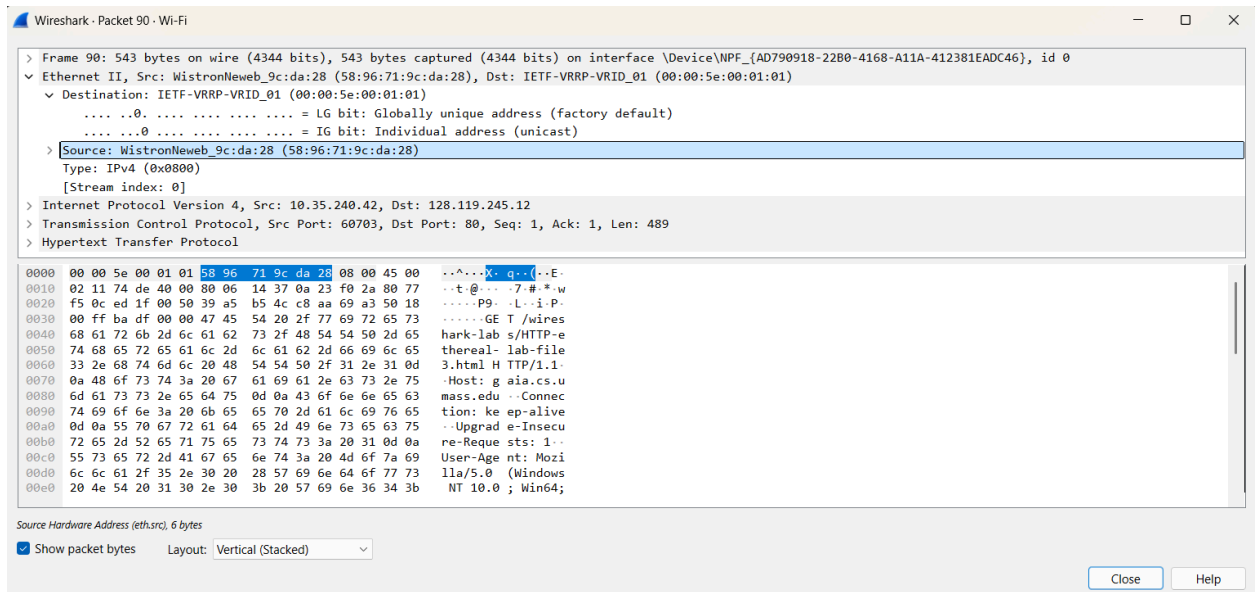


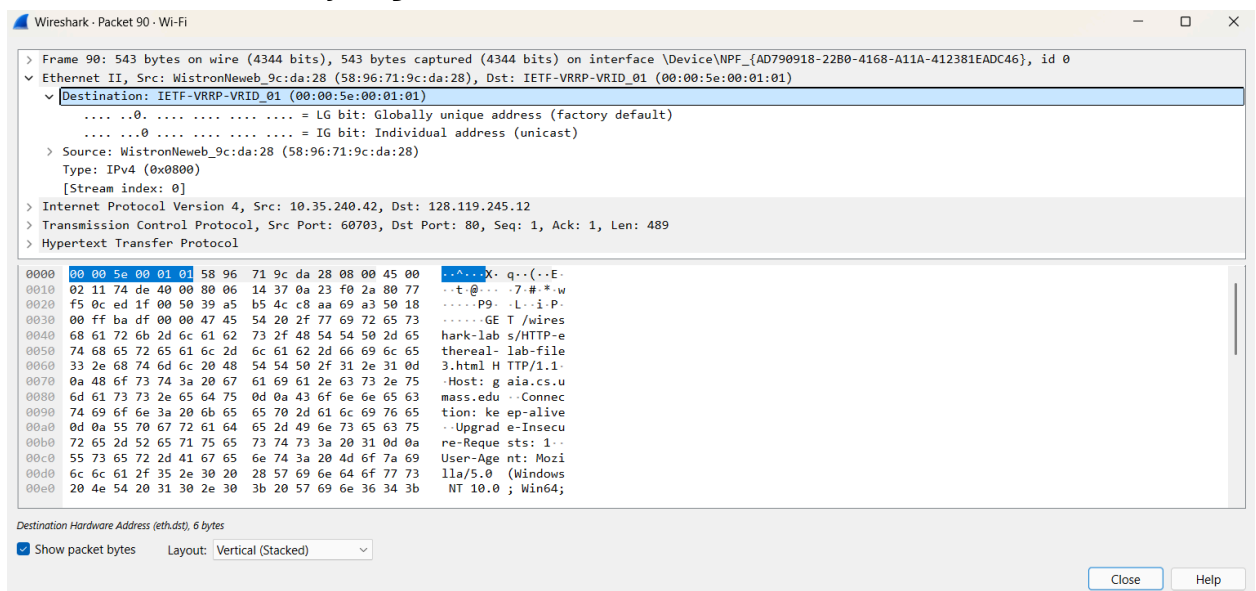
# CSCE 416 Assignment

## Nathan