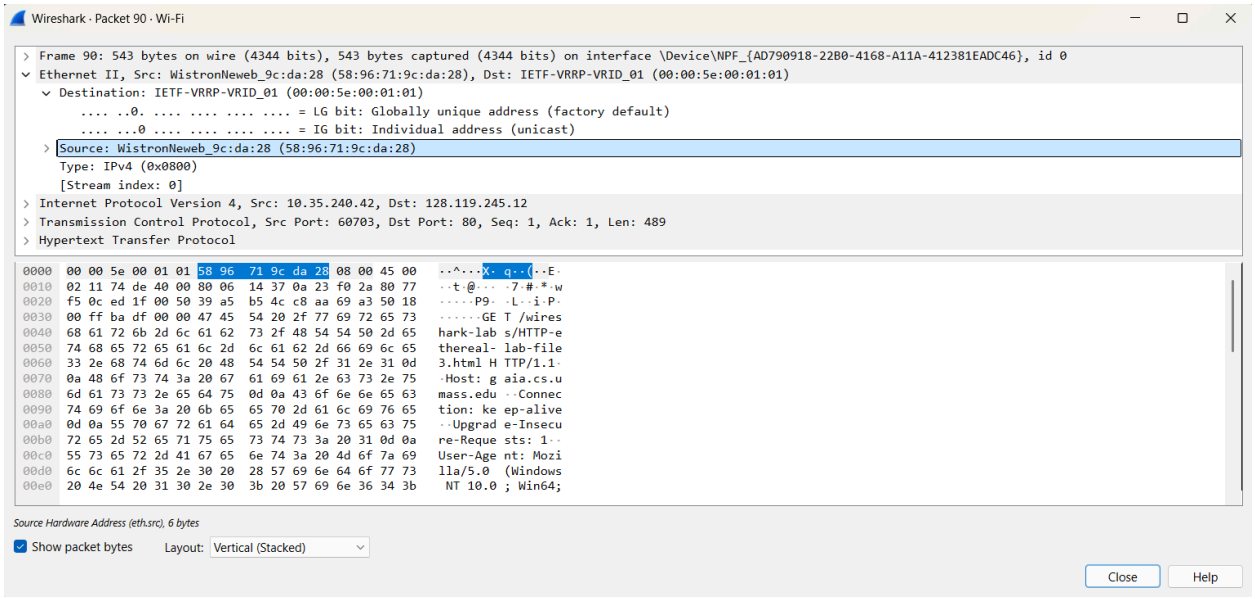
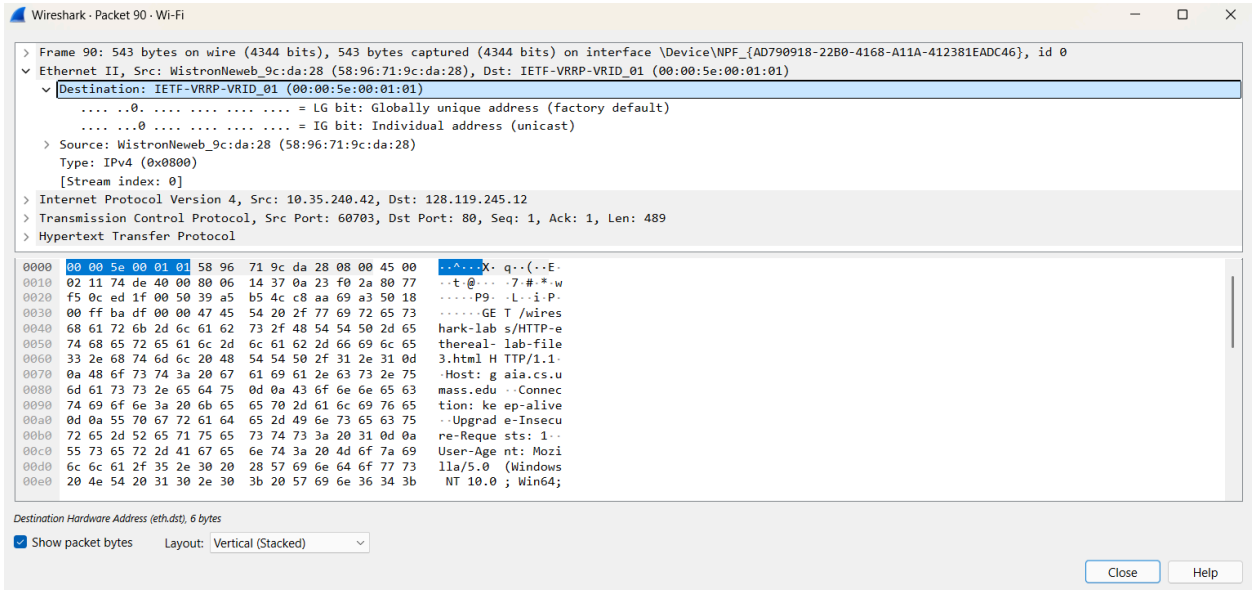
CSCE 416 Assignment
Nathan Bickel

