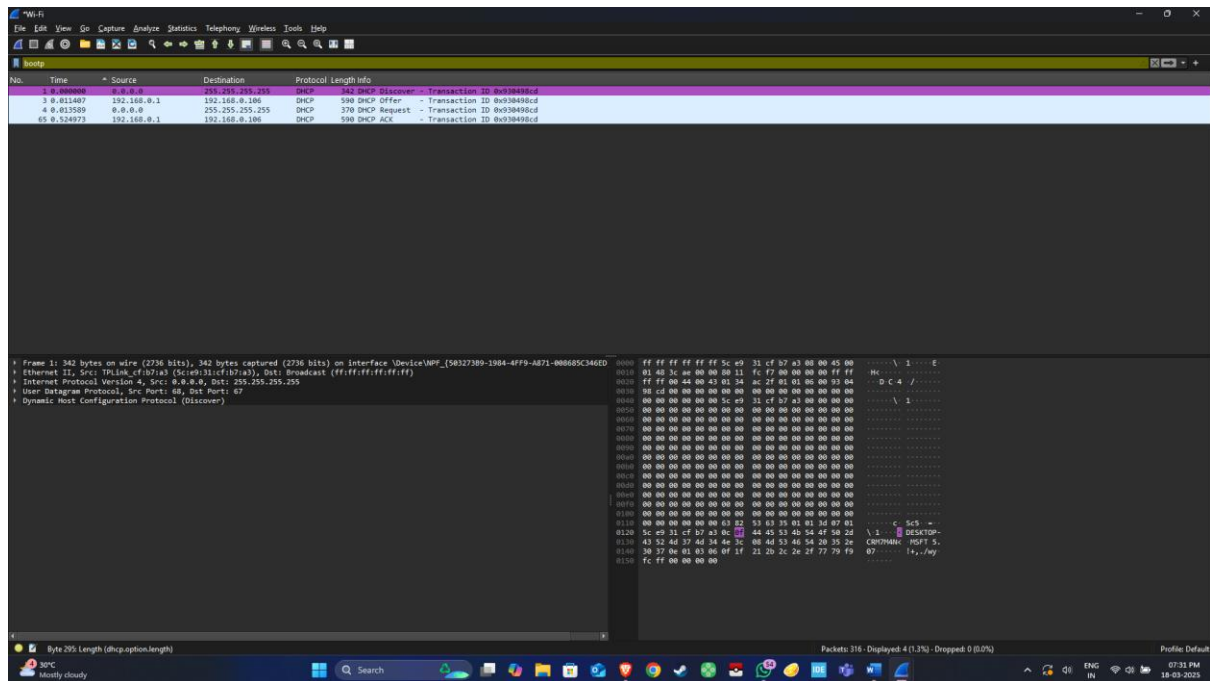


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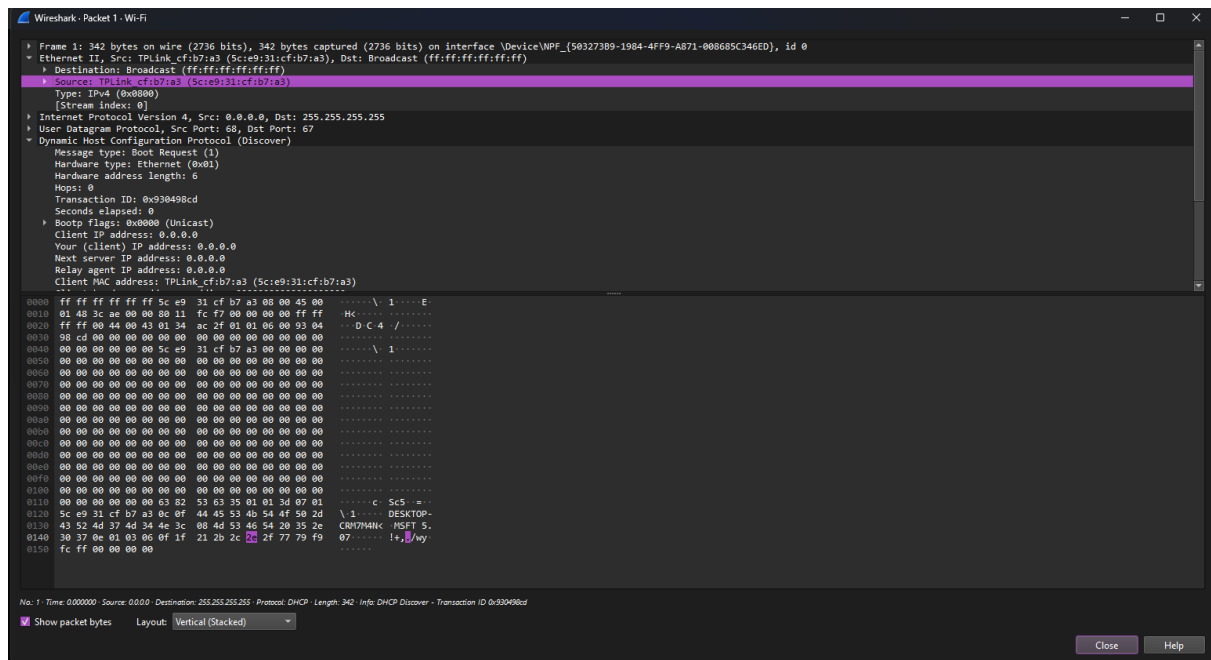
Q3) DHCP Analysis on Wireshark:



The method of obtaining DHCP is by first disconnecting from WiFi, then selecting the network interface in Wireshark, start capturing the packets and then connect to internet. We will soon start getting packets. Filter by BOOTP and we will find the DHCP Process.

