

My IP address is 192.168.200.8

```
Command Prompt
Microsoft Windows [Version 10.0.17134.648]
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C:\Users\sauga>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 1:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Local Area Connection* 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

Wireless LAN adapter Wi-Fi:

    Connection-specific DNS Suffix  . :
    Link-local IPv6 Address . . . . . : fe80::b097::5f0:8826:6b52%13
    IPv4 Address. . . . . : 192.168.200.8
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : 192.168.200.1

Ethernet adapter Bluetooth Network Connection 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :

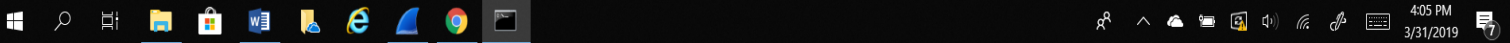
C:\Users\sauga>ipconfig/all

Windows IP Configuration

    Host Name . . . . . : DESKTOP-PR5RTL2
    Primary Dns Suffix . . . . . :
    Node Type . . . . . : Hybrid
    IP Routing Enabled. . . . . : No
    WINS Proxy Enabled. . . . . : No

Ethernet adapter Ethernet 2:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . :
```



# 1. The MAC address from my computer is (ac:ed:5c:47:b8:32)

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F> Expression...

No.	Time	Source	Destination	Protocol	Length	Info
4	2019-03-31 13:15:29.016872	192.168.200.8	192.168.200.1	DNS	77	Standard query 0x1c20 A gaia.cs.umass.edu
5	2019-03-31 13:15:29.048049	192.168.200.8	192.168.200.1	DNS	77	Standard query 0x1c20 A gaia.cs.umass.edu
6	2019-03-31 13:15:29.054751	192.168.200.1	192.168.200.8	DNS	93	Standard query response 0x1c20 A gaia.cs.umass.edu A 128.119.245.12
7	2019-03-31 13:15:29.055574	192.168.200.8	128.119.245.12	TCP	66	54706 → 80 [SYN] Seq=0 Win=17520 Len=0 MSS=1460 WS=256 SACK_PERM=1
8	2019-03-31 13:15:29.056045	192.168.200.8	128.119.245.12	TCP	66	54707 → 80 [SYN] Seq=0 Win=17520 Len=0 MSS=1460 WS=256 SACK_PERM=1
9	2019-03-31 13:15:29.059229	192.168.200.1	192.168.200.8	DNS	93	Standard query response 0x1c20 A gaia.cs.umass.edu A 128.119.245.12
10	2019-03-31 13:15:29.077373	128.119.245.12	192.168.200.8	TCP	66	80 → 54707 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS=1460 SACK_PERM=1 WS=128
11	2019-03-31 13:15:29.077491	192.168.200.8	128.119.245.12	TCP	54	54707 → 80 [ACK] Seq=1 Ack=1 Win=17408 Len=0
12	2019-03-31 13:15:29.078364	192.168.200.8	128.119.245.12	HTTP	482	GET /wireshark-labs/HTTP-ethereal-lab-file3.html HTTP/1.1
13	2019-03-31 13:15:29.079039	128.119.245.12	192.168.200.8	TCP	66	80 → 54706 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS=1460 SACK_PERM=1 WS=128
14	2019-03-31 13:15:29.079151	192.168.200.8	128.119.245.12	TCP	54	54706 → 80 [ACK] Seq=1 Ack=1 Win=17408 Len=0
15	2019-03-31 13:15:29.095142	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=1 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
16	2019-03-31 13:15:29.096031	128.119.245.12	192.168.200.8	TCP	54	80 → 54707 [ACK] Seq=1 Ack=429 Win=30336 Len=0
17	2019-03-31 13:15:29.096031	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=1461 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
18	2019-03-31 13:15:29.096032	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=2921 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
19	2019-03-31 13:15:29.096032	128.119.245.12	192.168.200.8	HTTP	535	HTTP/1.1 200 OK (text/html)

[Frame is ignored: False]  
[Protocols in frame: eth:ethertype:ip:tcp:http]  
[Coloring Rule Name: HTTP]  
[Coloring Rule String: http || tcp.port == 80 || http2]

▼ Ethernet II, Src: IntelCor\_47:b8:32 (ac:ed:5c:47:b8:32), Dst: Verizon\_d0:13:e4 (20:c0:47:d0:13:e4)  
    > Destination: Verizon\_d0:13:e4 (20:c0:47:d0:13:e4)  
    > Source: IntelCor\_47:b8:32 (ac:ed:5c:47:b8:32)  
    Type: IPv4 (0x0800)