Bickel

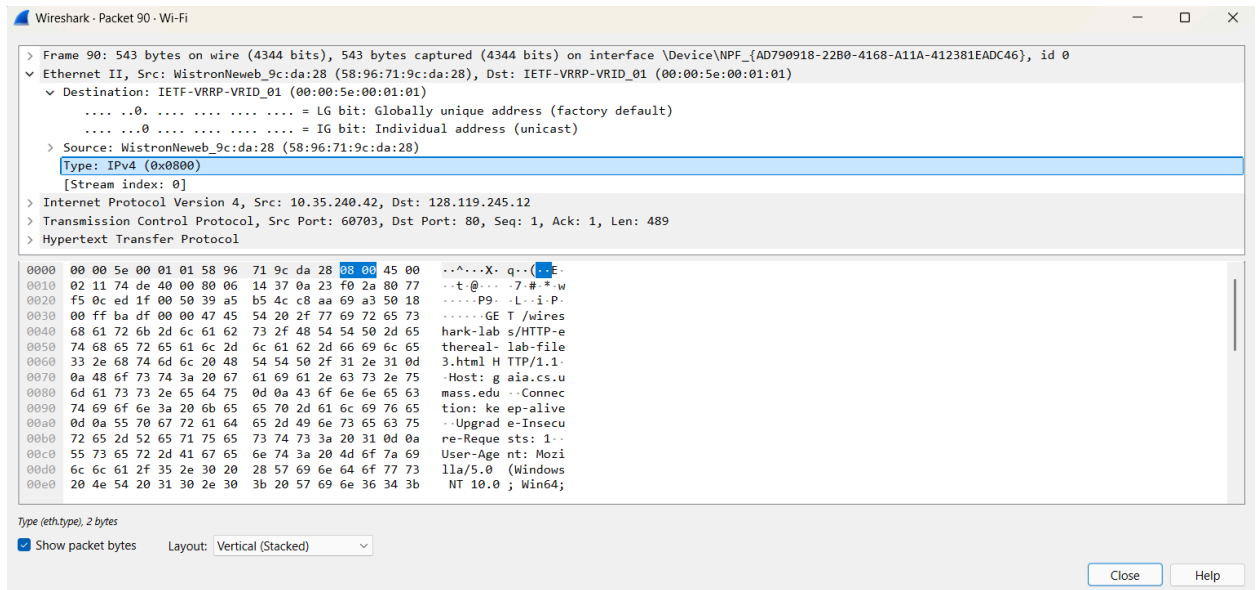
1. The 48-bit Ethernet address of my computer is 58:96:71:9c:da:28:



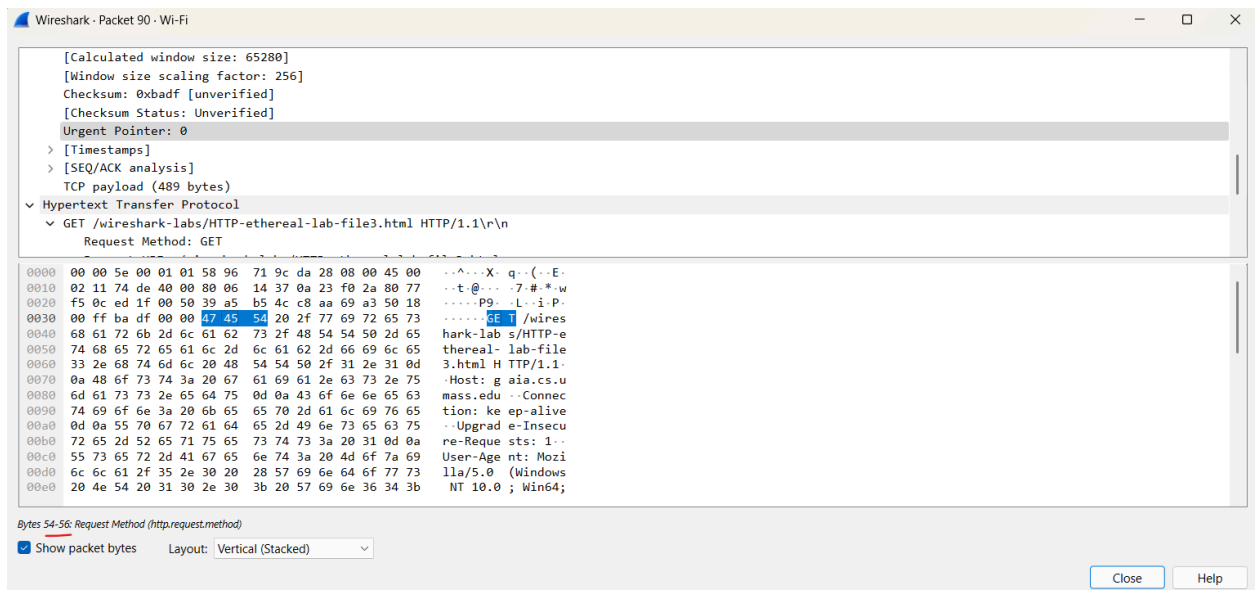
2. The 48-bit destination address in the Ethernet frame is 00:00:5e:00:01:01. This is not the Ethernet address of gaia.cs.umass.edu, since my computer's IP address is not in the same subnet as gaia.cs.umass.edu. This is instead the Ethernet address of a neighbor of my computer (probably a router) that the packet is forwarded to on its way to gaia.cs.umass.edu:



3. The hexadecimal value for the two-byte Frame type field is 0x0800. This corresponds to IPv4 (Internet Protocol version 4) in the network layer:

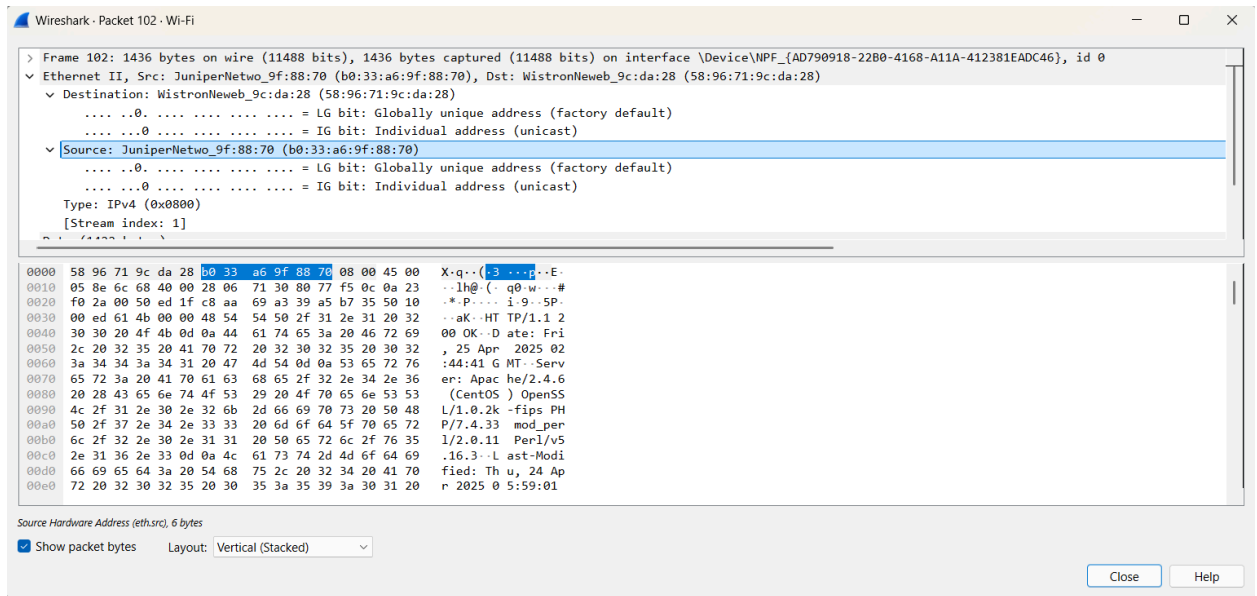


4. From the very start of the Ethernet frame, the ASCII "G" in "GET" appears at the 54th (0-indexed) byte of the frame:

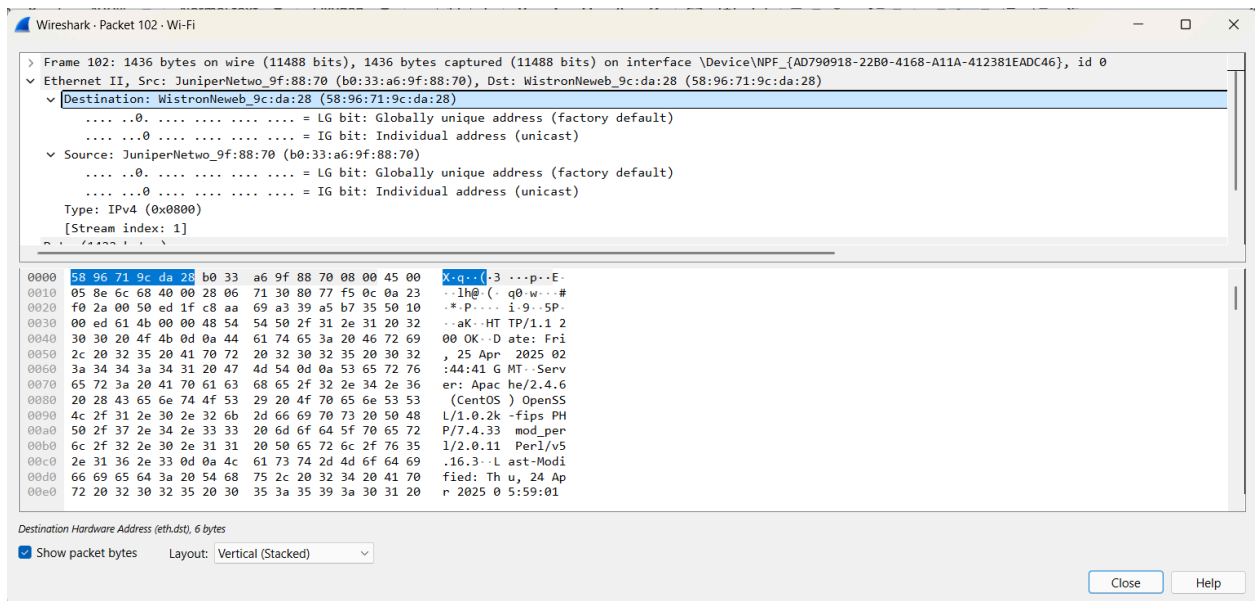


5. The value of the Ethernet source address is b0:33:a6:9f:88:70. This is neither the address of my computer nor of gaia.cs.umass.edu: it is the address of my neighbor who is my last hop on the path from gaia.cs.umass.edu to my

