230415H
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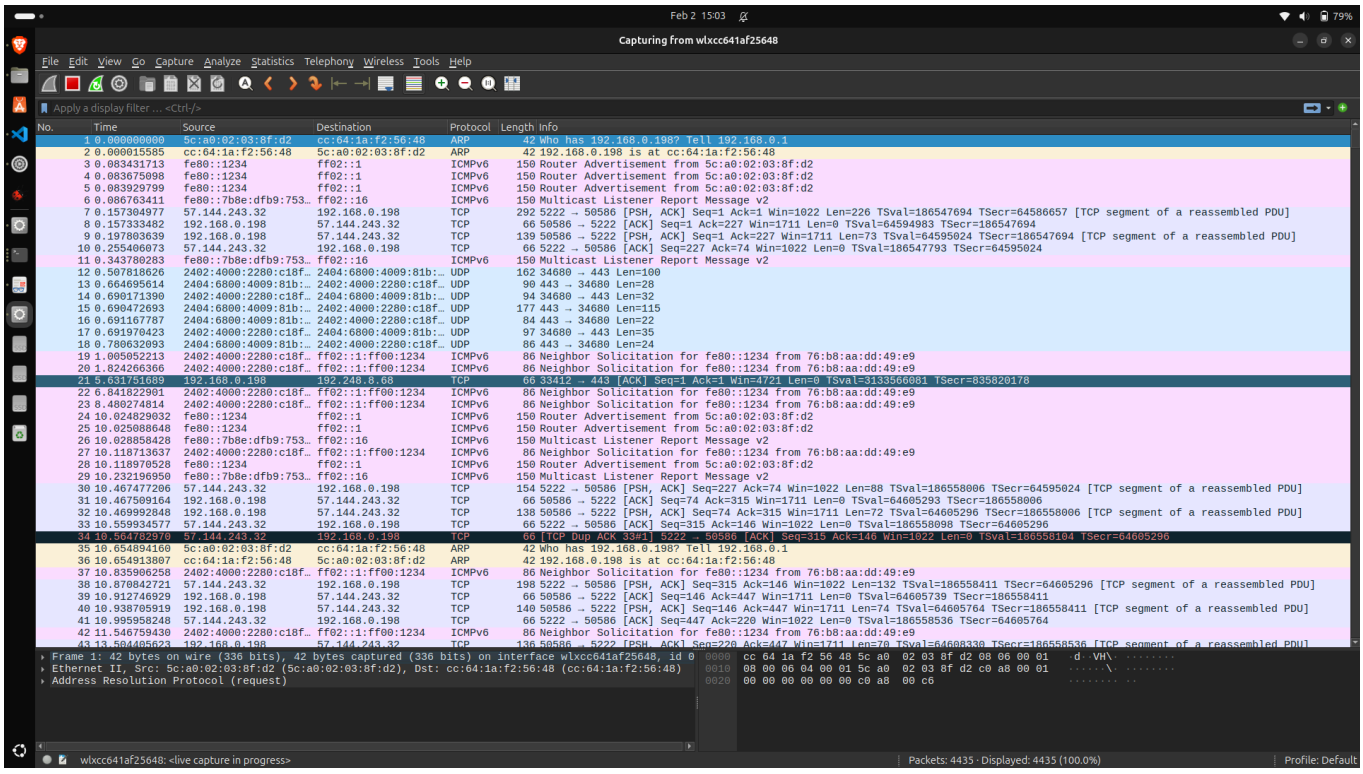
Take Home Assignment
02/02/2026