▼ Internet Protocol Version 4, Src: 192.168.200.8, Dst: 128.119.245.12

▼ Transmission Control Protocol, Src Port: 54707, Dst Port: 80, Seq: 1, Ack: 1, Len: 428  
    Source Port: 54707  
    Destination Port: 80

0000 20 c0 47 d0 13 e4 ac ed 5c 47 b8 32 08 00 45 00 .G....\G.2..E-  
0010 01 d4 7d 93 40 00 80 06 7d 5b c0 a8 c8 08 80 77 .-} @... }[....w  
0020 f5 0c d5 b3 00 50 5c b5 73 f9 dd de 57 ba 50 18 ....P\ s...W.P-  
0030 00 44 51 3d 00 00 47 45 54 20 2f 77 69 72 65 73 .DQ=..GE T/wires  
0040 68 61 72 6b 2d 6c 61 62 73 2f 48 54 54 50 2d 65 hark-lab s/HTTP-e  
0050 74 68 65 72 65 61 6c 2d 6c 61 62 2d 66 69 6c 65 thereal-lab-file  
0060 33 2e 68 74 6d 6c 20 48 54 54 50 2f 31 2e 31 0d 3.html] H TTP/1.1  
0070 0a 48 6f 73 74 3a 20 67 61 69 61 2e 63 73 2e 75 .Host: g aia.cs.u  
0080 6d 61 73 73 2e 65 64 75 0d 0a 43 6f 6e 6e 65 63 mass.edu ..Connec

Destination Hardware Address (eth.dst), 6 bytes

Packets: 34 · Displayed: 34 (100.0%) · Dropped: 0 (0.0%) Profile: Default

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## 2. The destination MAC address is (20:c0:47:d0:13:e4)

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

Apply a display filter ... <Ctrl-F>

No.	Time	Source	Destination	Protocol	Length	Info
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16	2019-03-31 13:15:29.096031	128.119.245.12	192.168.200.8	TCP	54	80 → 54707 [ACK] Seq=1 Ack=429 Win=30336 Len=0
17	2019-03-31 13:15:29.096031	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=1461 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
18	2019-03-31 13:15:29.096032	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=2921 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
19	2019-03-31 13:15:29.096032	128.119.245.12	192.168.200.8	HTTP	535	HTTP/1.1 200 OK (text/html)

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[Protocols in frame: eth:ethertype:ip:tcp:http]  
[Coloring Rule Name: HTTP]  
[Coloring Rule String: http || tcp.port == 80 || http2]

▼ Ethernet II, Src: IntelCor\_47:b8:32 (ac:ed:5c:47:b8:32), Dst: Verizon\_d0:13:e4 (20:c0:47:d0:13:e4)  
    > Destination: Verizon\_d0:13:e4 (20:c0:47:d0:13:e4)  
    > Source: IntelCor\_47:b8:32 (ac:ed:5c:47:b8:32)  
    Type: IPv4 (0x0800)  
    > Internet Protocol Version 4, Src: 192.168.200.8, Dst: 128.119.245.12  
    ▼ Transmission Control Protocol, Src Port: 54707, Dst Port: 80, Seq: 1, Ack: 1, Len: 428  
        Source Port: 54707  
        Destination Port: 80

0000 20 c0 47 d0 13 e4 ac ed 5c 47 b8 32 08 00 45 00 -G.... \G.2..E  
0010 01 d4 7d 93 40 00 80 06 7d 5b c0 a8 c8 08 80 77 ..} @... }[....w  
0020 f5 0c d5 b3 00 50 5c b5 73 f9 dd de 57 ba 50 18 ....P\ s...W.P.  
0030 00 44 51 3d 00 00 47 45 54 20 2f 77 69 72 65 73 .DQ=..GE T/wires  
0040 68 61 72 6b 2d 6c 61 62 73 2f 48 54 54 50 2d 65 hark-lab s/HTTP-e  
0050 74 68 65 72 65 61 6c 2d 6c 61 62 2d 66 69 6c 65 thereal-lab-file  
0060 33 2e 68 74 6d 6c 20 48 54 54 50 2f 31 2e 31 0d 3.html H TTP/1.1  
0070 0a 48 6f 73 74 3a 20 67 61 69 61 2e 63 73 2e 75 -Host: g aia.cs.u  
0080 6d 61 73 73 2e 65 64 75 0d 0a 43 6f 6e 6e 65 63 mass.edu ..Connec

Destination Hardware Address (eth.dst), 6 bytes

Packets: 34 · Displayed: 34 (100.0%) · Dropped: 0 (0.0%)

Profile: Default

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### 3. The MAC address has show: Verizon\_d0:13:e4 in the destination.