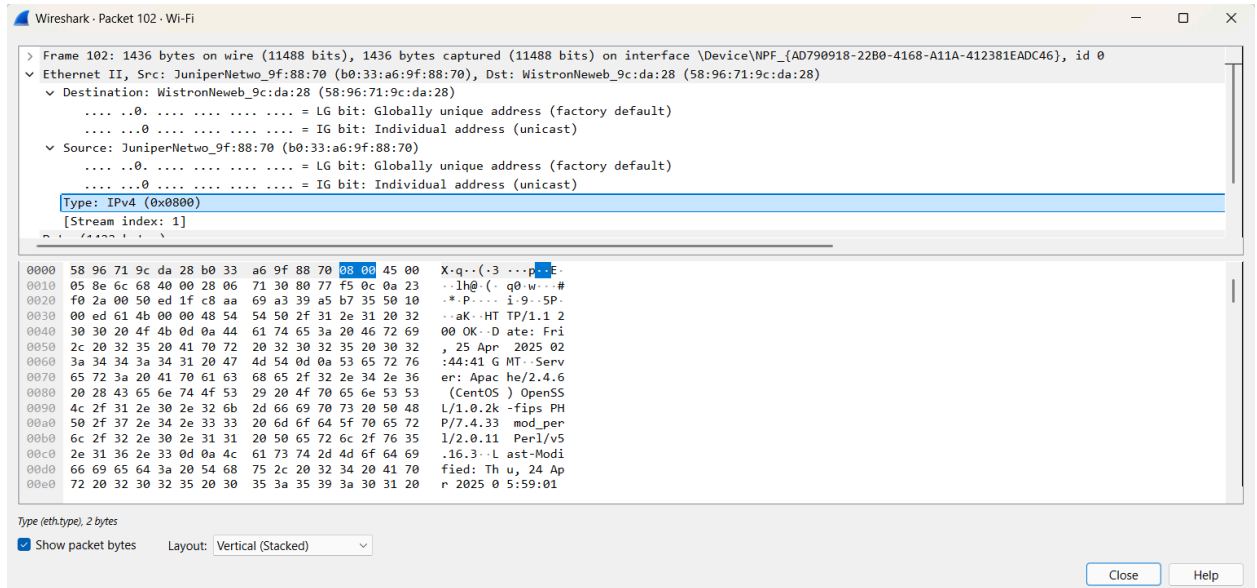
computer:



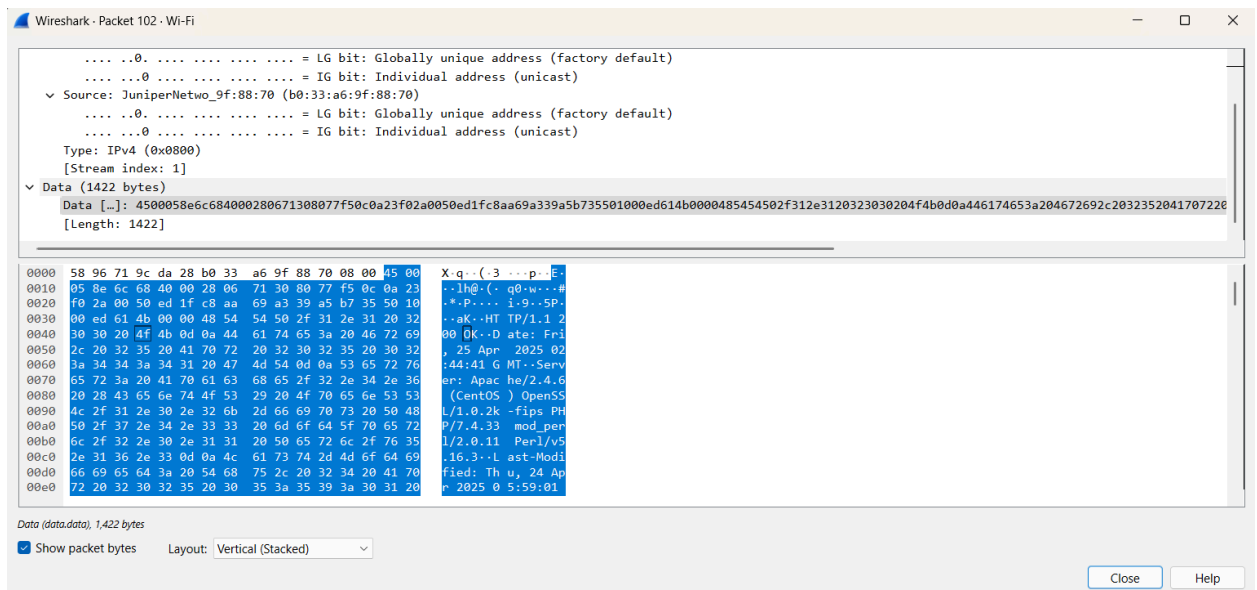
6. The destination address in the Ethernet frame is 58:96:71:9c:da:28. This is the Ethernet address of my computer (note that it matches the Ethernet address in question 1):



