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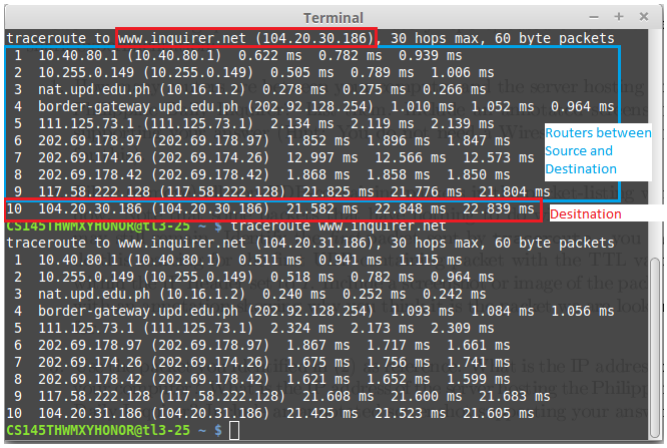
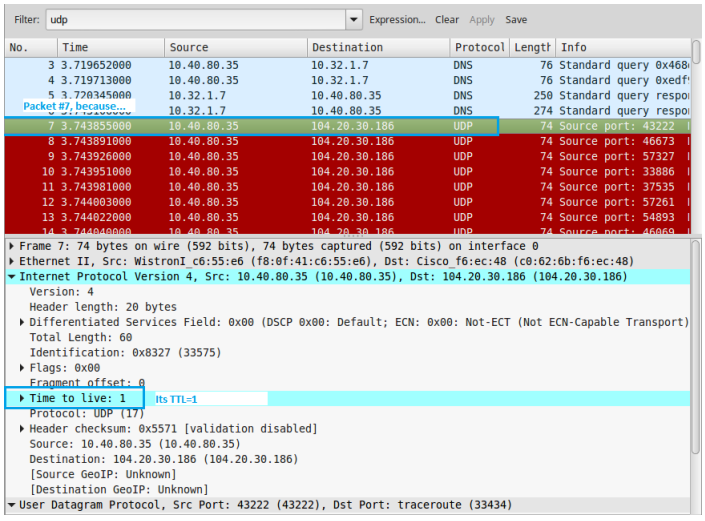
2014-40093
CS 145 THWMXY-HONOR

CS145 Lab Exercise 3: Wireshark Lab - Internet Protocol and Traceroute Operation

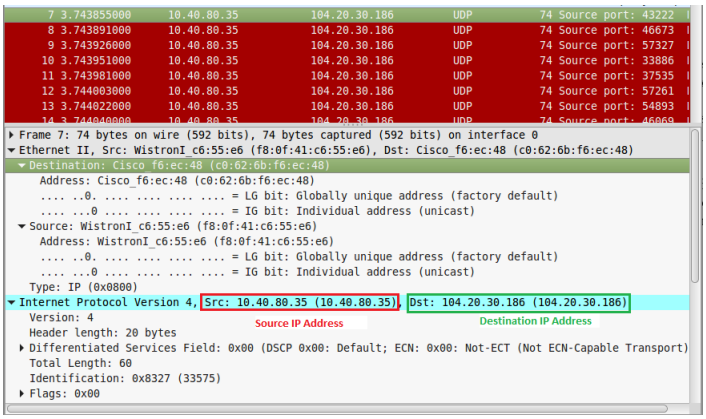
1. 9 routers, not including the server hosting the Philippine Daily Inquirer.



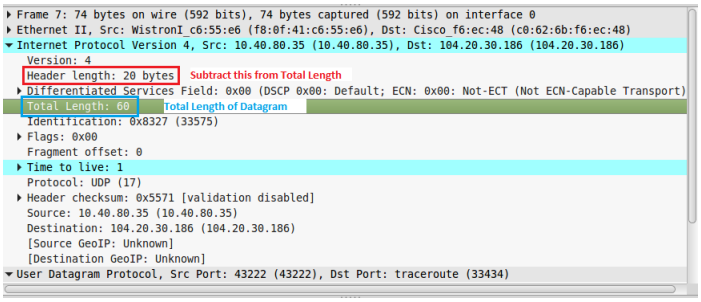
2. Packet #7



3. IP Address (Computer): **10.40.80.35**
   IP Address (Website): **104.20.30.186**



4. IP Header: **20 bytes**
   IP Datagram Payload: **40 bytes**
   As annotated, the total length of the IP Datagram is 60 bytes. To get the payload, subtract the IP Header bytes from the total length of the datagram. Hence, $60 - 20 = 40$ bytes.