The steps in DHCP are:

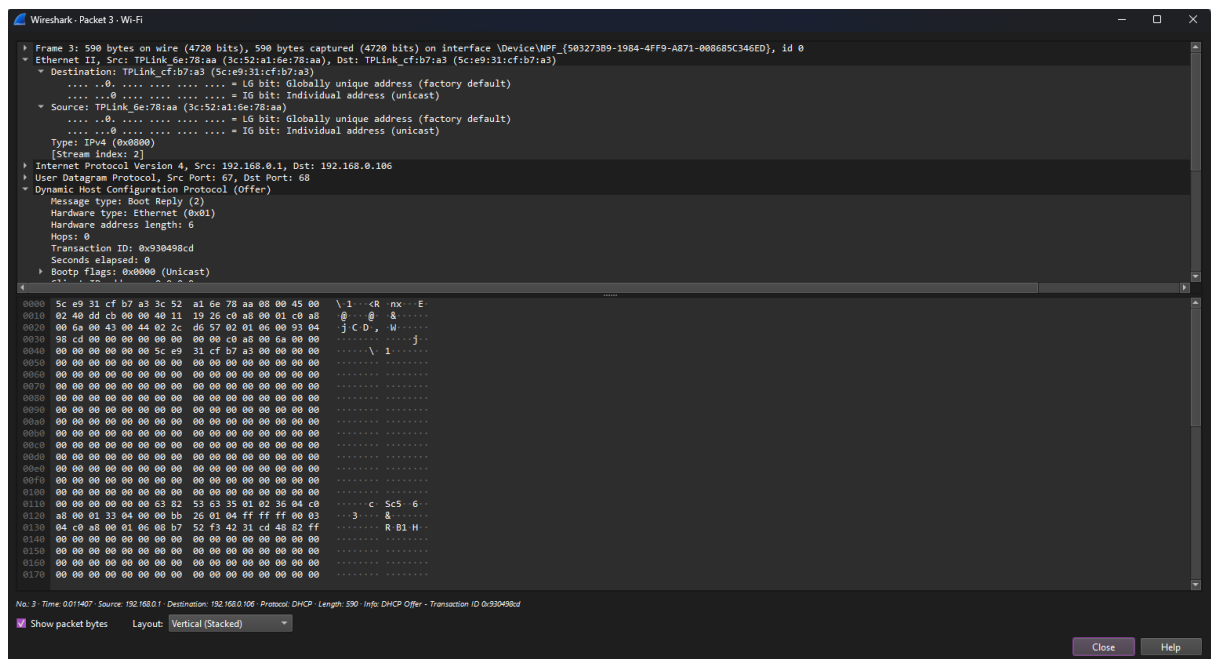
1) DHCP Discover



This is the first step in DHCP, where the System is first connecting to an network with no IP, so it sends a broadcast message asking for the DHCP server for an IP.

The source here is 0.0.0.0 (since there is no address assigned) and the destination is broadcast (ff:ff:ff:ff:ff:ff)

