 5000)=3000
- The number of bytes that can be sent =
- 3000 − 2000 = **1000** bytes

Question 27

- TCP opens a connection using an initial sequence number (ISN) of 14,534.The other party opens the connection with an ISN of 21,732.Show the three TCP segments during the connection establishment.

Question 27 answer