7. The hexadecimal value for the two-byte Frame type field is 0x0800. This corresponds to IPv4 in the network layer:

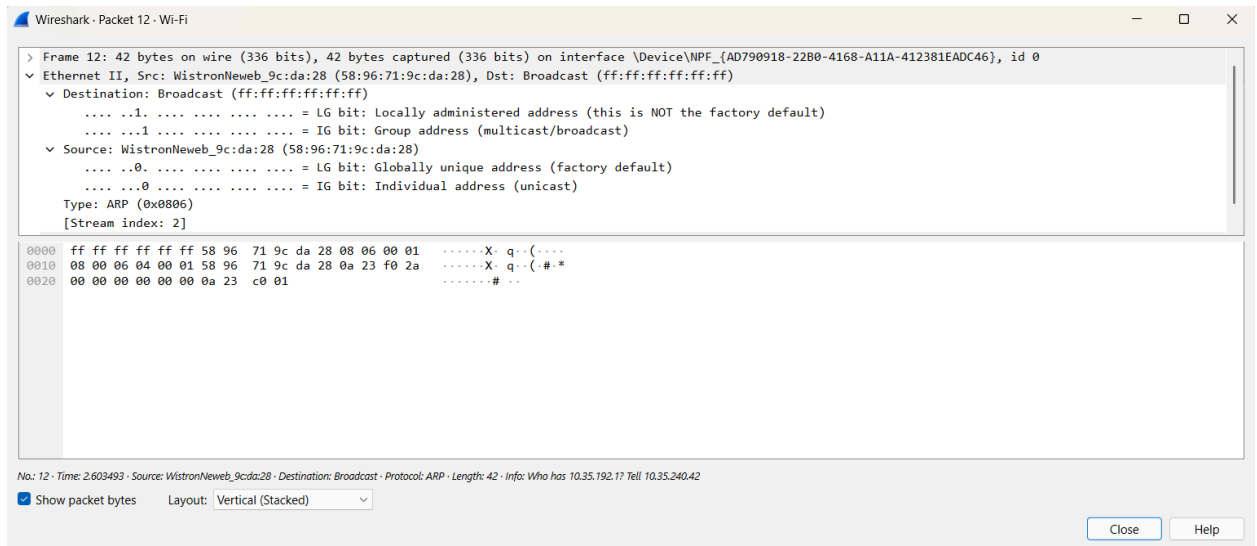


8. From the very start of the Ethernet frame, the ASCII "O" in "OK" appears at the 68th (0-indexed) byte of the frame:

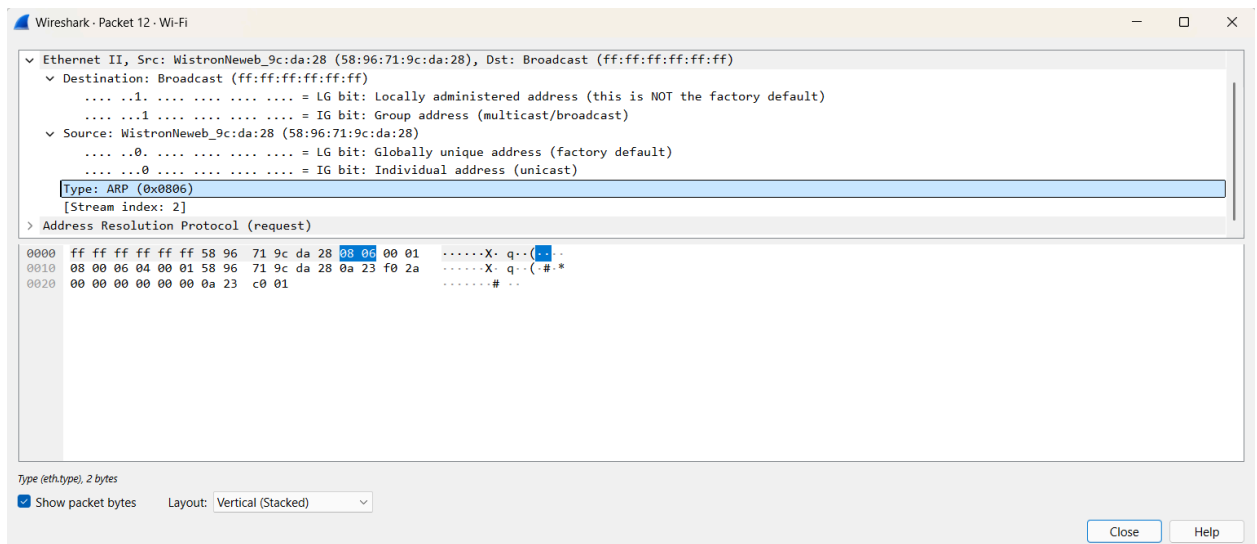


9. The hexadecimal values for the source and destination addresses in the

Ethernet frame containing the ARP request message are 58:96:71:9c:da:28 and ff:ff:ff:ff:ff:ff, respectively:

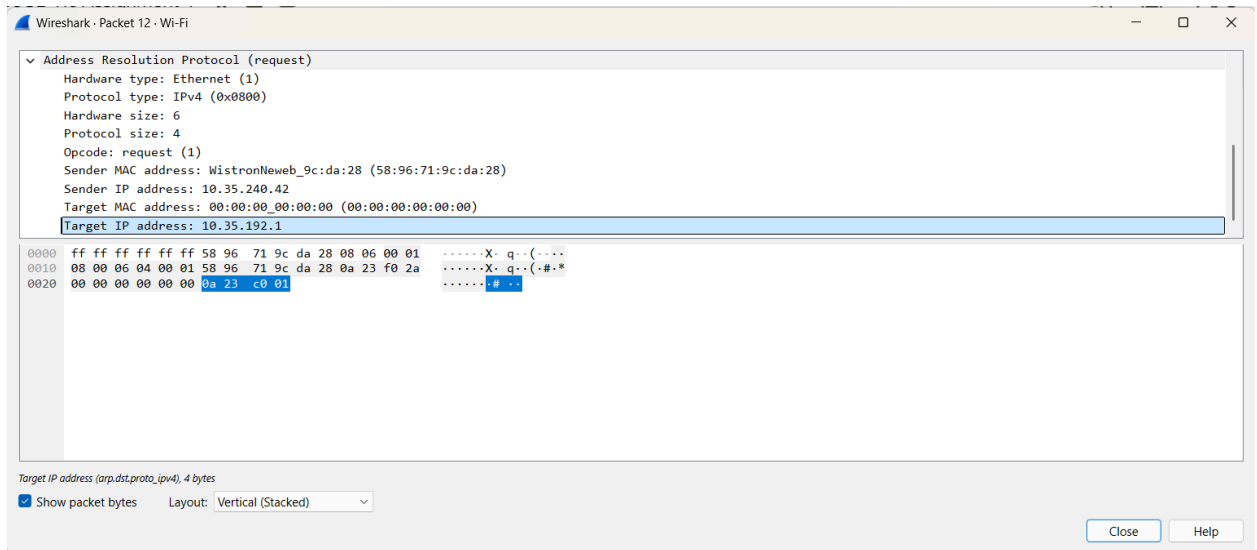


10. The hexadecimal value for the two-byte Frame type field is 0x0806. This corresponds to the Address Resolution Protocol (ARP) upper level protocol:

