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Computer Network
Lab Manual 4

1. FTP uses two port numbers: 20 and 21. Apply tcp.port==20 and tcp.port==21. Analyze the result and write down the purposes of these two ports for FTP.
Port number 20 is used to transfer data between the server and the client like downloading and uploading. On the other hand, port number 21 is used to pass on control information like authentication, methods etc.

2. Filter out each packet using either FTP or FTP-DATA Protocol (using ftp || ftp-data filter). Mention each packet number and its purpose with reference to request made and response received in the above mentioned FTP Session in command line to get file legal.txt (screenshot shown above). Also look for Response Code and Response Arg in the FTP Header for each packet (There are 19 such packets and you have to write one/two lines explanation for each packet, what the packet is doing w.r.t FTP Session (Screenshot shown above) e.g., Packet 104: Client asks server to send the data on IP:192.168.1.2 and Port:16341 [63(0x3F),213(0xD5) and (0x3FD5=16341)])

1. ***89 24.126301 195.89.6.167 192.168.1.2 FTP 96 Response: 220 spftp/1.0.0000 Server [195.89.6.167]***
   The server is ready to establish a new connection and transfer the file to the client.

2. ***94 28.142597 192.168.1.2 195.89.6.167 FTP 70 Request: USER anonymous***
   The client device requests the FTP server to login using the anonymous ID.

3. ***96 28.314400 195.89.6.167 192.168.1.2 FTP 87 Response: 331 Password required for USER.***
   The server prompts the user to send a password for the anonymous client.

4. ***99 28.892626 192.168.1.2 195.89.6.167 FTP 61 Request: PASS***
   The client responds to the previous request by sending the anonymous user's password.

5. ***100 29.079858 195.89.6.167 192.168.1.2 FTP 387 Response: 230-***

The server accepts the login and grants access.

6. ***104 30.822855 192.168.1.2 195.89.6.167 FTP 79 Request: PORT 192,168,1,2,63,213***
   The client requests to open a connection with the given port and IP.

7. ***105 30.972276 195.89.6.167 192.168.1.2 FTP 84 Response: 200 PORT command successful.***
   The server acknowledges the connection setup.

8. ***106 30.973217 192.168.1.2 195.89.6.167 FTP 60 Request: NLST***
   The client requests the listing of the directory via “ls” command in the command prompt.

9. ***107 31.122564 195.89.6.167 192.168.1.2 FTP 101 Response: 150 Opening ASCII mode data connection for /.***
   Server initiates a connection to transfer listing data.

10. ***125 34.275733 195.89.6.167 192.168.1.2 FTP 77 Response: 226 Transfer Complete***
    Listing transfer is complete

11. ***127 34.278648 195.89.6.167 192.168.1.2 FTP-DATA 191 FTP Data: 125 bytes (PORT) (NLST)***
    This also represents sending some data to the client.

12. ***151 39.943855 192.168.1.2 195.89.6.167 FTP 79 Request: PORT 192,168,1,2,63,214***
    This requests a new connection for data transfer to begin.

13. ***152 40.093676 195.89.6.167 192.168.1.2 FTP 84 Response: 200 PORT command successful.***
    Connection successfully established between the client and the server.

14. ***153 40.095350 192.168.1.2 195.89.6.167 FTP 70 Request: RETR legal.txt***
    The client requests the file legal.txt from the server.

15. ***155 40.319238 195.89.6.167 192.168.1.2 FTP 122 Response: 150 Opening ASCII mode data connection for legal.txt (1415 bytes).***

The server initiates the file transfer.

16. ***160 40.546151 195.89.6.167 192.168.1.2 FTP 77 Response: 226 Transfer Complete***
    The file transfer is complete.

17. ***161 40.551399 195.89.6.167 192.168.1.2 FTP-DATA 1481 FTP Data: 1415 bytes (PORT) (RETR legal.txt)***
    This indicates the file transfer

18. ***173 43.384559 192.168.1.2 195.89.6.167 FTP 60 Request: QUIT***
    Client requests the termination of the FTP session.

19. ***175 43.533716 195.89.6.167 192.168.1.2 FTP 68 Response: 221 Goodbye.***
    The server closes the connection.

Lab Statement 2:

Are ICMP messages sent over UDP or TCP?	TCP
What is the link-layer (e.g., Ethernet) address of the host?	Destination: (60:67:20:55:7b:ac)
Which kind of request is sent through these ICMP packets?	Message requests are sent
How many requests are sent through the host?	16
What is the IP address of your host? What is the IP address of the destination host?	Source Address: 172.217.27.36 Destination Address: 192.168.33.110
Why is it that an ICMP packet does not have source and destination port numbers?	It does not operate at the Transport layer which requires port number for identification.
What values in the ICMP request message differentiate this message from the ICMP reply message?	Type and Code fields in the ICMP header differentiate both the types i.e. 8 for request and 0 for reply.

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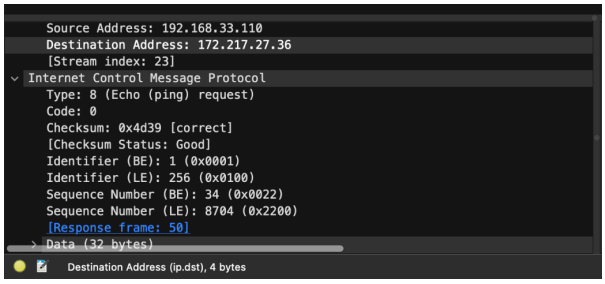
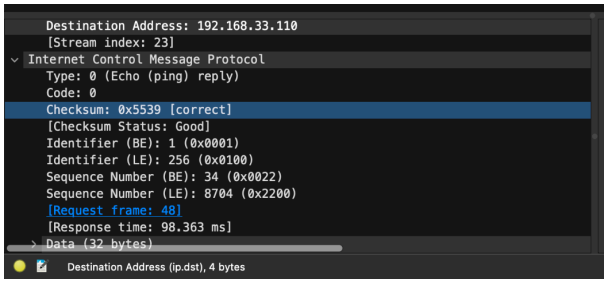
Examine one of the ping request packets sent by your host. What are the ICMP type and code numbers? What other fields does this ICMP packet have? How many bytes are the checksum, sequence number and identifier fields?	
Examine the corresponding ping reply packet. What are the ICMP type and code numbers? What other fields does this ICMP packet have? How many bytes are the checksum, sequence number and identifier fields?	
Examine the packet no 56. What are the ICMP type and code numbers? Why is the IP and TCP Header included in the ICMP Header? What do these headers depict?	These headers depict that an error occurred during the transmission and are used for debugging and identification.