

Subject: Computer Networks (01CT0503)

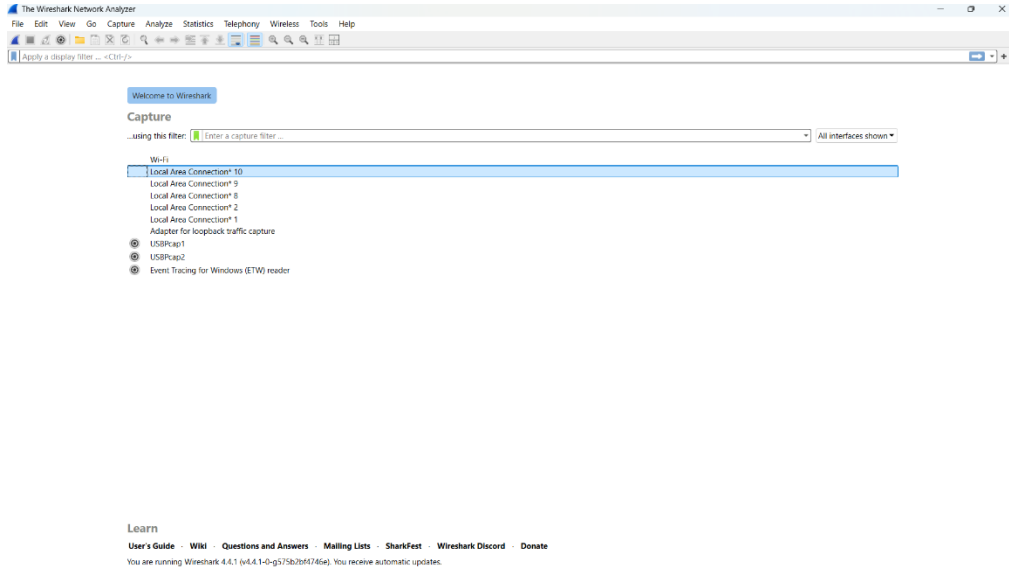
Experiment No: 12

Aim: Monitor the live/real time network and analyze the concepts of various networking protocols like ARP, RARP, DHCP, HTTP, etc.

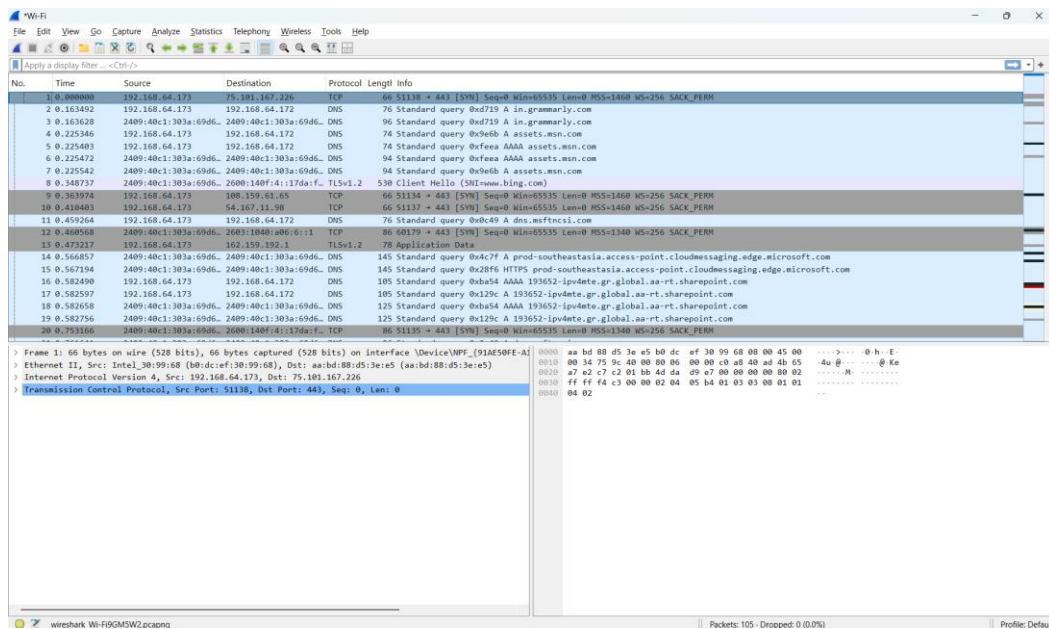
Date: 24-11-2025

Enrolment No: 92301733024

Step – 1:- Open Wireshark



Step – 2 :- Select the Network from which you want to communicate



Subject: Computer Networks (01CT0503)