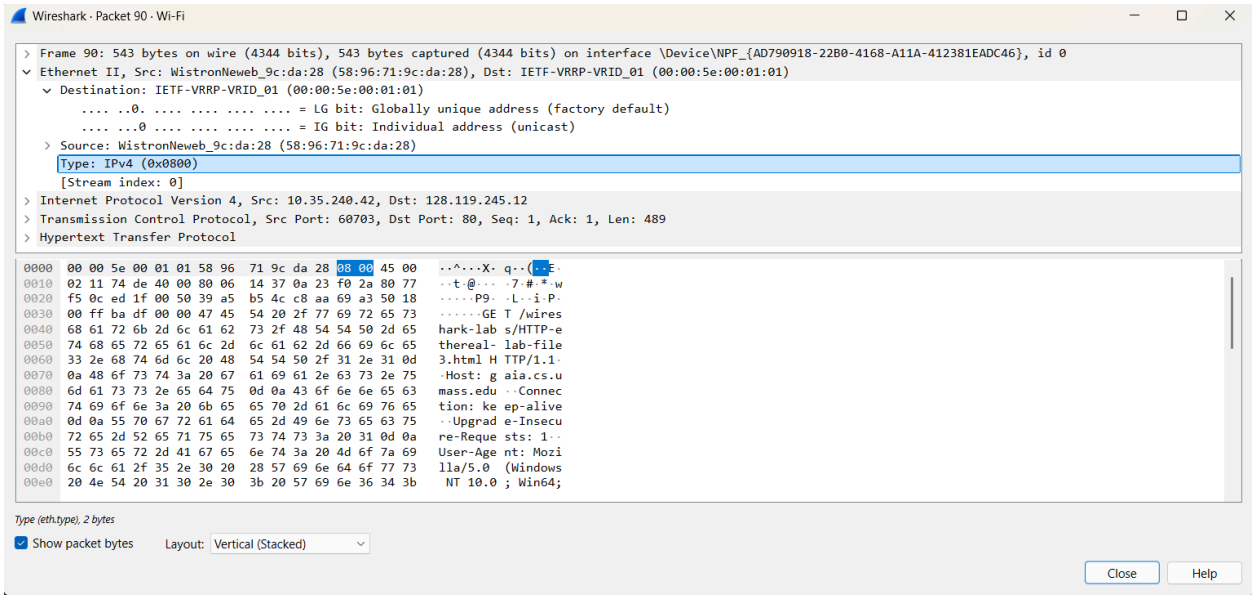
1. The 48-bit Ethernet address of my computer is 58:96:71:9c:da:28:



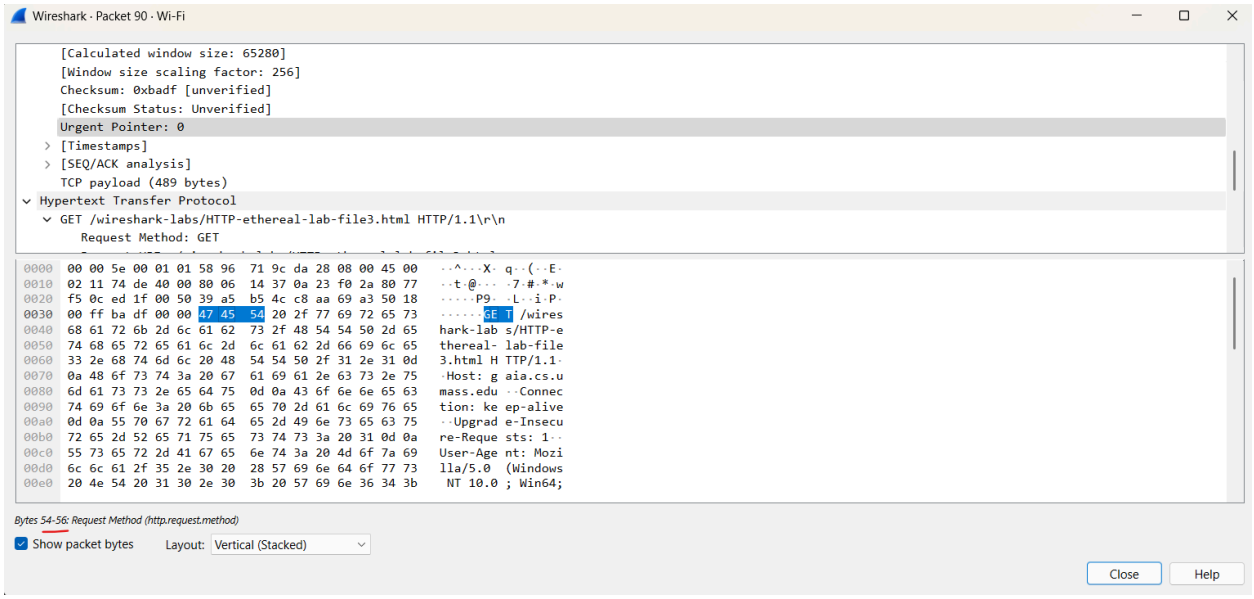
2. The 48-bit destination address in the Ethernet frame is 00:00:5e:00:01:01. This is not the Ethernet address of gaia.cs.umass.edu, since my computer's IP address is not in the same subnet as gaia.cs.umass.edu. This is instead the Ethernet address of a neighbor of my computer (probably a router) that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

