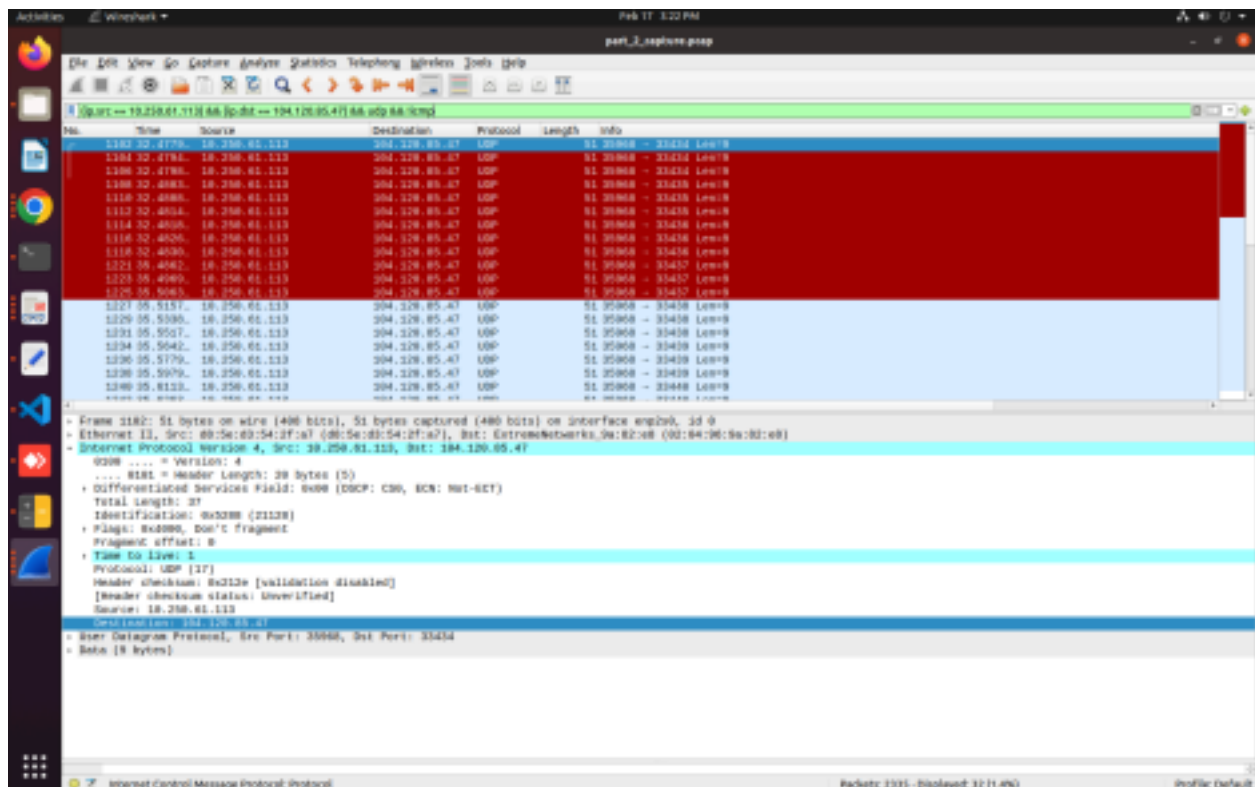


Part 1: Wireshark packet Capture (part_1_capture.pcap)

- Two
- Packet No. 8, Total Bytes: 347
- Host: www.ccsf.edu
Host: clients1.google.com
- HTTP 1.1
- Source IP: 10.100.1.24, Destination IP: 74.125.19.113, Hostname: clients1.google.com

Part 2: Wireshark packet Capture (part_2_capture.pcap)

- We observe **2 DNS** responses, and the DNS types are **A** and **AAAA**.
- The IP address for www.mit.edu is 104.120.85.47. The total number of UDP packets transmitted from the client to the www.mit.edu site is 32.



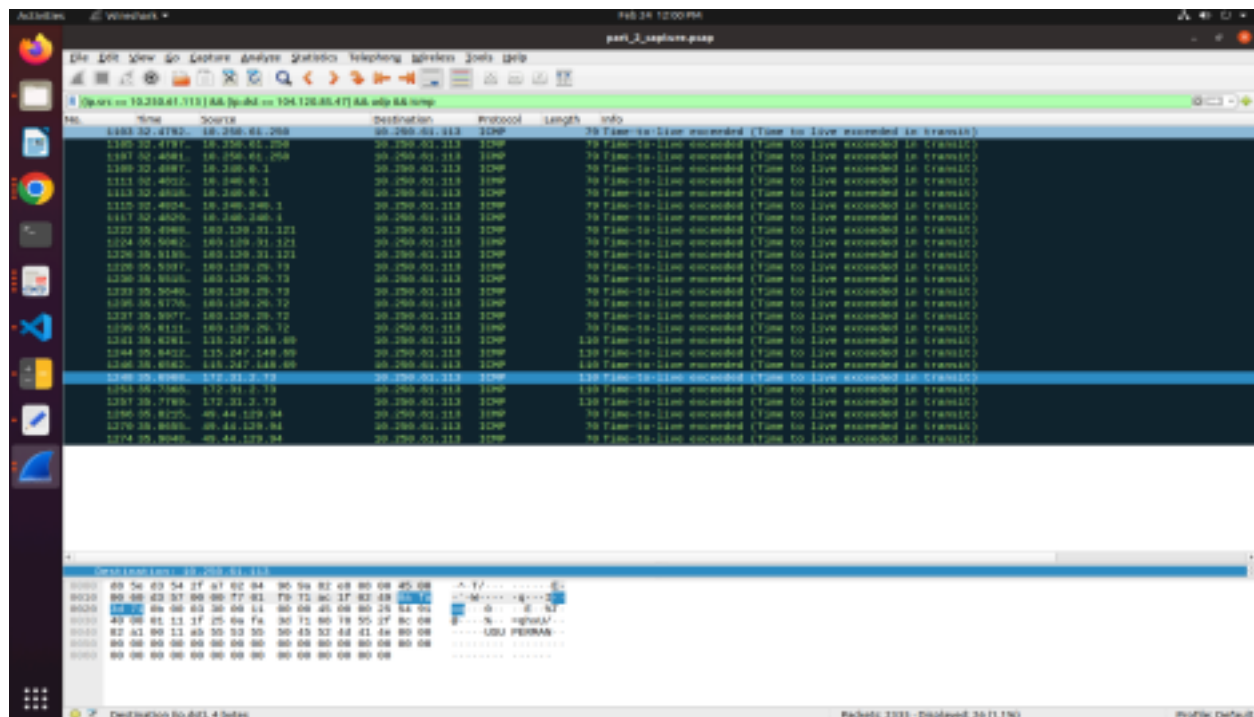
- For the last UDP packet transmitted from the client to the www.mit.edu site, the details are:
 - TTL: **11**
Identification number: **0x57c9 (22473)**
Header Length: 20 bytes
Payload: **17 bytes** (Ref: Packet no. 1748)
 - UDP
 - Min: 0, Max: 65535

d. The UDP length field is 16 bits, so the maximum value it can achieve is $(2^{16} - 1)$ bytes = **65535 bytes**. However, this length field contains the sum of the UDP header + UDP payload. The UDP header is fixed to 8 bytes. So, maximum UDP payload length = **65535 - 8 = 65527 bytes**.

9. The number of hops that have responded with ICMP packets for the request made to www.mit.edu is **nine**.

The list of IP addresses is as follows:

- i. 10.250.61.250
- ii. 10.240.0.1
- iii. 10.240.240.1
- iv. 103.120.31.121
- v. 103.120.29.73
- vi. 103.120.29.72
- vii. 115.247.148.69
- viii. 172.31.2.73
- ix. 49.44.129.94



10. Packet number 1100 -> answers

www.mit.edu: type CNAME, class IN, cname www.mit.edu.edgekey.net

www.mit.edu.edgekey.net: type CNAME, class IN, cname e9566.dscb.akamaiedge.net

e9566.dscb.akamaiedge.net: type A, class IN, addr 104.120.85.47

Part 3:Socket programming:

Server.py:

- Server setup [4 marks]
- Client's choice [1 mark]
- Game status [3 marks]
- Notify client [2 marks]
- Continue game [2 marks]
- Quit Game [2 marks]
- Rerun server [1 mark]

Client.py:

- A client connects server [3 marks]
 - Send's name [1 mark]
 - Makes choice [1 mark]
 - Prints the win status [1 mark] •
- YES/ QUIT message [1 mark]