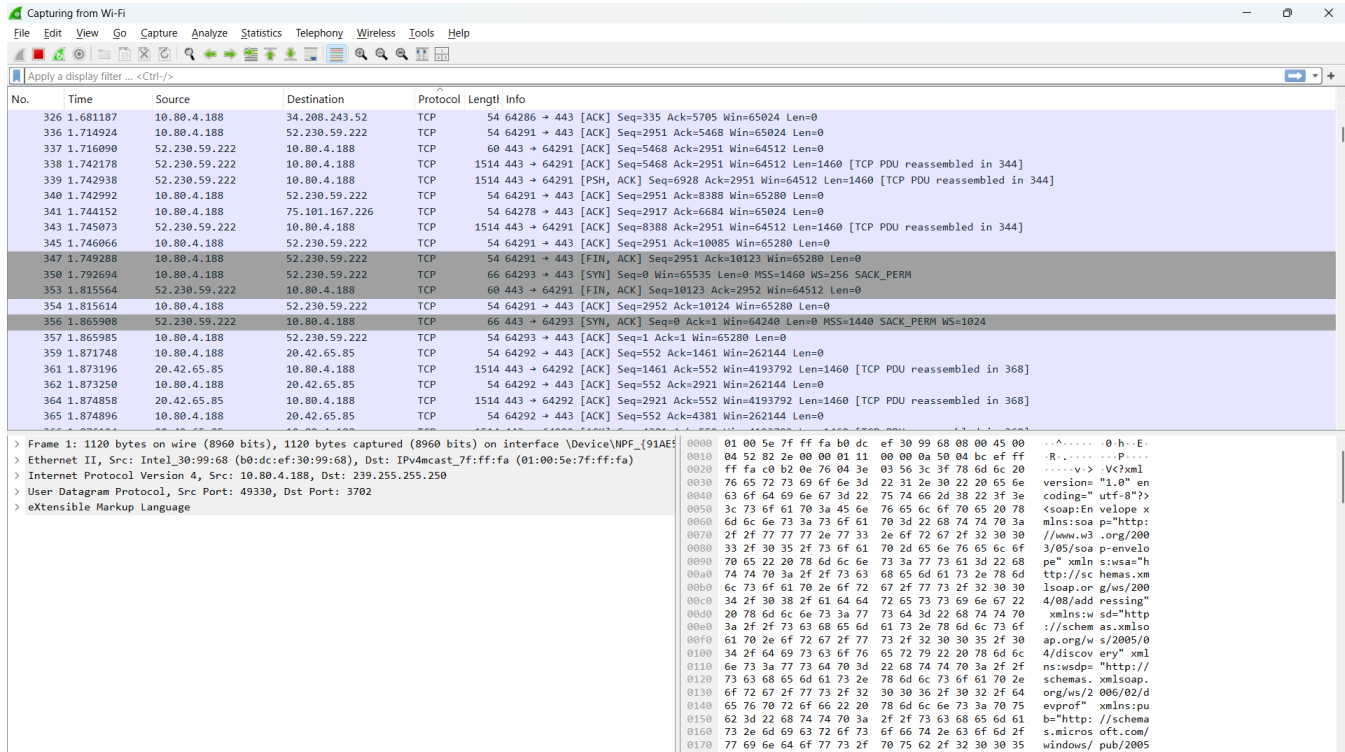
Aim: Monitor the live/real time network and analyze the concepts of various networking protocols like ARP, RARP, DHCP, HTTP, etc.

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Step – 3 :- Now when we press Protocol button it will sort the packet based on protocol used.



Wireshark - Capturing from Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter: <Ctrl-/>