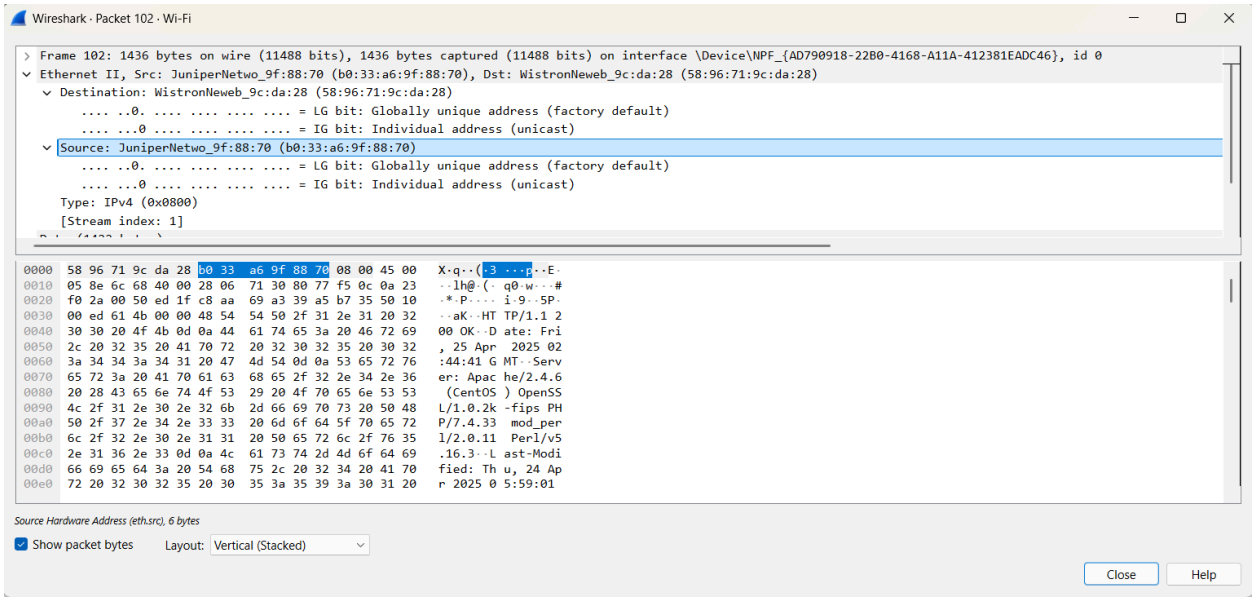


4. From the very start of the Ethernet frame, the ASCII “G” in “GET” appears at the 54th (0-indexed) byte of the frame:

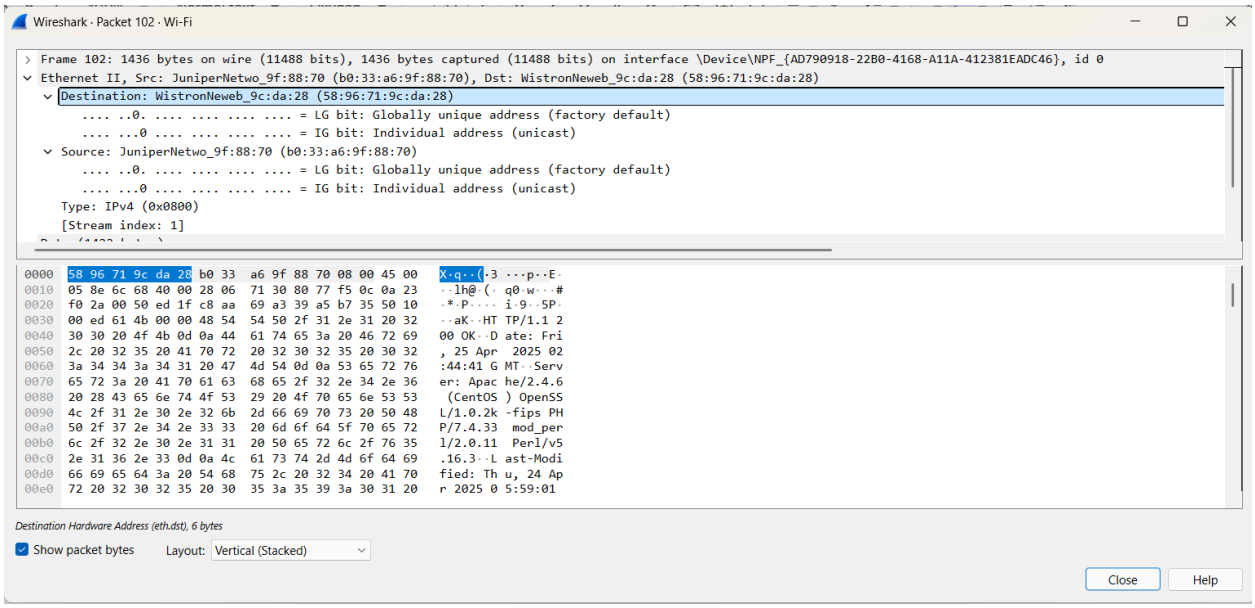


5. The value of the Ethernet source address is b0:33:a6:9f:88:70. This is neither the address of my computer nor of gaia.cs.umass.edu: it is the address of my neighbor who is my last hop on the path from gaia.cs.umass.edu to my

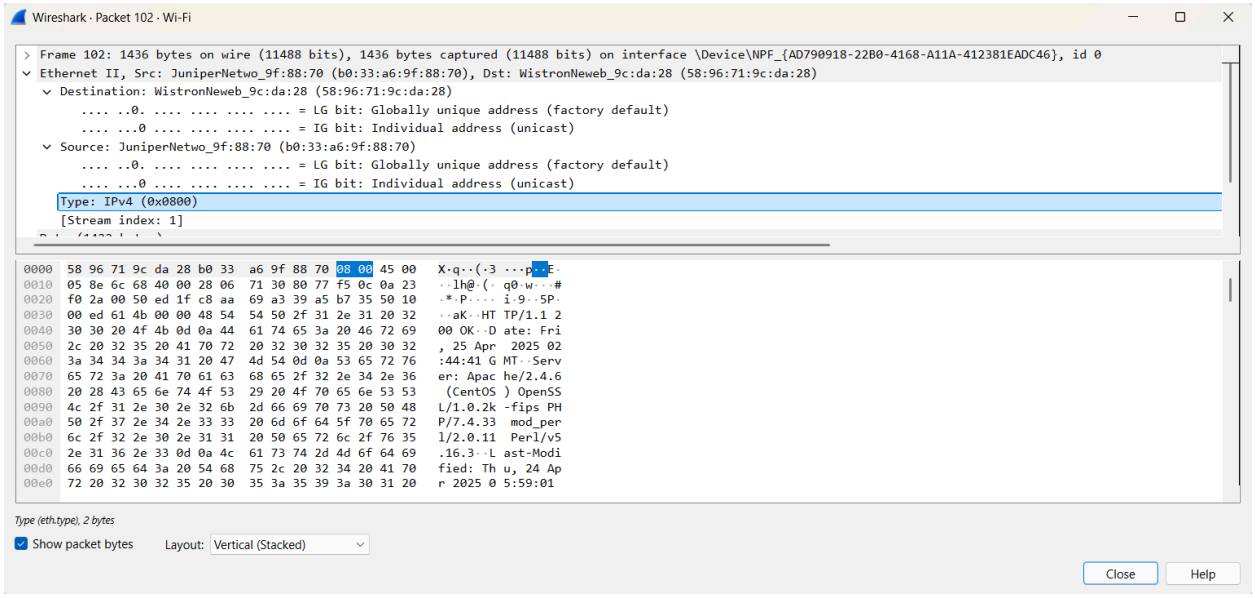
computer:



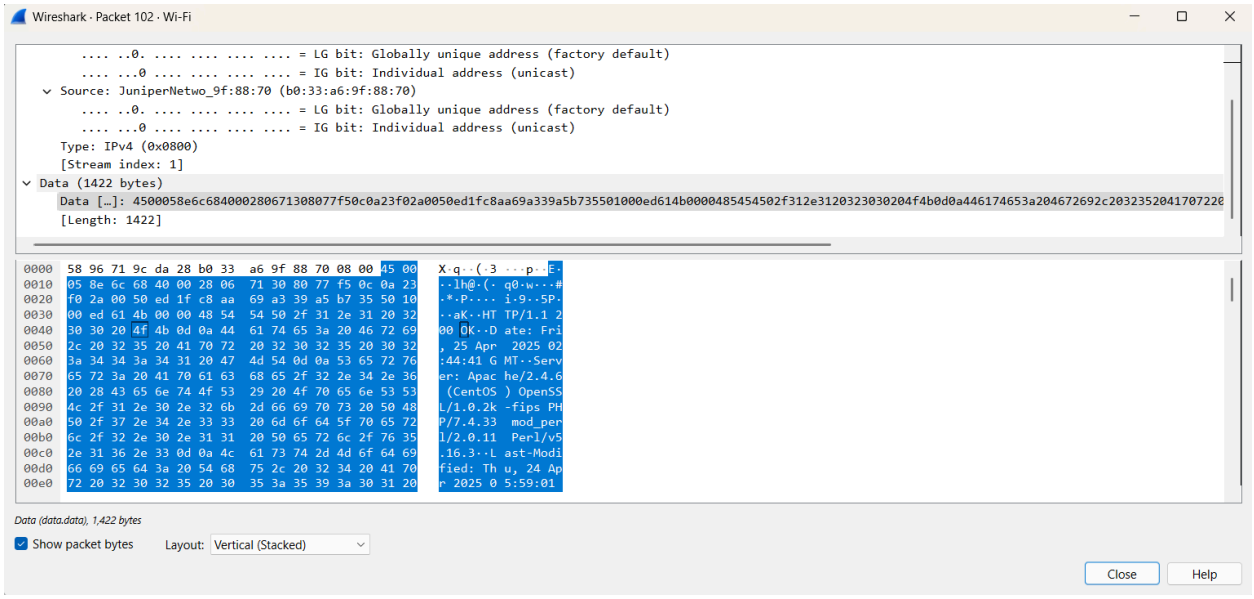
6. The destination address in the Ethernet frame is 58:96:71:9c:da:28. This is the Ethernet address of my computer (note that it matches the Ethernet address in question 1):