1. Capture of Some PDUs

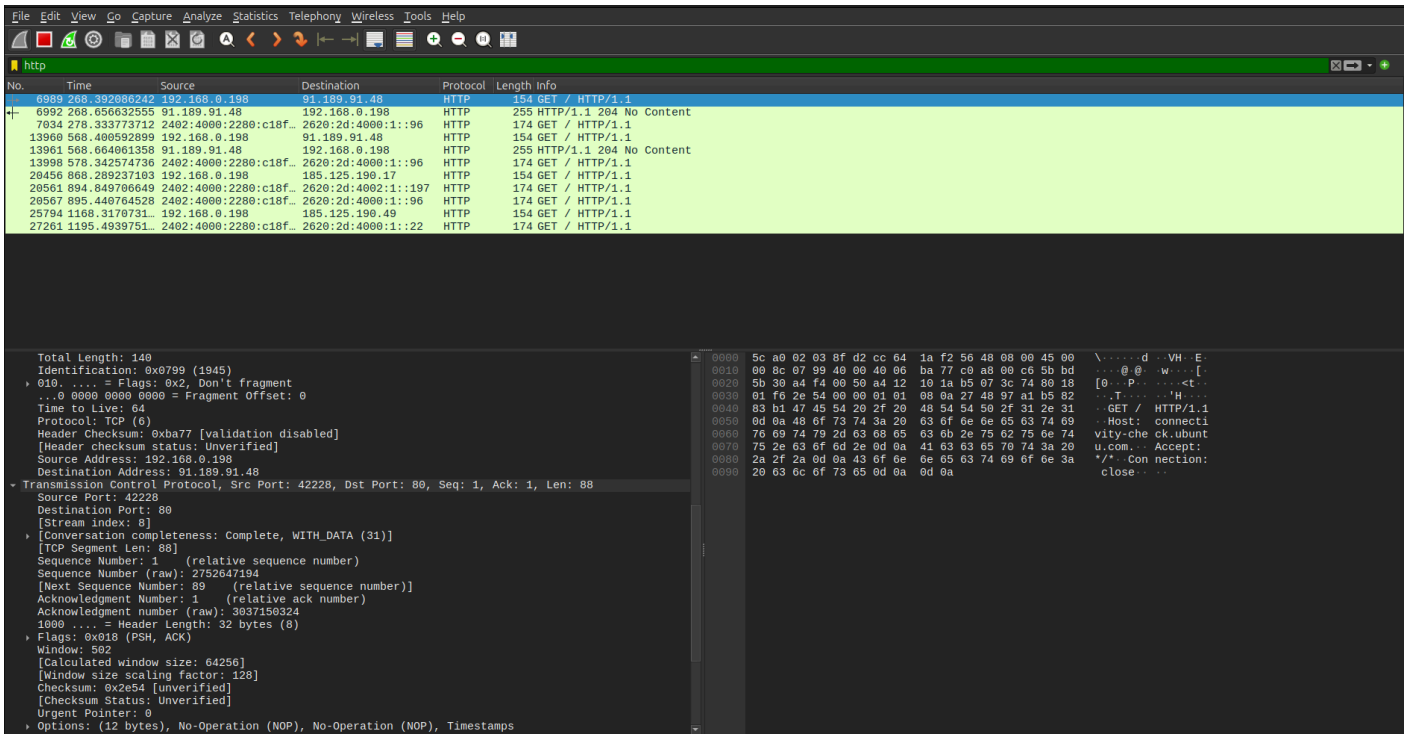


2. Five protocols and its functions

Protocol	Name	Function
ARP	Address Resolution Protocol	Translates logical ip address(Layer 3) into physical mac address(Layer 2)
ICMPv6	Internet control message protocol version 6	Error reporting and network diagnostics, handles Neighbour discovery, Stateless address configuration.
TCP	Transmission control protocol	Ensure reliable, ordered and

		error checked delivery of data over networks(Braking data in to packets, number them and reassembling them correctly at the destination)
UDP	User Datagram Protocol	Sends data independently packets(Data Grams) without establishing a connection(Fast and Connection less)
DNS	Domain Name System	Acts as an Internet phone book. Translating human readable domain names into machine readable IP addresses.

3. Application Layer Protocol : HTTP

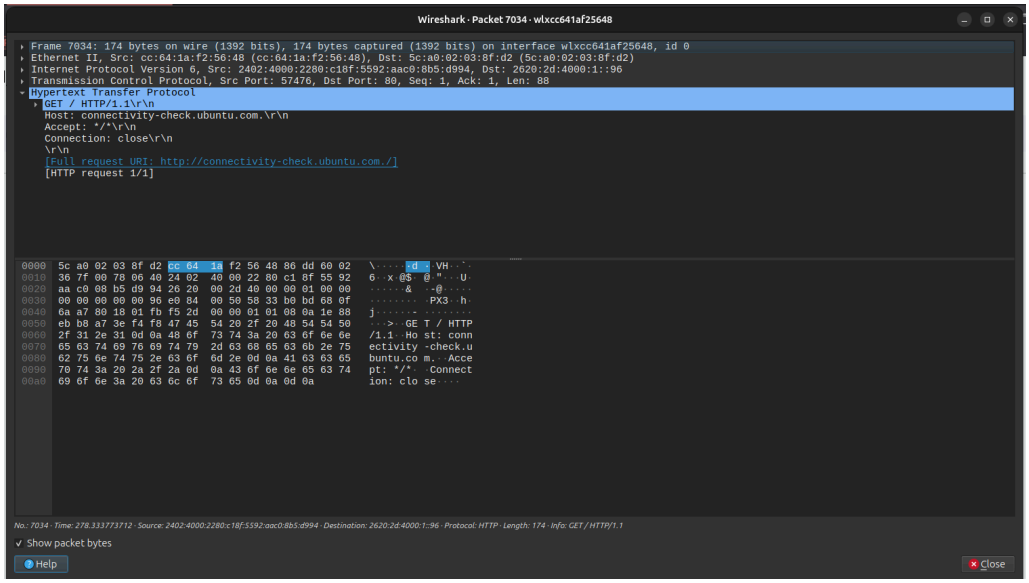


Consider about the HTTP GET method:

6992	268.656632555	91.189.91.48	192.168.0.198	HTTP	255 HTTP/1.1 204 No Content
7034	278.333773712	2402:4000:2280:c18f…	2620:2d:4000:1::96	HTTP	174 GET / HTTP/1.1
13960	568.400592899	192.168.0.198	91.189.91.48	HTTP	154 GET / HTTP/1.1
13961	568.664061358	91.189.91.48	192.168.0.198	HTTP	255 HTTP/1.1 204 No Content
13998	578.342574736	2402:4000:2280:c18f…	2620:2d:4000:1::96	HTTP	174 GET / HTTP/1.1
20456	868.289237103	192.168.0.198	185.125.190.17	HTTP	154 GET / HTTP/1.1
20561	894.849706649	2402:4000:2280:c18f…	2620:2d:4002:1::197	HTTP	174 GET / HTTP/1.1
20567	895.440764528	2402:4000:2280:c18f…	2620:2d:4000:1::96	HTTP	174 GET / HTTP/1.1
25794	1168.3170731…	192.168.0.198	185.125.190.49	HTTP	154 GET / HTTP/1.1
27261	1195.4939751…	2402:4000:2280:c18f…	2620:2d:4000:1::22	HTTP	174 GET / HTTP/1.1
32654	1468.4004561…	192.168.0.198	91.189.91.48	HTTP	154 GET / HTTP/1.1
32655	1468.6802726…	91.189.91.48	192.168.0.198	HTTP	255 HTTP/1.1 204 No Content
33288	1495.5677803…	2402:4000:2280:c18f…	2620:2d:4000:1::2a	HTTP	174 GET / HTTP/1.1

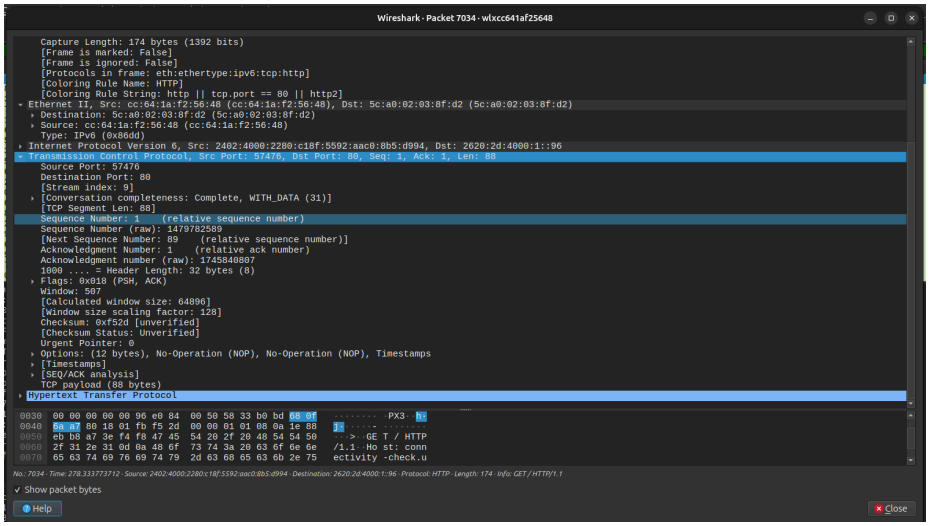
Lets look at the single Application layer PDU like HTTP GET request.(Consider the tcp IP model)

- Application Layer(PDU name : Message or Data):



This layer combines the three layers of the OSI model. As the screenshot shows, the Ubuntu connectivity check using the get method. The HTTP protocol formats the request accordingly.

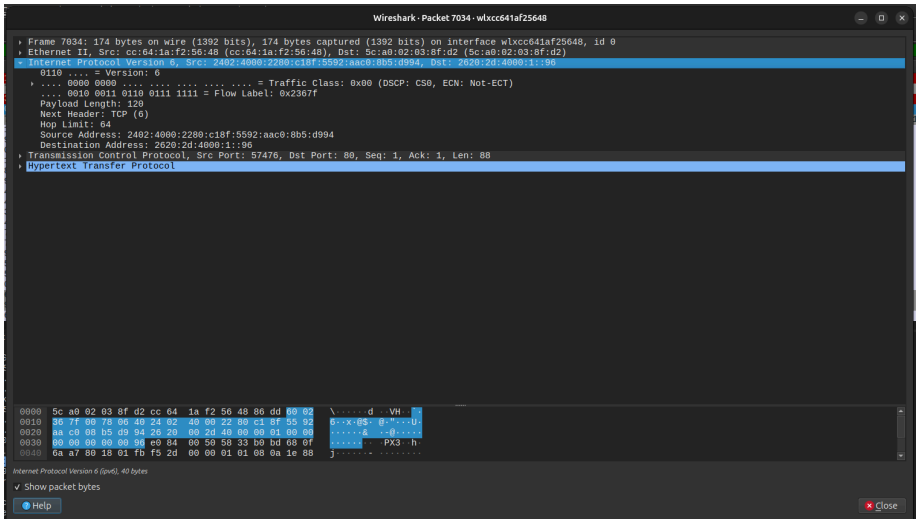
- Transport Layer (PDU name: Segment or Datagram)



This layer is responsible for host to host communication and error recovery.
Data chopped into smaller chunks. If using TCP, a header is added that includes Source/Destination Ports(57476 and 80) and Sequence numbers(1), which ensures the pieces are put back together in the right order at the destination.

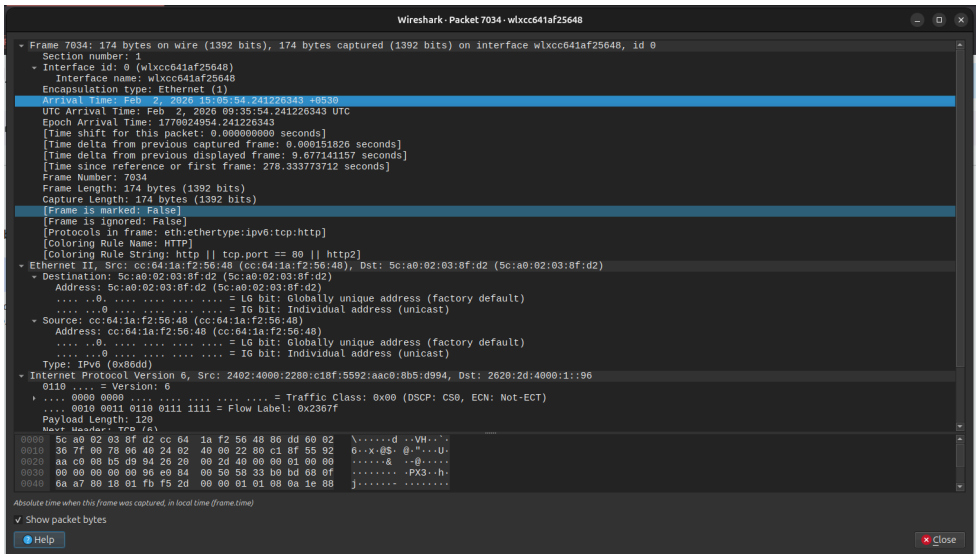
- Internet Layer(PDU name : Packets)

This is the routing layer. The primary job is to move packets from host to host.



The ip header is attached. This includes the Source and Destination IP addresses. Routes and deciding the best path to for your packet to travel.

- Network access Layer (PDU name : Frame)



The packet is wrapped with a MAC address. Also add a “Frame Check Sequence “ (FCS) at the end to detect if any bits were corrupted during the physical transmission. Finally It converts the frame into electrical or radio signals.