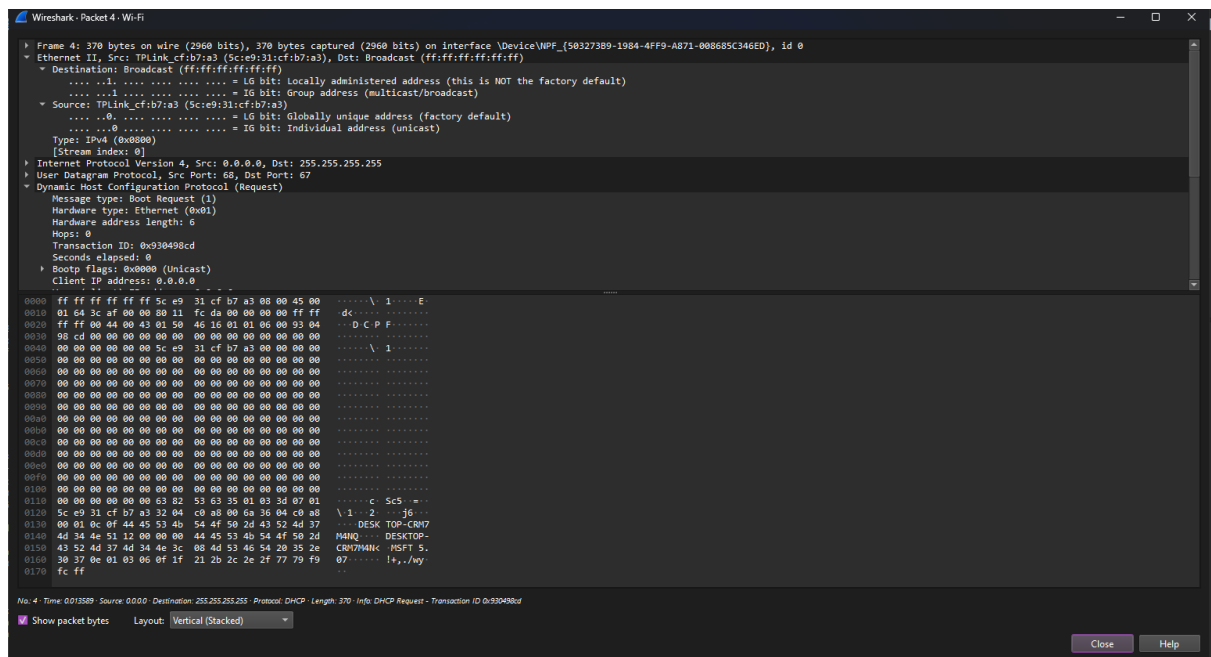
2) DHCP Offer



This is the reply from DHCP Server, returning back with an available IP. This message is an OFFER Packet from Server to PC, informing that the sent IP is available, it is possible to accept this IP at lease.

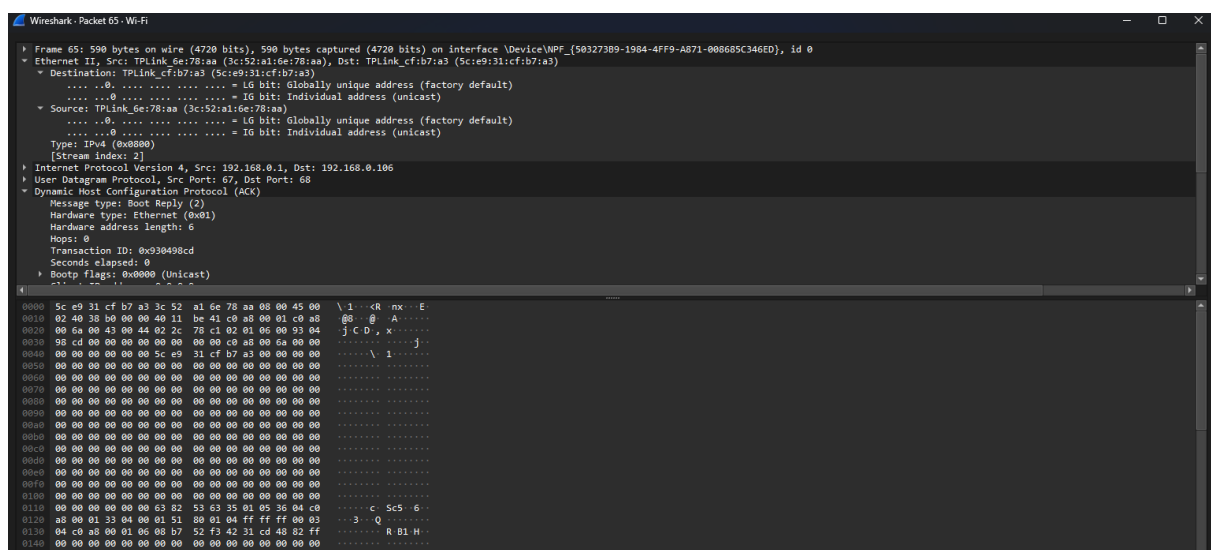
Source address is 192.168.0.1 (Router) and Destination is 192.168.0.106 (the IP available for lease).

3) DHCP Request

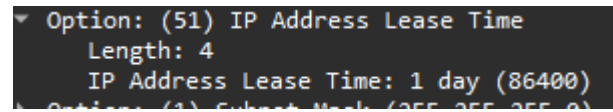


This is a message from the PC to the Server saying that it is ready for accepting the IP sent by the DHCP server. So, it sends an acknowledgement to the message sent by the server and is ready to receive the IP

4) DHCP Acknowledgement



This is the final message in the DHCP process. This message is from the Server to the PC, finalizing the transaction with an IP for the PC. Note that the IP shared is NOT permanent, and that it is given as lease, and the system has to renew it before the expiration time.

A screenshot of a network configuration tool showing DHCP options. It displays 'Option: (51) IP Address Lease Time' with a 'Length: 4' and 'IP Address Lease Time: 1 day (86400)'. Below it, a partially visible line shows 'Option: (1) Subnet Mask (255.255.255.0)'.

```
Option: (51) IP Address Lease Time
Length: 4
IP Address Lease Time: 1 day (86400)
Option: (1) Subnet Mask (255.255.255.0)
```

As we can see, there is a lease time of 1 day, and the system has to renew it before the time expires.