No.	Time	Source	Destination	Protocol	Length	Info
326	1.691187	10.80.4.188	34.208.243.52	TCP	54	64286 → 443 [ACK] Seq=335 Ack=5705 Win=65024 Len=0
336	1.714924	10.80.4.188	52.230.59.222	TCP	54	64291 → 443 [ACK] Seq=2951 Ack=5468 Win=65024 Len=0
337	1.716090	52.230.59.222	10.80.4.188	TCP	60	443 → 64291 [ACK] Seq=5468 Ack=2951 Win=64512 Len=0
338	1.742178	52.230.59.222	10.80.4.188	TCP	1514	443 → 64291 [ACK] Seq=5468 Ack=2951 Win=64512 Len=1460 [TCP PDU reassembled in 344]
339	1.742938	52.230.59.222	10.80.4.188	TCP	1514	443 → 64291 [PSH, ACK] Seq=6928 Ack=2951 Win=64512 Len=1460 [TCP PDU reassembled in 344]
340	1.742992	10.80.4.188	52.230.59.222	TCP	54	64291 → 443 [ACK] Seq=2951 Ack=8388 Win=65280 Len=0
341	1.744152	10.80.4.188	75.101.167.226	TCP	54	64278 → 443 [ACK] Seq=2917 Ack=6684 Win=65024 Len=0
343	1.745073	52.230.59.222	10.80.4.188	TCP	1514	443 → 64291 [ACK] Seq=8388 Ack=2951 Win=64512 Len=1460 [TCP PDU reassembled in 344]
345	1.746066	10.80.4.188	52.230.59.222	TCP	54	64291 → 443 [ACK] Seq=2951 Ack=10085 Win=65280 Len=0
347	1.749288	10.80.4.188	52.230.59.222	TCP	54	64291 → 443 [FIN, ACK] Seq=2951 Ack=10123 Win=65280 Len=0
350	1.792694	10.80.4.188	52.230.59.222	TCP	66	64293 → 443 [SYN] Seq=0 Win=65535 Len=0 MSS=1460 WS=256 SACK_PERM
353	1.815564	52.230.59.222	10.80.4.188	TCP	60	443 → 64291 [FIN, ACK] Seq=10123 Ack=2952 Win=64512 Len=0
354	1.815614	10.80.4.188	52.230.59.222	TCP	54	64291 → 443 [ACK] Seq=2952 Ack=10124 Win=65280 Len=0
356	1.865988	52.230.59.222	10.80.4.188	TCP	66	443 → 64291 [SYN, ACK] Seq=0 Ack=1 Win=64240 Len=0 MSS=1440 SACK_PERM WS=1024
357	1.865985	10.80.4.188	52.230.59.222	TCP	54	64293 → 443 [ACK] Seq=1 Ack=1 Win=65280 Len=0
359	1.871748	10.80.4.188	20.42.65.85	TCP	54	64292 → 443 [ACK] Seq=552 Ack=1461 Win=262144 Len=0
361	1.873196	20.42.65.85	10.80.4.188	TCP	1514	443 → 64292 [ACK] Seq=1461 Ack=552 Win=4193792 Len=1460 [TCP PDU reassembled in 368]
362	1.873250	10.80.4.188	20.42.65.85	TCP	54	64292 → 443 [ACK] Seq=552 Ack=2921 Win=262144 Len=0
364	1.874858	20.42.65.85	10.80.4.188	TCP	1514	443 → 64292 [ACK] Seq=2921 Ack=552 Win=4193792 Len=1460 [TCP PDU reassembled in 368]
365	1.874896	10.80.4.188	20.42.65.85	TCP	54	64292 → 443 [ACK] Seq=552 Ack=4381 Win=262144 Len=0

> Frame 1: 1120 bytes on wire (8960 bits), 1120 bytes captured (8960 bits) on interface \Device\NPF_{91AE50FE-A16C-432E-B2F6-D743AE198080}, id 0

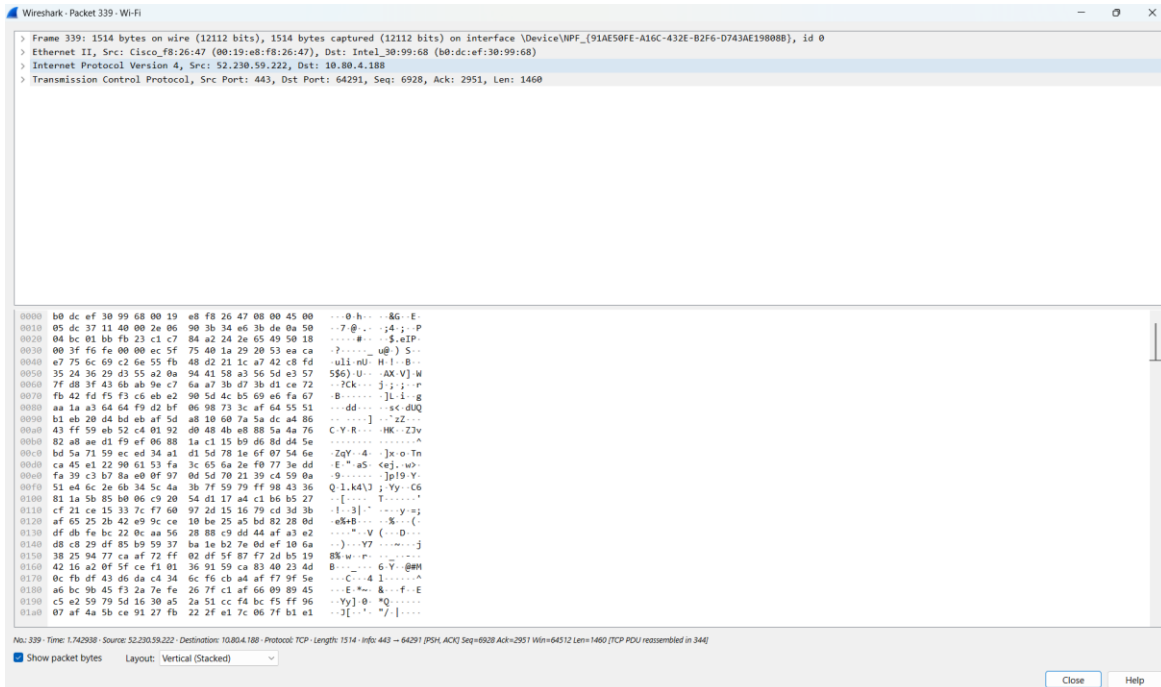
> Ethernet II, Src: Intel_30:99:68 (b0:dcef:30:99:68), Dst: IPv4mcast_7f:ff:fa (01:00:5e:7f:ff:fa)

> Internet Protocol Version 4, Src: 10.80.4.188, Dst: 239.255.255.250

> User Datagram Protocol, Src Port: 49330, Dst Port: 3702

> eXtensible Markup Language

Step – 4 :- Now when we press one of the packet it will open the packet and show every details.



Wireshark - Packet 339: Wi-Fi

> Frame 339: 1514 bytes on wire (12112 bits), 1514 bytes captured (12112 bits) on interface \Device\NPF_{91AE50FE-A16C-432E-B2F6-D743AE198080}, id 0

> Ethernet II, Src: Cisco_F8:26:47 (00:19:ed:f8:26:47), Dst: Intel_30:99:68 (b0:dcef:30:99:68)

> Internet Protocol Version 4, Src: 52.230.59.222, Dst: 10.80.4.188


> Transmission Control Protocol, Src Port: 443, Dst Port: 64291, Seq: 6928, Ack: 2951, Len: 1460

0000 b0 dc ef 30 99 68 00 19 e8 f8 26 47 00 00 45 00 ...0 h...>Ag->E-
0010 05 dc 37 11 40 00 2e 06 90 3b 34 e6 3b de 0a 50 ...7 @...:4 ; P
0020 04 bc 01 b8 fb 23 c1 c7 8a a2 24 2e 65 49 50 18 ...- - - - ->S.eIP
0030 00 3f f6 fe 00 00 ec 5f 75 40 1a 29 20 53 ea ca ...?.....u@) S
0040 e7 75 6c 69 c2 6e 55 fb 48 d2 21 1c a7 42 c8 fd ...ull nU: H: I: B
0050 35 24 36 29 d3 55 a2 0a 94 41 58 a3 56 5d a3 57 ...58() U: - AX VJ: W
0060 7f 08 3f 43 6b ab 9e c7 6a a7 3b d7 3b d1 ce 72 ...-TCK...j...: p
0070 fb 42 fd f5 f3 c6 eb a2 90 5d 4c b5 69 e6 fa 67 ...B.....]L: i g
0080 aa 1a a3 64 64 f9 d2 bf 06 98 73 3c af 64 55 51 ...dd...:x-cdUQ
0090 b1 eb 20 64 bd eb af fd a8 10 60 7a 5a dc a4 86 ...-]...:zZ
00a0 43 ff 59 ab 52 c4 01 92 d8 4b ab e8 88 5a 4a 76 ...C-Y-R...HK:Zzv
00b0 82 a8 ae d1 f9 af 06 88 1a c1 15 b9 d6 8d d4 5e ...ZgY:4- :Je oTn
00c0 bd 5a 71 59 ec ed 34 a1 d1 5d 78 1e 6f 07 54 6e ...E" aS: <ej; w-
00d0 ca 45 c1 22 90 61 53 fa 3c 65 6a 2e 70 f7 3e dd ...9.....:jp19-Y-
00e0 fa 39 c3 b7 8a e0 0f 97 0d 5d 70 21 39 c4 59 0a ...Q: LkA() ;yY: C
00f0 51 e4 6c 2e 6b 34 5c 4a 3b 7f 59 7f 98 43 36 ...[-...T.....
0100 81 1a 5b 85 b0 06 c9 20 54 d1 17 a4 c1 b6 b5 27 ...[-...T.....
0110 cf 21 ce 15 33 7c f7 60 97 2d 15 16 79 cd 3d 3b ...[-...T.....
0120 af 65 25 2b 42 e9 9c ce 10 be 25 a5 bd 82 28 d0 ...eKB...:S...(-
0130 df 0b fe bc 22 0c aa 56 28 08 c9 dd 44 af a3 a2 ...-...V (-...D...
0140 d8 c8 29 4f 85 b9 59 37 ba 1e b2 7e 0d ef 10 6a ...-...Y7.....:z
0150 38 25 94 77 ca af 72 ff 02 df 5f 87 f7 2d b5 19 ...Bk...:w...:Y...
0160 42 16 a2 0f 5f ce f3 01 36 91 59 ca 83 40 23 4d ...B.....6 Y: @M
0170 0c fb af 43 66 da c4 34 6c f6 cb ad af f7 9f 5e ...C: -4 1...:A
0180 a6 bc 9b 45 f3 2a 7e fe 26 7f c1 af 66 09 89 45 ...-E...:k...:f: E
0190 c5 a2 59 79 5d 16 30 a5 2a 51 cc fa bc f5 ff 96 ...-Yy] 0: "Q.....
01a0 07 af 4a 5b ce 91 27 fb 22 2f a1 7c 0e 7f b1 e1 ...-J[...:7].....