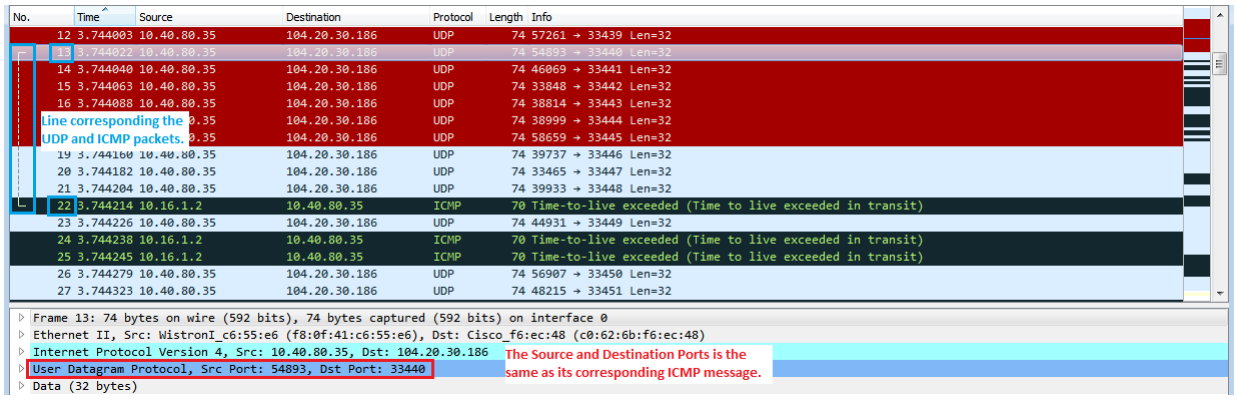
5. The Identification and the Checksum. They are as follows:

   - Packet #7: 0x8327 (Identification), 0x5571 (Checksum)
   - Packet #8: 0x8328 (Identification), 0x5570 (Checksum)
   - Packet #9: 0x8329 (Identification), 0x556f (Checksum)

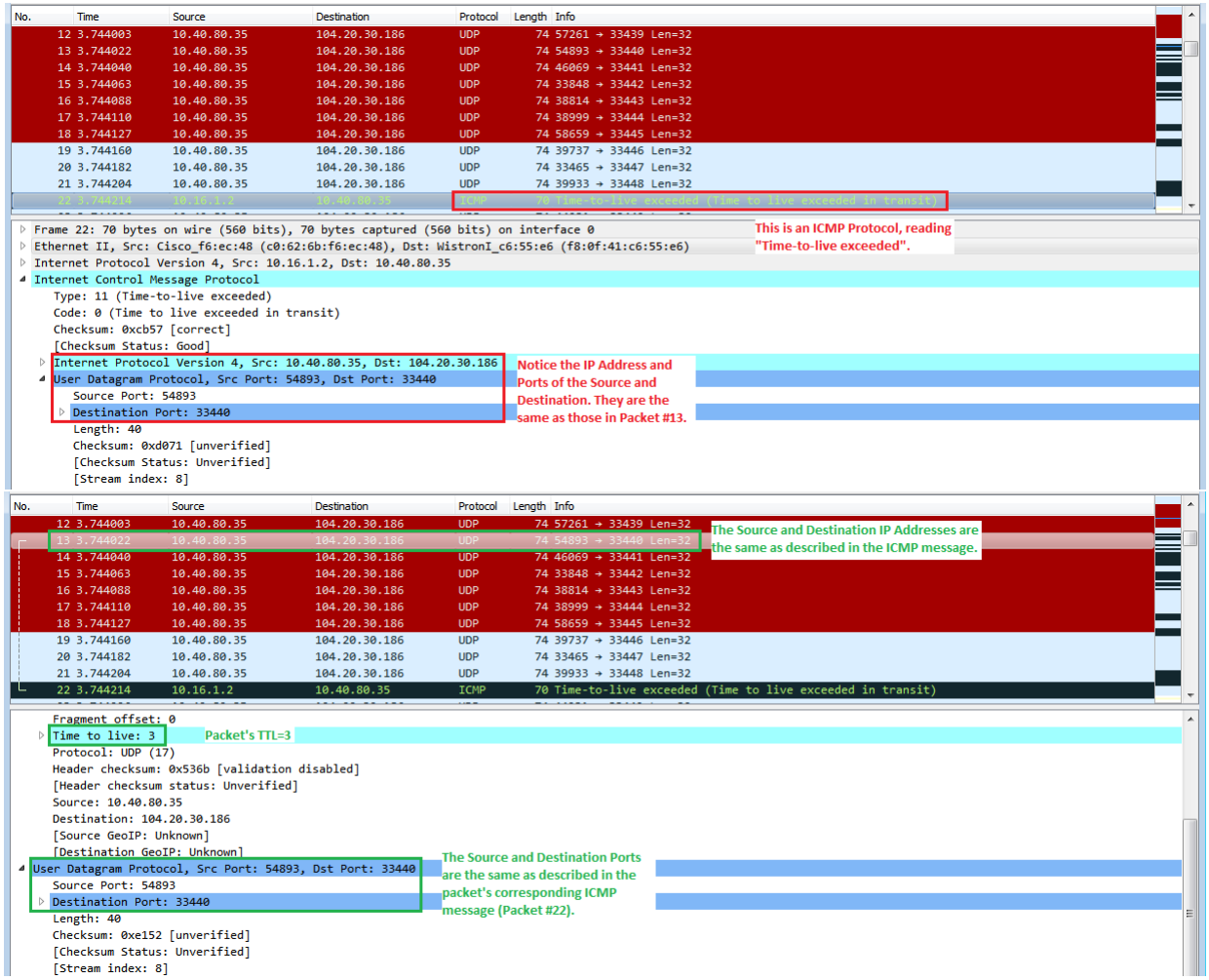
6. The Internet Protocol Version, Header Length, Differentiated Services Field, Flags, TTL, Protocol, Source, and Destination.

7. The values in the Identification field increase by 1 each succeeding packet.

8. Traceroute does not assume that the ICMP messages will arrive in order. It depends on the delay time of each UDP packet. An ICMP message is associated to its corresponding UDP packet through the Source and Destination Ports in the UDP header.



