

HỌ TÊN : NGUYỄN XUÂN TRỰC

MSSV : 1513804

LỚP : L04

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Question 01. What is the 48-bit Ethernet address of your computer?

ANSWER

00:1f:bc:02:5f:6f

Question 02. What is the 48-bit destination address in the Ethernet frame? Is this the Ethernet address of gaia.cs.umass.edu? (Hint: the answer is no). What device has this as its Ethernet address? [Note: this is an important question, and one that students sometimes get wrong. Re-read pages 468-469 in the text and make sure you understand the answer here.]

ANSWER

00:19:e4:10:1e:99. This is the address for the home router that the host computer is connected to.

Question 03. Give the hexadecimal value for the two-byte Frame type field. What do the bit(s) whose value is 1 mean within the flag field?

ANSWER

0800

Question 04. How many bytes from the very start of the Ethernet frame does the ASCII “G” in “GET” appear in the Ethernet frame?

ANSWER

55 bytes.

Question 05. What is the hexadecimal value of the CRC field in this Ethernet frame?

ANSWER

0d0a0d0a

Question 06. What is the value of the Ethernet source address? Is this the address of your computer, or of gaia.cs.umass.edu (Hint: the answer is no). What device has this as its Ethernet address?

ANSWER

00:19:e4:10:1e:99. This is the address for the home router that the host computer is connected to.

Question 07. What is the destination address in the Ethernet frame? Is this the Ethernet address of your computer?

ANSWER

00:1f:bc:02:5f:6f. This is the ethernet address of my computer.

Question 08. Give the hexadecimal value for the two-byte Frame type field. What do the bit(s) whose value is 1 mean within the flag field?

ANSWER

0800

Question 09. How many bytes from the very start of the Ethernet frame does the ASCII “O” in “OK” (i.e., the HTTP response code) appear in the Ethernet frame?

ANSWER

52 bytes.

Question 10. What is the hexadecimal value of the CRC field in this Ethernet frame?

ANSWER

0d0a0d0a.

Question 11. Write down the contents of your computer's ARP cache. What is the meaning of each column value?

ANSWER

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C:\Users\TRUC BK>arp -a

Interface: 192.168.99.1 --- 0x8
    Internet Address      Physical Address      Type
    192.168.99.255        ff-ff-ff-ff-ff-ff    static
    224.0.0.22            01-00-5e-00-00-16    static
    224.0.0.251          01-00-5e-00-00-fb    static
    224.0.0.252          01-00-5e-00-00-fc    static
    239.255.255.250       01-00-5e-7f-ff-fa    static

Interface: 192.168.43.178 --- 0x10
    Internet Address      Physical Address      Type
    192.168.43.108        1e-8b-48-ef-19-65    dynamic
    192.168.43.255        ff-ff-ff-ff-ff-ff    static
    224.0.0.22            01-00-5e-00-00-16    static
    224.0.0.251          01-00-5e-00-00-fb    static
    224.0.0.252          01-00-5e-00-00-fc    static
    239.255.255.250       01-00-5e-7f-ff-fa    static
    255.255.255.255       ff-ff-ff-ff-ff-ff    static

Interface: 192.168.56.1 --- 0x13
    Internet Address      Physical Address      Type
    192.168.56.255        ff-ff-ff-ff-ff-ff    static
    224.0.0.22            01-00-5e-00-00-16    static
    224.0.0.251          01-00-5e-00-00-fb    static
    224.0.0.252          01-00-5e-00-00-fc    static
    239.255.255.250       01-00-5e-7f-ff-fa    static

Interface: 169.254.125.229 --- 0x16
    Internet Address      Physical Address      Type
    169.254.255.255       ff-ff-ff-ff-ff-ff    static
    224.0.0.22            01-00-5e-00-00-16    static
    224.0.0.251          01-00-5e-00-00-fb    static
    224.0.0.252          01-00-5e-00-00-fc    static
    239.255.255.250       01-00-5e-7f-ff-fa    static
    255.255.255.255       ff-ff-ff-ff-ff-ff    static
```

Each value in the left column is an IP address on my local area network. Each value in the middle column is the corresponding MAC address.

Question 12. What are the hexadecimal values for the source and destination addresses in the Ethernet frame containing the ARP request message?

ANSWER

Source address: 00:1f:bc:02:5f:6f.

Destination address: ff:ff:ff:ff:ff:ff.

Question 13. Give the hexadecimal value for the two-byte Ethernet Frame type field. What do the bit(s) whose value is 1 mean within the flag field?

ANSWER

0806. The bit flags represent a multicast (broadcast) that is sent to the subnet and not the internet.

Question 14. Download the ARP specification from <ftp://ftp.rfceditor.org/innotes/std/std37.txt>. A readable, detailed discussion of ARP is also at <http://www.erg.abdn.ac.uk/users/gorry/course/inet-pages/arp.html>.

a) How many bytes from the very beginning of the Ethernet frame does the ARP opcode field begin?

ANSWER

21 bytes.

b) What is the value of the opcode field within the ARP-payload part of the Ethernet frame in which an ARP request is made?

ANSWER

0001.

c) Does the ARP message contain the IP address of the sender?

ANSWER

Yes. It is 192.168.1.69

d) Where in the ARP request does the “question” appear – the Ethernet address of the machine whose corresponding IP address is being queried?

ANSWER

In the Target IP address: 192.168.1.69

Question 15. Now find the ARP reply that was sent in response to the ARP request.

a) How many bytes from the very beginning of the Ethernet frame does the ARP opcode field begin?

ANSWER

21 bytes.

b) What is the value of the opcode field within the ARP-payload part of the Ethernet frame in which an ARP response is made?

ANSWER

0002.

c) Where in the ARP message does the “answer” to the earlier ARP request appear – the IP address of the machine having the Ethernet address whose corresponding IP address is being queried?

ANSWER

In Sender MAC address: 2wire_10:1e:99 (00:19:e4:10:1e:99)

Question 16. What are the hexadecimal values for the source and destination addresses in the Ethernet frame containing the ARP reply message?

ANSWER

Source address: 00:19:e4:10:1e:99

Destination address: 00:1f:bc:02:5f:6f

Question 17. Open the ethernet-ethereal-trace-1 trace file in <http://gaia.cs.umass.edu/wireshark-labs/wireshark-traces.zip>. The first and second ARP packets in this trace correspond to an ARP request sent by the computer running Wireshark, and the ARP reply sent to the computer running Wireshark by the computer with the ARP-requested Ethernet address. But there is yet another computer on this network, as indicated by packet 6 – another ARP request. Why is there no ARP reply (sent in response to the ARP request in packet 6) in the packet trace?

ANSWER

Because this host computer is not the router that maintains the ARP table and therefore does not give the sender an answer. Only the router running the network will respond to the ARP request.