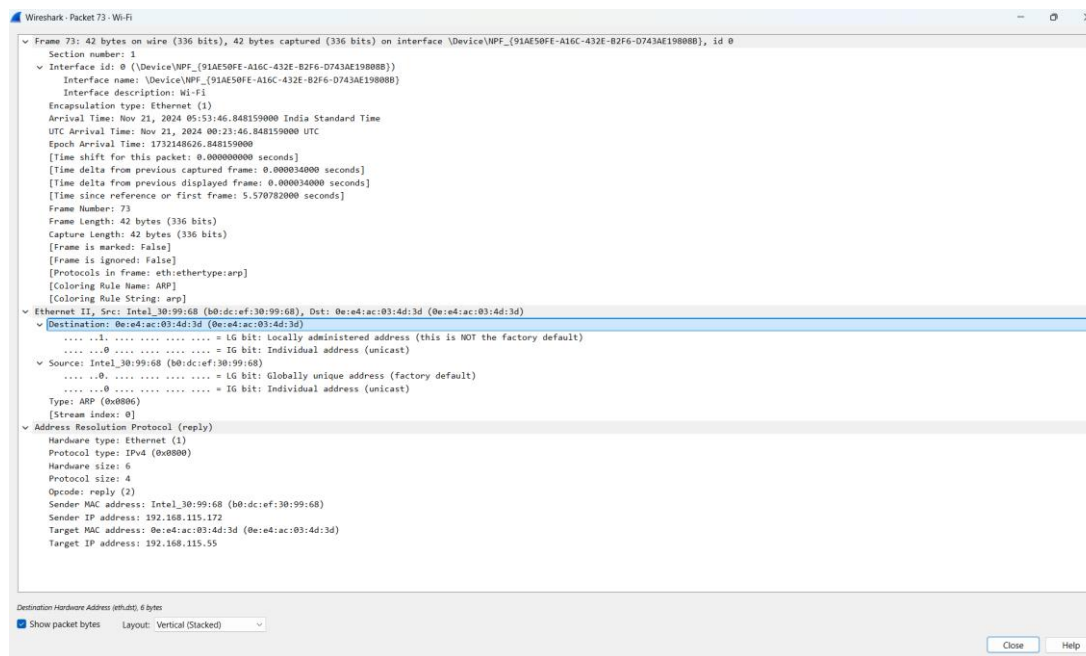
Nb: 339: Time: 1.742938 - Source: 52.230.59.222 - Destination: 10.80.4.188 - Protocol: TCP - Length: 1514 - Info: 443 → 64291 [PSH, ACK] Seq=6928 Ack=2951 Win=64512 Len=1460 [TCP PDU reassembled in 344]

Show packet bytes Layout: Vertical (Stacked)

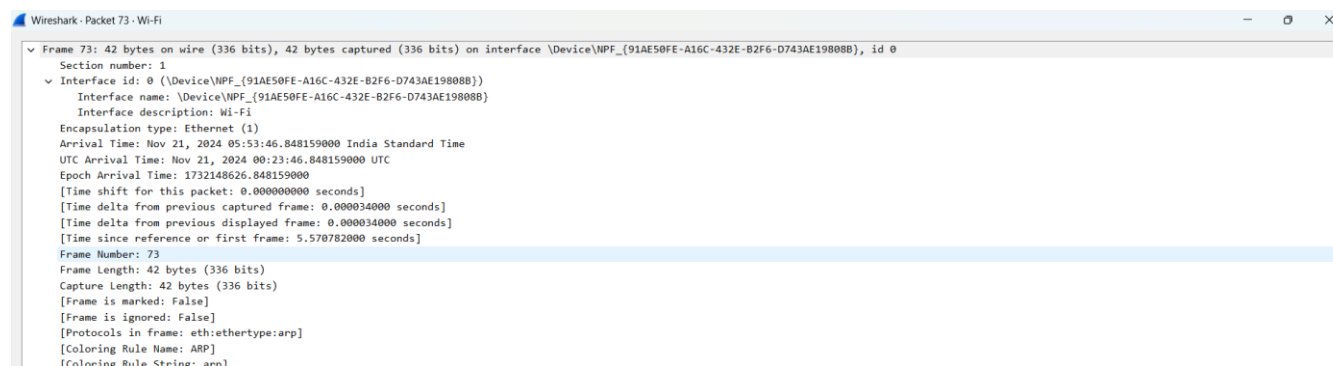
Close Help

 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
Subject: Computer Networks (01CT0503)	Aim: Monitor the live/real time network and analyze the concepts of various networking protocols like ARP, RARP, DHCP, HTTP, etc.	
Experiment No: 12	Date: 24-11-2025	Enrolment No: 92301733024


Step – 5 :- Now we will analyze one ARP Packet



Step – 7 :- Analysis of ARP Packet



➤ It is the timing details and frame length and frame no.

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Step – 8:- It is showing the source and destination IP Address:-

```

Wireshark - Packet 73 - Wi-Fi
> Frame 73: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface \Device\NPF_{91AE50FE-A16C-432E-B2F6-D743AE198088}, id 0
  Ethernet II, Src: Intel_30:99:68 (b0:dc:ef:30:99:68), Dst: 0e:e4:ac:03:4d:3d (0e:e4:ac:03:4d:3d)
    Destination: 0e:e4:ac:03:4d:3d (0e:e4:ac:03:4d:3d)
      ...1. .... = LG bit: Locally administered address (this is NOT the factory default)
      ...0. .... = IG bit: Individual address (unicast)
    Source: Intel_30:99:68 (b0:dc:ef:30:99:68)
      ...0. .... = LG bit: Globally unique address (factory default)
      ...0. .... = IG bit: Individual address (unicast)
    Type: ARP (0x0806)
    [Stream index: 0]
  Address Resolution Protocol (reply)
    Hardware type: Ethernet (1)
    Protocol type: IPv4 (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: reply (2)
    Sender MAC address: Intel_30:99:68 (b0:dc:ef:30:99:68)
    Sender IP address: 192.168.115.172
    Target MAC address: 0e:e4:ac:03:4d:3d (0e:e4:ac:03:4d:3d)
    Target IP address: 192.168.115.55

```

Step – 9:- It is showing the TCP related details stored in the packets: like header section src and destination port no flags , checksum , length , timestamps.

```

Wireshark - Packet 73 - Wi-Fi
> Frame 73: 42 bytes on wire (336 bits), 42 bytes captured (336 bits) on interface \Device\NPF_{91AE50FE-A16C-432E-B2F6-D743AE198088}, id 0
  Section number: 1
  Interface id: 0 (\Device\NPF_{91AE50FE-A16C-432E-B2F6-D743AE198088})
    Interface name: \Device\NPF_{91AE50FE-A16C-432E-B2F6-D743AE198088}
    Interface description: Wi-Fi
    Encapsulation type: Ethernet (1)
    Arrival Time: Nov 21, 2024 05:53:46.848159000 India Standard Time
    UTC Arrival Time: Nov 21, 2024 00:23:46.848159000 UTC
    Epoch Arrival Time: 1732148626.848159000
    [Time shift for this packet: 0.000000000 seconds]
    [Time delta from previous captured frame: 0.000034000 seconds]
    [Time delta from previous displayed frame: 0.000034000 seconds]
    [Time since reference or first frame: 5.570782000 seconds]
  Frame Number: 73
  Frame Length: 42 bytes (336 bits)
  Capture Length: 42 bytes (336 bits)
  [Frame is marked: False]
  [Frame is ignored: False]
  [Protocols in frame: eth:ethertype:arp]
  [Coloring Rule Name: ARP]
  [Coloring Rule String: arp]
  Ethernet II, Src: Intel_30:99:68 (b0:dc:ef:30:99:68), Dst: 0e:e4:ac:03:4d:3d (0e:e4:ac:03:4d:3d)
    Destination: 0e:e4:ac:03:4d:3d (0e:e4:ac:03:4d:3d)
      ...1. .... = LG bit: Locally administered address (this is NOT the factory default)
      ...0. .... = IG bit: Individual address (unicast)
    Source: Intel_30:99:68 (b0:dc:ef:30:99:68)
      ...0. .... = LG bit: Globally unique address (factory default)
      ...0. .... = IG bit: Individual address (unicast)
    Type: ARP (0x0806)
    [Stream index: 0]
  Address Resolution Protocol (reply)
    Hardware type: Ethernet (1)
    Protocol type: IPv4 (0x0800)
    Hardware size: 6
    Protocol size: 4
    Opcode: reply (2)
    Sender MAC address: Intel_30:99:68 (b0:dc:ef:30:99:68)
    Sender IP address: 192.168.115.172
    Target MAC address: 0e:e4:ac:03:4d:3d (0e:e4:ac:03:4d:3d)
    Target IP address: 192.168.115.55