9. Packet #22 (caused by Packet #13)

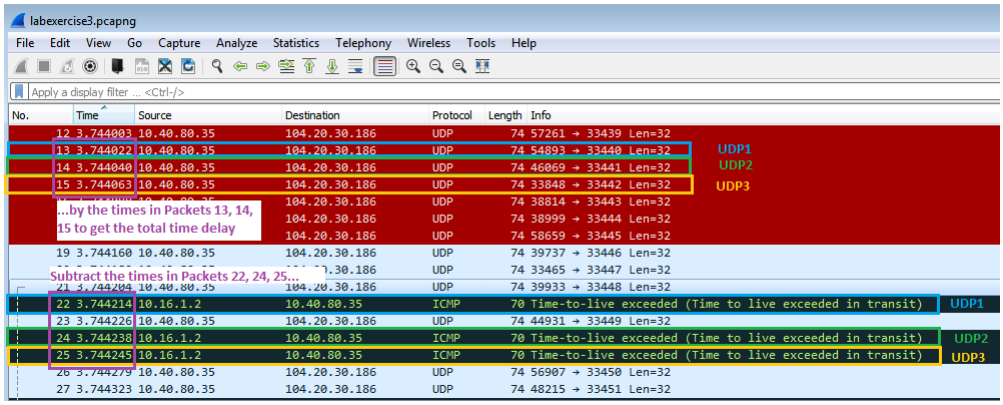


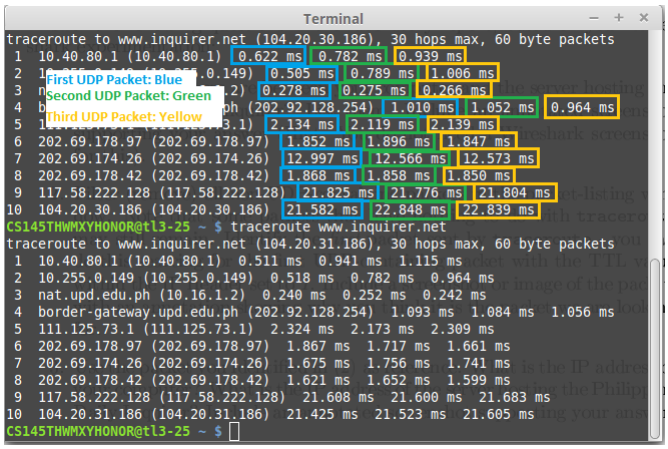
10. Timestamp Delays:

    - UDP1 = 3.744214 s - 3.744022 s = 192 ms
    - UDP2 = 3.744238 s - 3.744040 s = 198 ms
    - UDP3 = 3.744245 s - 3.744063 s = 182 ms

    Delay based on Traceroute Values:

#	UDP1	UDP2	UDP3
1	0.622 ms	0.782 ms	0.939 ms
2	0.505 ms	0.789 ms	1.006 ms
3	0.278 ms	0.275 ms	0.266 ms
4	1.010 ms	1.052 ms	0.964 ms
5	2.134 ms	2.119 ms	2.139 ms
6	1.852 ms	1.896 ms	1.847 ms
7	12.997 ms	12.566 ms	12.573 ms
8	1.868 ms	1.858 ms	1.850 ms
9	21.825 ms	21.776 ms	21.804 ms
10	21.582 ms	22.848 ms	22.839 ms
Total	64.673 ms	65.961 ms	66.281 ms
X Hops (3)	194.02 ms	197.88 ms	198.84 ms




Terminal
First UDP Packet: Blue
Second UDP Packet: Green
Third UDP Packet: Yellow
traceroute to www.inquirer.net (104.20.30.186), 30 hops max, 60 byte packets
1 10.40.80.1 (10.40.80.1) 0.622 ms 0.782 ms 0.939 ms
2 0.149) 0.505 ms 0.789 ms 1.006 ms
3 .2) 0.278 ms 0.275 ms 0.266 ms
4 ph (202.92.128.254) 1.010 ms 1.052 ms 0.964 ms
5 3.1) 2.134 ms 2.119 ms 2.139 ms
6 202.69.178.97 (202.69.178.97) 1.852 ms 1.896 ms 1.847 ms
7 202.69.174.26 (202.69.174.26) 12.997 ms 12.566 ms 12.573 ms
8 202.69.178.42 (202.69.178.42) 1.868 ms 1.858 ms 1.850 ms
9 117.58.222.128 (117.58.222.128) 21.825 ms 21.776 ms 21.804 ms
10 104.20.30.186 (104.20.30.186) 21.582 ms 22.848 ms 22.839 ms
CS145THWMXYHONOR@tl3-25 ~ $ traceroute www.inquirer.net
traceroute to www.inquirer.net (104.20.31.186), 30 hops max, 60 byte packets
1 10.40.80.1 (10.40.80.1) 0.511 ms 0.941 ms 1.115 ms
2 10.255.0.149 (10.255.0.149) 0.518 ms 0.782 ms 0.964 ms
3 nat.upd.edu.ph (10.16.1.2) 0.240 ms 0.252 ms 0.242 ms
4 border-gateway.upd.edu.ph (202.92.128.254) 1.093 ms 1.084 ms 1.056 ms
5 111.125.73.1 (111.125.73.1) 2.324 ms 2.173 ms 2.309 ms
6 202.69.178.97 (202.69.178.97) 1.867 ms 1.717 ms 1.661 ms
7 202.69.174.26 (202.69.174.26) 1.675 ms 1.756 ms 1.741 ms
8 202.69.178.42 (202.69.178.42) 1.621 ms 1.652 ms 1.599 ms
9 117.58.222.128 (117.58.222.128) 21.608 ms 21.600 ms 21.683 ms
10 104.20.31.186 (104.20.31.186) 21.425 ms 21.523 ms 21.605 ms
CS145THWMXYHONOR@tl3-25 ~ $