Wi-Fi

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

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6	2019-03-31 13:15:29.054751	192.168.200.1	192.168.200.8	DNS	93	Standard query response 0x1c20 A gaia.cs.umass.edu A 128.119.245.12
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11	2019-03-31 13:15:29.077491	192.168.200.8	128.119.245.12	TCP	54	54707 → 80 [ACK] Seq=1 Ack=1 Win=17408 Len=0
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14	2019-03-31 13:15:29.079151	192.168.200.8	128.119.245.12	TCP	54	54706 → 80 [ACK] Seq=1 Ack=1 Win=17408 Len=0
15	2019-03-31 13:15:29.095142	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=1 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
16	2019-03-31 13:15:29.096031	128.119.245.12	192.168.200.8	TCP	54	80 → 54707 [ACK] Seq=1 Ack=429 Win=30336 Len=0
17	2019-03-31 13:15:29.096031	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=1461 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
18	2019-03-31 13:15:29.096032	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=2921 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
19	2019-03-31 13:15:29.096032	128.119.245.12	192.168.200.8	HTTP	535	HTTP/1.1 200 OK (text/html)

[Frame is ignored: False]  
[Protocols in frame: eth:ethertype:ip:tcp:http]  
[Coloring Rule Name: HTTP]  
[Coloring Rule String: http || tcp.port == 80 || http2]

▼ Ethernet II, Src: IntelCor\_47:b8:32 (ac:ed:5c:47:b8:32), Dst: Verizon\_d0:13:e4 (20:c0:47:d0:13:e4)  
    > Destination: Verizon\_d0:13:e4 (20:c0:47:d0:13:e4)  
    > Source: IntelCor\_47:b8:32 (ac:ed:5c:47:b8:32)  
    Type: IPv4 (0x0800)

> Internet Protocol Version 4, Src: 192.168.200.8, Dst: 128.119.245.12

▼ Transmission Control Protocol, Src Port: 54707, Dst Port: 80, Seq: 1, Ack: 1, Len: 428  
    Source Port: 54707  
    Destination Port: 80

0000 20 c0 47 d0 13 e4 ac ed 5c 47 b8 32 08 00 45 00 .G.....\G-2..E-  
0010 01 d4 7d 93 40 00 80 06 7d 5b c0 a8 c8 08 80 77 ..} @... }[....w  
0020 f5 0c d5 b3 00 50 5c b5 73 f9 dd de 57 ba 50 18 .....P\ s...W.P.  
0030 00 44 51 3d 00 00 47 45 54 20 2f 77 69 72 65 73 .DQ=-GE T /wires  
0040 68 61 72 6b 2d 6c 61 62 73 2f 48 54 54 50 2d 65 hark-lab s/HTTP-e  
0050 74 68 65 72 65 61 6c 2d 6c 61 62 2d 66 69 6c 65 thereal- lab-file  
0060 33 2e 68 74 6d 6c 20 48 54 54 50 2f 31 2e 31 0d 3.html H TTP/1.1-  
0070 0a 48 6f 73 74 3a 20 67 61 69 61 2e 63 73 2e 75 .Host: g aia.cs.u  
0080 6d 61 73 73 2e 65 64 75 0d 0a 43 6f 6e 6e 65 63 mass.edu ..Connec

Destination Hardware Address (eth.dst), 6 bytes

Packets: 34 · Displayed: 34 (100.0%) · Dropped: 0 (0.0%) Profile: Default

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4. The MAC address is a layer 2 address and the IP address is a layer 3 address. So the relationship between the destination MAC address and the destination IP address is that the destination IP address is the final destination address of the website and the destination MAC address is the physical address of my router. These together are used to create and send datagrams. ARP takes these data through an IP address to an actual piece of computer hardware.