```

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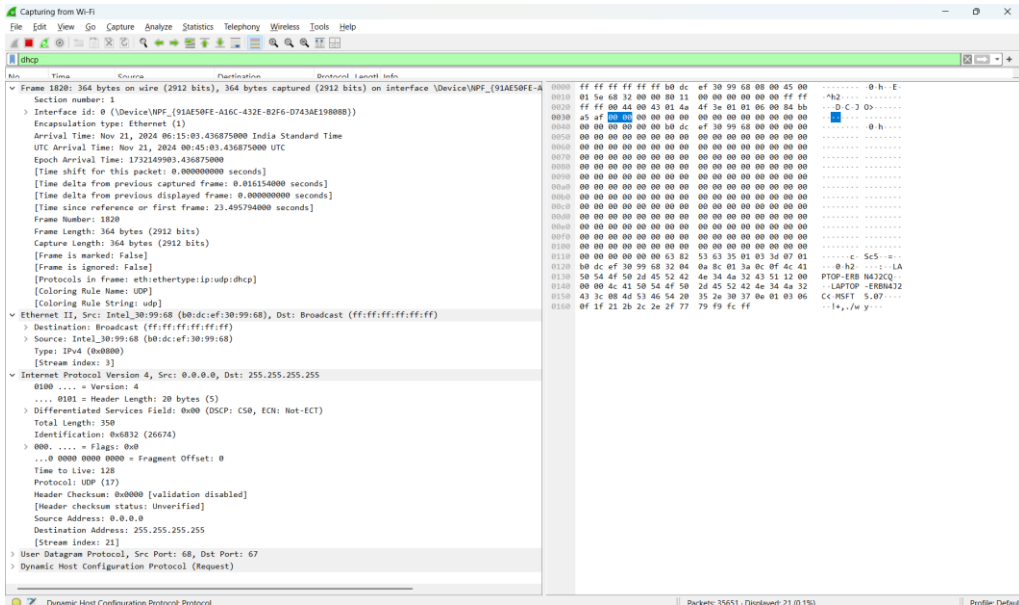
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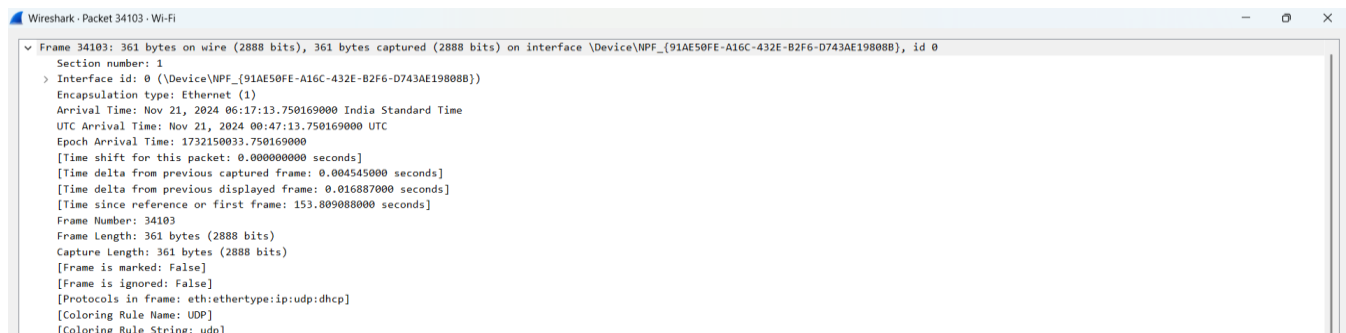
Date: 24-11-2025

Enrolment No: 92301733024

Step - 11:- now we will analyze the DHCP Packet.



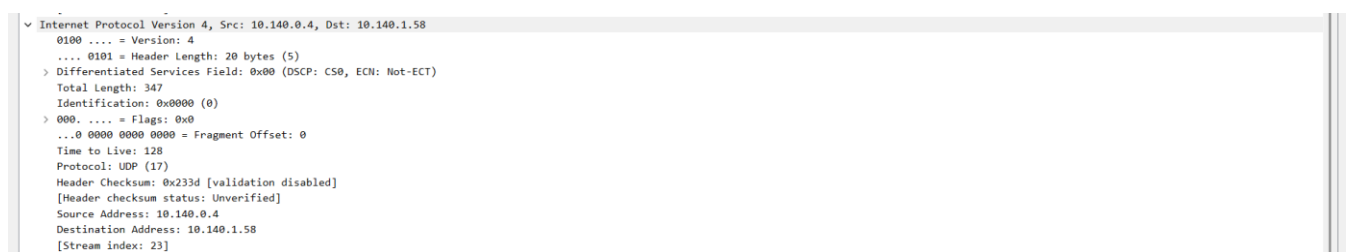
Step - 12:- It us showing the timing related details of DHCP Packet.




Step - 13:- It is showing the ip related details of DHCP Packet.



Step - 14:- It is showing the details about the flags of DHCP Packet.



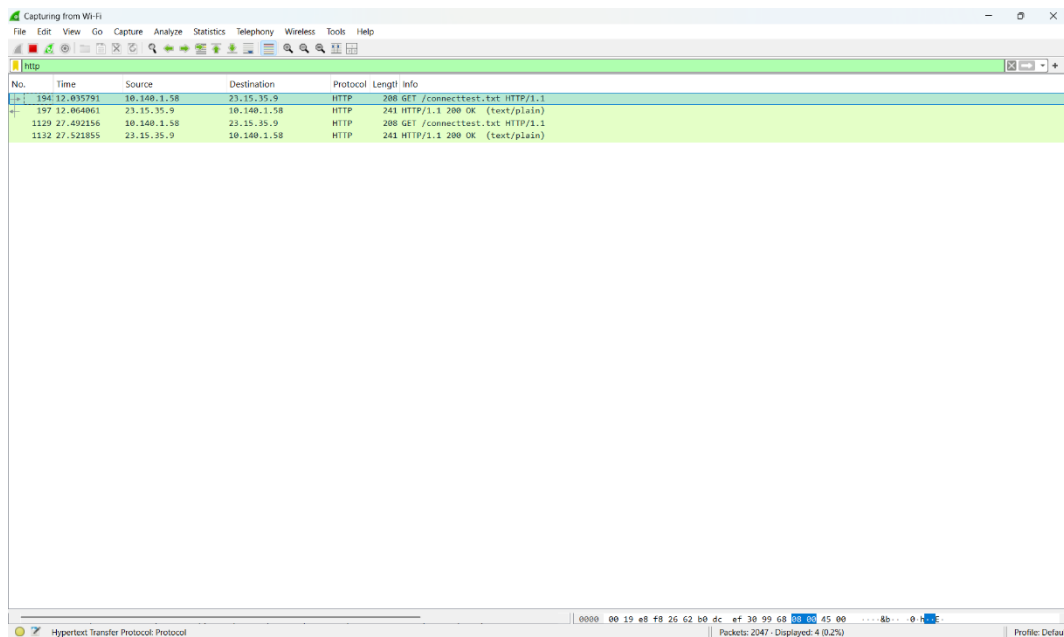
 Marwadi University Marwadi Chandarana Group	Marwadi University Faculty of Engineering and Technology Department of Information and Communication Technology	
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Step - 15:- It is showing the details about the header of DHCP Packet.

User Datagram Protocol, Src Port: 64580, Dst Port: 53


Source Port: 64580
 Destination Port: 53
 Length: 47
 Checksum: 0x02eb [unverified]
 [Checksum Status: Unverified]
 [Stream index: 103]
 [Stream Packet Number: 1]
 > [Timestamps]
 UDP payload (39 bytes)

Step - 16:- Now we will analyze the HTTP Protocol.



No.	Time	Source	Destination	Protocol	Length	Info
154	12.835791	10.140.1.58	23.15.35.9	HTTP	208	GET /connecttest.txt HTTP/1.1
197	12.864861	23.15.35.9	10.140.1.58	HTTP	241	HTTP/1.1 200 OK (text/plain)
1129	27.492156	10.140.1.58	23.15.35.9	HTTP	208	GET /connecttest.txt HTTP/1.1
1122	27.521855	23.15.35.9	10.140.1.58	HTTP	241	HTTP/1.1 200 OK (text/plain)

Step - 17:- These are the timing related details of http packet

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```

Wireshark - Packet 194 - Wi-Fi
▼ Frame 194: 288 bytes on wire (1664 bits), 288 bytes captured (1664 bits) on interface \Device\NPF_{91AE50FE-A16C-432E-B2F6-D743AE19808B}, id 0
  Section number: 1
  > Interface id: 0 (\Device\NPF_{91AE50FE-A16C-432E-B2F6-D743AE19808B})
  Encapsulation type: Ethernet (1)
  Arrival Time: Nov 21, 2024 06:29:04.101295000 India Standard Time
  UTC Arrival Time: Nov 21, 2024 00:59:04.101295000 UTC
  Epoch Arrival Time: 1732150744.101295000
  [Time shift for this packet: 0.000000000 seconds]
  [Time delta from previous captured frame: 0.000258000 seconds]
  [Time delta from previous displayed frame: 0.000000000 seconds]
  [Time since reference or first frame: 12.035791000 seconds]
  Frame Number: 194
  Frame Length: 288 bytes (1664 bits)
  Capture Length: 288 bytes (1664 bits)
  [Frame is marked: False]
  [Frame is ignored: False]
  [Protocols in frame: eth:ethertype:ip:tcp:http]
  [Coloring Rule Name: HTTP]
  [Coloring Rule String: http || tcp.port == 80 || http2]

```

Step - 18:- these are the fields of http packets :-

```

HTTP/1.1 200 OK (text/plain)
▼ Hypertext Transfer Protocol
  > GET /connecttest.txt HTTP/1.1\r\n
    Cache-Control: no-cache\r\n
    Connection: Close\r\n
    Pragma: no-cache\r\n
    User-Agent: Microsoft NCSE\r\n
    Host: www.msftconnecttest.com\r\n
    \r\n
    [Response in frame: 197]
    [Full request URI: http://www.msftconnecttest.com/connecttest.txt]

```