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

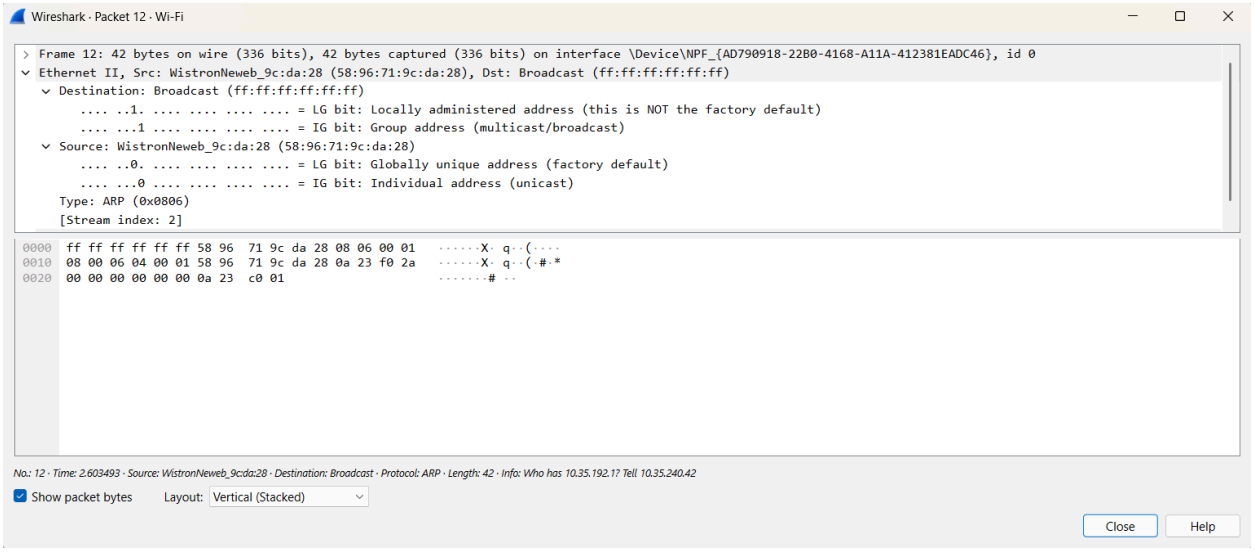


8. From the very start of the Ethernet frame, the ASCII “O” in “OK” appears at the 68th (0-indexed) byte of the frame:

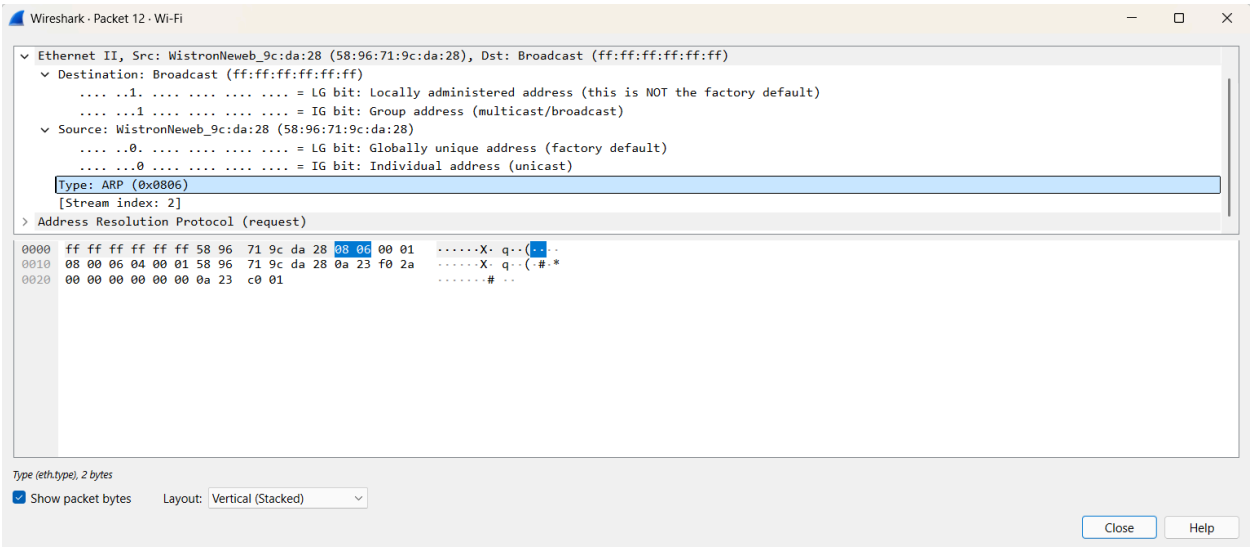


9. The hexadecimal values for the source and destination addresses in the

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

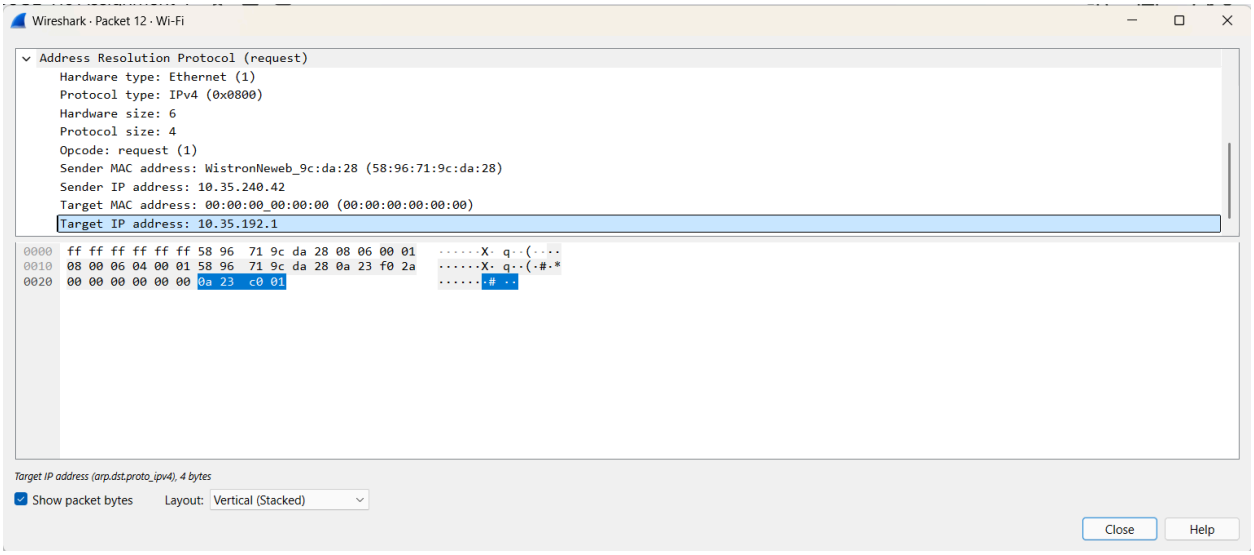