The screenshot displays the Wireshark interface with a packet capture of network traffic. The main pane shows a list of packets, with packet 12 selected. The packet list pane shows the following details:

No.	Time	Source	Destination	Protocol	Length	Info
4	2019-03-31 13:15:29.016872	192.168.200.8	192.168.200.1	DNS	77	Standard query 0x1c20 A gaia.cs.umass.edu
5	2019-03-31 13:15:29.048049	192.168.200.8	192.168.200.1	DNS	77	Standard query 0x1c20 A gaia.cs.umass.edu
6	2019-03-31 13:15:29.054751	192.168.200.1	192.168.200.8	DNS	93	Standard query response 0x1c20 A gaia.cs.umass.edu A 128.119.245.12
7	2019-03-31 13:15:29.055574	192.168.200.8	128.119.245.12	TCP	66	54706 → 80 [SYN] Seq=0 Win=17520 Len=0 MSS=1460 WS=256 SACK_PERM=1
8	2019-03-31 13:15:29.056045	192.168.200.8	128.119.245.12	TCP	66	54707 → 80 [SYN] Seq=0 Win=17520 Len=0 MSS=1460 WS=256 SACK_PERM=1
9	2019-03-31 13:15:29.059229	192.168.200.1	192.168.200.8	DNS	93	Standard query response 0x1c20 A gaia.cs.umass.edu A 128.119.245.12
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11	2019-03-31 13:15:29.077491	192.168.200.8	128.119.245.12	TCP	54	54707 → 80 [ACK] Seq=1 Ack=1 Win=17408 Len=0
12	2019-03-31 13:15:29.078364	192.168.200.8	128.119.245.12	HTTP	482	GET /wireshark-labs/HTTP-ethereal-lab-file3.html HTTP/1.1
13	2019-03-31 13:15:29.079039	128.119.245.12	192.168.200.8	TCP	66	80 → 54706 [SYN, ACK] Seq=0 Ack=1 Win=29200 Len=0 MSS=1460 SACK_PERM=1 WS=128
14	2019-03-31 13:15:29.079151	192.168.200.8	128.119.245.12	TCP	54	54706 → 80 [ACK] Seq=1 Ack=1 Win=17408 Len=0
15	2019-03-31 13:15:29.095142	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=1 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
16	2019-03-31 13:15:29.096031	128.119.245.12	192.168.200.8	TCP	54	80 → 54707 [ACK] Seq=1 Ack=429 Win=30336 Len=0
17	2019-03-31 13:15:29.096031	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=1461 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
18	2019-03-31 13:15:29.096032	128.119.245.12	192.168.200.8	TCP	1514	80 → 54707 [ACK] Seq=2921 Ack=429 Win=30336 Len=1460 [TCP segment of a reassembled PDU]
19	2019-03-31 13:15:29.096032	128.119.245.12	192.168.200.8	HTTP	535	HTTP/1.1 200 OK (text/html)

The packet details pane for packet 12 shows the following structure:

- [Frame is ignored: False]
- [Protocols in frame: eth:ethertype:ip:tcp:http]
- [Coloring Rule Name: HTTP]
- [Coloring Rule String: http || tcp.port == 80 || http2]
- Ethernet II, Src: IntelCor\_47:b8:32 (ac:ed:5c:47:b8:32), Dst: Verizon\_d0:13:e4 (20:c0:47:d0:13:e4)
  - Destination: Verizon\_d0:13:e4 (20:c0:47:d0:13:e4)
  - Source: IntelCor\_47:b8:32 (ac:ed:5c:47:b8:32)
  - Type: IPv4 (0x0800)
- Internet Protocol Version 4, Src: 192.168.200.8, Dst: 128.119.245.12
- Transmission Control Protocol, Src Port: 54707, Dst Port: 80, Seq: 1, Ack: 1, Len: 428
  - Source Port: 54707
  - Destination Port: 80

The packet bytes pane shows the raw data of the selected packet, with a hex dump and ASCII representation. The ASCII representation shows the HTTP request line: GET /wireshark-labs/HTTP-ethereal-lab-file3.html HTTP/1.1.

The status bar at the bottom indicates: Packets: 34 · Displayed: 34 (100.0%) · Dropped: 0 (0.0%) Profile: Default

## 5. ARP list table.

Select Command Prompt

C:\Users\sauga>arp -a

Interface: 192.168.200.8 --- 0xd

Internet Address	Physical Address	Type
192.168.200.1	20-c0-47-d0-13-e4	dynamic
192.168.200.255	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

C:\Users\sauga>

