

Wireshark Lab: Ethernet

and ARP v7.0

Supplement to Computer Networking: A Top-Down

Approach, 7th ed., J.F. Kurose and K.W. Ross

**Enter the following URL into your browser**

**<http://gaia.cs.umass.edu/wireshark-labs/HTTP-ethereal-lab-file3.html>**

**Your browser should display the rather lengthy US Bill of Rights.**

1. The Ethernet Address of my computer is a4:97:b1:f2:b2:b1
2. The Ethernet Address of the destination frame is 44:1c:12:51:40:8e. This is the address of my home router setup, not gaia.cs.umass.edu.
3. The value of the two-byte Frame Type field is 0x0800, the upper layer protocol of IPv4.
4. The ASCII 'G' in 'GET' appears 52 bytes from the very start of the Ethernet frame.
5. The Ethernet Address of the source frame is 44:1c:12:51:40:8e. This is the address of my home router setup, not gaia.cs.umass.edu.
6. The destination address of the Ethernet frame is a4:97:b1:f2:b2:b1, that being my computer.
7. The value of the two-byte Frame Type field is 0x0800, the upper layer protocol of IPv4.
8. The ASCII 'O' in 'OK' appears 52 bytes from the very start of the Ethernet frame.
9. The Internet Addresss column contains the IP addresses, the Physical Address column contains the MAC addresses, the Type column contains the protocol type:

*Interface: 10.0.0.45 --- 0x3*

<i>Internet Address</i>	<i>Physical Address</i>	<i>Type</i>
10.0.0.1	44-1c-12-51-40-8e	dynamic
10.0.0.193	00-bf-af-01-fe-28	dynamic
10.0.0.255	ff-ff-ff-ff-ff-ff	static
224.0.0.2	01-00-5e-00-00-02	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*

<i>Internet Address</i>	<i>Physical Address</i>	<i>Type</i>
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192.168.56.255	ff-ff-ff-ff-ff	static
224.0.0.2	01-00-5e-00-00-02	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
239.255.255.177	01-00-5e-7f-ff-b1	static
239.255.255.250	01-00-5e-7f-ff-fa	static
255.255.255.255	ff-ff-ff-ff-ff	static

Interface: 192.168.195.1 --- 0x18

Internet Address	Physical Address	Type
192.168.195.255	ff-ff-ff-ff-ff	static
224.0.0.2	01-00-5e-00-00-02	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
239.255.255.177	01-00-5e-7f-ff-b1	static
239.255.255.250	01-00-5e-7f-ff-fa	static
255.255.255.255	ff-ff-ff-ff-ff	static

10. The value for the Source Address is 00:d0:59:a9:3d:63 while the value for the Destination Address is ff:ff:ff:ff:ff:ff.

11. The value of the two-byte Ethernet Frame type field is 0x0806 for ARP

12.

- The ARP opcode begins 20 bytes from the beginning of the Ethernet Frame
- The opcode field value within the ARP-Payload is 0x0001, for request.
- Yes, the ARP message contains the IP Address 192.168.1.105 for the sender.
- The field "Target MAC Address" is set to 00:00:00:00:00:00 to question the machine whose corresponding IP Address (192.168.1.1) is queried.

13.

- The ARP opcode field begins 20 bytes from the very beginning.
- The opcode field value is 0x0002 for reply.
- It appears in the "Sender Mac Address" field, with the Ethernet Address 00:05:25:da:af:73 for the sender with IP address 192.168.1.1.

14. The source Ethernet Address is 00:06:25:da:af:73 while the destination Ethernet Address is 00:d0:59:a9:3d:68
15. There is no reply in this trace because we are not at the machine that sent the request. The ARP request is broadcast, but the ARP reply is sent back directly to the senders Ethernet Address.