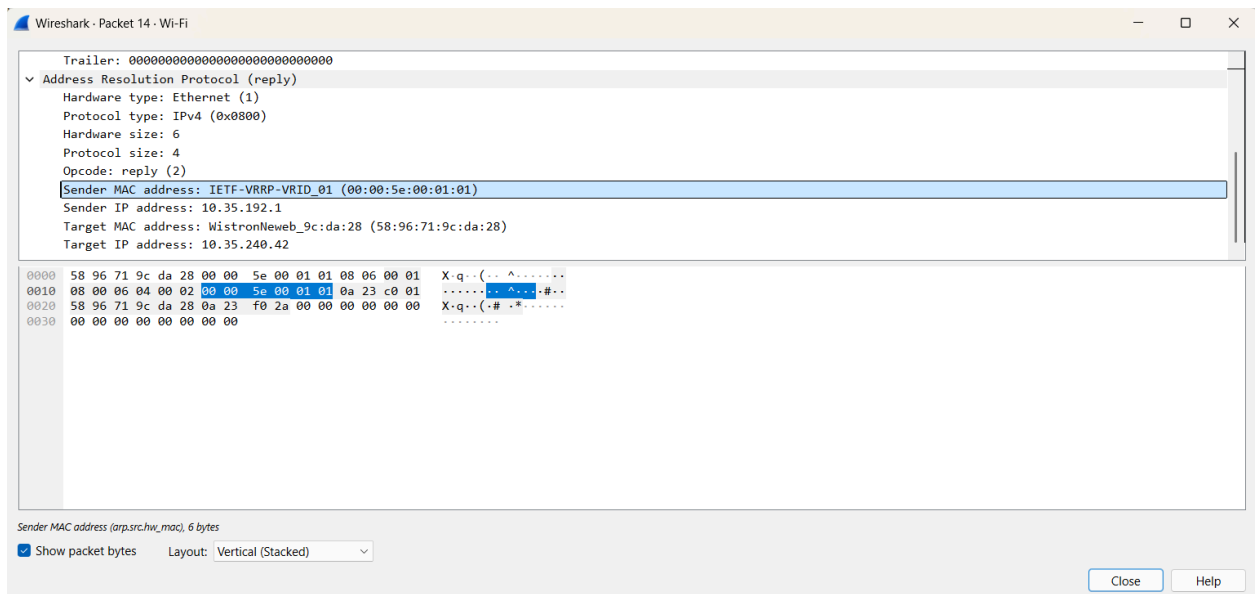


11. The "question" in the ARP request—the Ethernet address of the machine whose corresponding IP address is being queried—is in the last four bytes of the

packet:



12. The “answer” in the ARP response—the IP address of the machine having the Ethernet address whose corresponding IP address is being queried—appears in bytes 22–27 (0-indexed) of the ARP message:



13. The hexadecimal values for the source and destination addresses in the Ethernet frame containing the ARP reply message are 00:00:5e:00:01:01 and

58:96:71:9c:da:28, respectively:

Wireshark · Packet 14 · Wi-Fi

> Frame 14: 56 bytes on wire (448 bits), 56 bytes captured (448 bits) on interface \Device\NPF\_{AD790918-22B0-4168-A11A-412381EADC46}, id 0

▼ Ethernet II, Src: IETF-VRRP-VRID\_01 (00:00:5e:00:01:01), Dst: WistronNeweb\_9c:da:28 (58:96:71:9c:da:28)

▼ Destination: WistronNeweb\_9c:da:28 (58:96:71:9c:da:28)

.....0 = LG bit: Globally unique address (factory default)  
.....0 = IG bit: Individual address (unicast)

▼ Source: IETF-VRRP-VRID\_01 (00:00:5e:00:01:01)

.....0 = LG bit: Globally unique address (factory default)  
.....0 = IG bit: Individual address (unicast)

Type: ARP (0x0806)  
[Stream index: 1]  
Trailer: 00000000000000000000000000000000

0000 58 96 71 9c da 28 00 00 5e 00 01 01 08 06 00 01 X-q-(- ^.....  
0010 08 00 06 04 00 02 00 00 5e 00 01 01 0a 23 c0 01 .....^...#..  
0020 58 96 71 9c da 28 0a 23 f0 2a 00 00 00 00 00 X-q-(- #\*.....  
0030 00 00 00 00 00 00 00 00 .....

No.: 14 · Time: 2.610883 · Source: IETF-VRRP-VRID\_01 · Destination: WistronNeweb\_9c:da:28 · Protocol: ARP · Length: 56 · Info: 10.35.192.1 is at 00:00:5e:00:01:01

☒ Show packet bytes    Layout: Vertical (Stacked) ▼

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