10. The hexadecimal value for the two-byte Frame type field is 0x0806. This corresponds to the Address Resolution Protocol (ARP) upper level protocol:

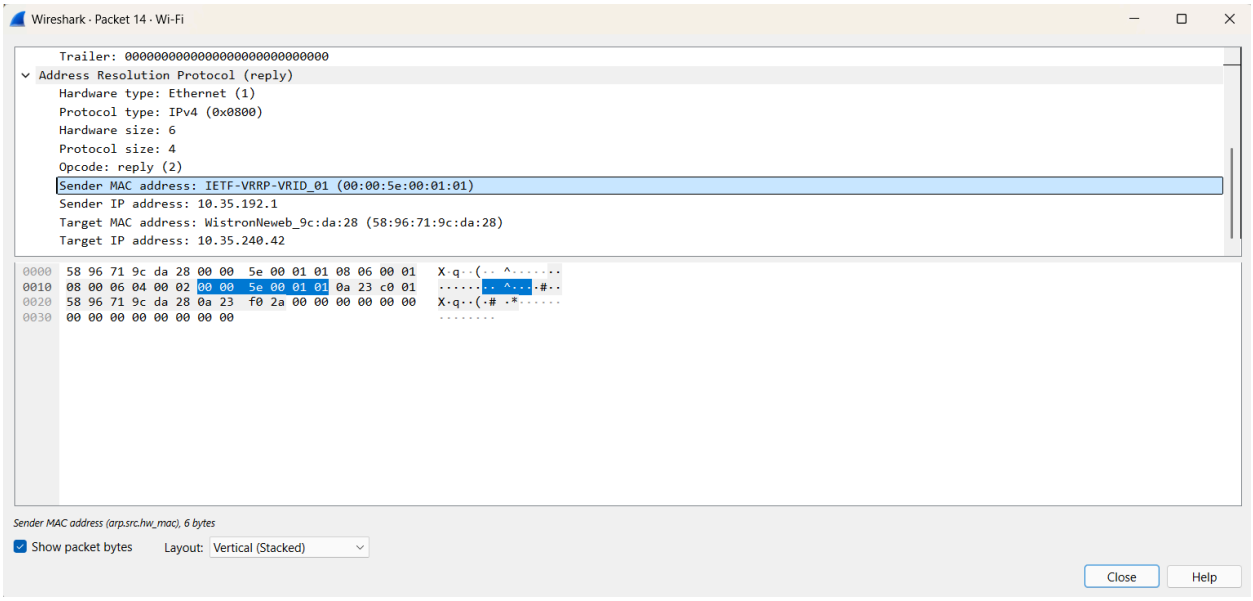


11. The “question” in the ARP request—the Ethernet address of the machine whose corresponding IP address is being queried—is in the last four bytes of the

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: