



# PF30-PF60 Didattica e Laboratorio di Reti di Elaboratori Lezione -3- TOOLS

Fausto Marcantoni

[fausto.marcantoni@unicam.it](mailto:fausto.marcantoni@unicam.it)

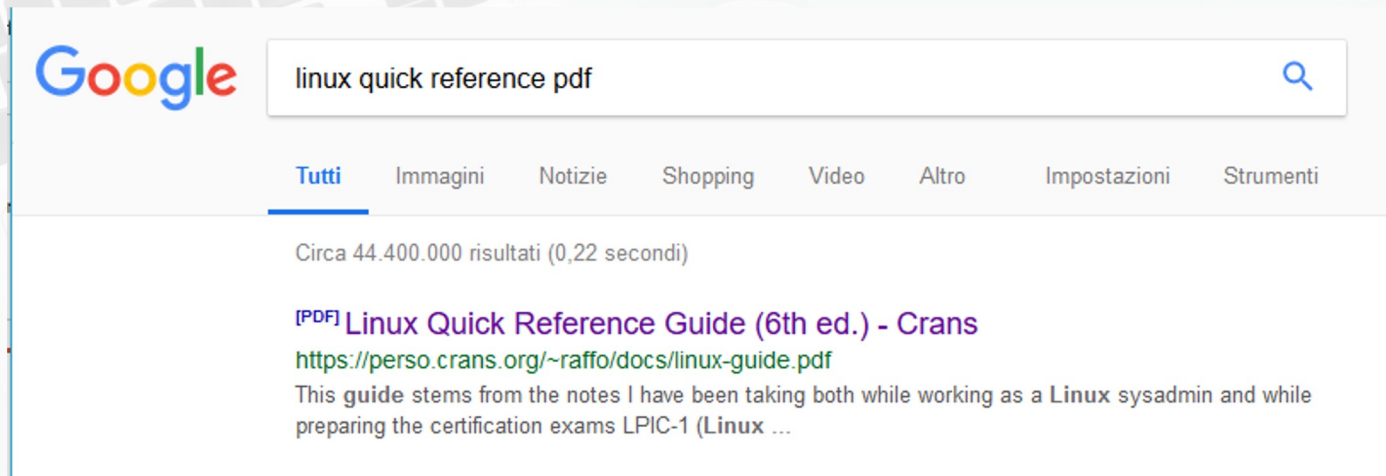
## tools

| TOOLS - Laboratorio -                                                                                                                                                                             |                 |                                                               |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------|---------------------------------------------------------------|
| <u>Linux - Windows</u><br>shell<br>PowerShell                                                                                                                                                     |                 |                                                               |
| <u>Wireshark</u>                                                                                                                                                                                  |                 |                                                               |
| <u>Nmap</u>                                                                                                                                                                                       |                 |                                                               |
| <u>Vmware - VirtualBox</u><br><u>Metasploitable2</u><br><u>Apache</u><br><u>Webmin</u><br><br><u>Nessus</u><br>Greenbone-openvas                                                                  | <u>Firewall</u> |                                                               |
|                                                                                                                                                                                                   | <u>Pfsense</u>  |                                                               |
|                                                                                                                                                                                                   | OPNsense        | <a href="https://opnsense.org/">https://opnsense.org/</a>     |
|                                                                                                                                                                                                   | Ipcop           | <a href="https://www.ipcop.org/">https://www.ipcop.org/</a>   |
|                                                                                                                                                                                                   | Ipfire          | <a href="https://www.ipfire.org/">https://www.ipfire.org/</a> |
| <u>GNS3</u>                                                                                                                                                                                       |                 |                                                               |
| Draw io<br>• <a href="https://www.drawio.com/">https://www.drawio.com/</a><br>• <a href="https://github.com/jgraph/drawio-desktop/releases">https://github.com/jgraph/drawio-desktop/releases</a> |                 |                                                               |
|                                                                                                                                                                                                   |                 |                                                               |

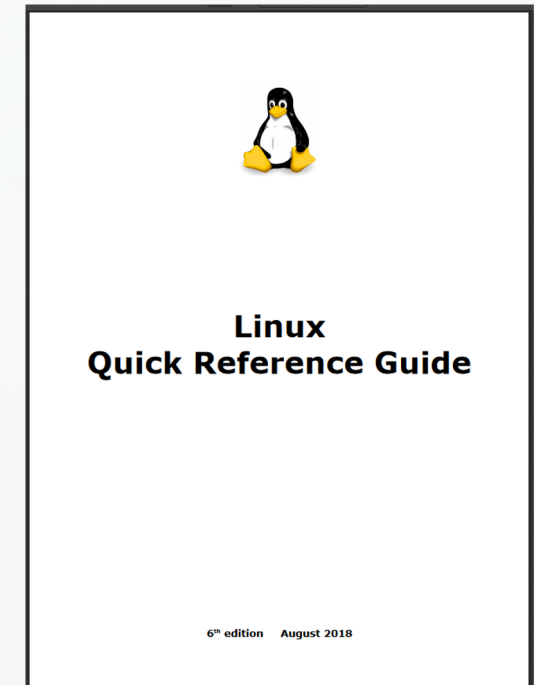
# Linux vs Windows



un buon manuale per  
iniziare



<https://dr0.ch/docs/linux-guide-8ed.pdf>





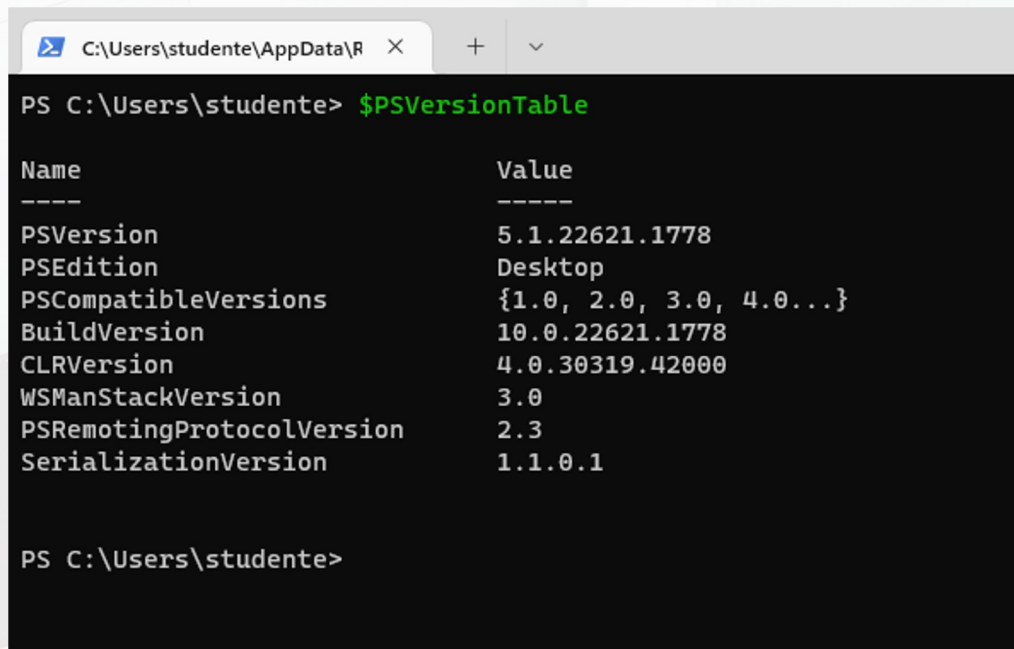
# powershell

## Che cos'è PowerShell?

<https://learn.microsoft.com/it-it/powershell/scripting/overview?view=powershell-7.4>

<https://learn.microsoft.com/it-it/training/modules/introduction-to-powershell/>

<https://thesolving.com/it/sala-server/powershell-una-guida-completa-parte-1a/>



```
PS C:\Users\studente> $PSVersionTable
```

| Name                      | Value                   |
|---------------------------|-------------------------|
| PSVersion                 | 5.1.22621.1778          |
| PSEdition                 | Desktop                 |
| PSCompatibleVersions      | {1.0, 2.0, 3.0, 4.0...} |
| BuildVersion              | 10.0.22621.1778         |
| CLRVersion                | 4.0.30319.42000         |
| WSManStackVersion         | 3.0                     |
| PSRemotingProtocolVersion | 2.3                     |
| SerializationVersion      | 1.1.0.1                 |

```
PS C:\Users\studente>
```

<https://learn.microsoft.com/it-it/training/browse/>



## Come installare Linux in Windows con WSL

<https://learn.microsoft.com/it-it/windows/wsl/install>

```
wsl --install
```

```
wsl --list --online 0 wsl -l -o
```

```
wsl.exe --install -d <Distribution Name>
```

**ma  
perché?!?!?!?**

## Installare e iniziare a configurare Terminale Windows

<https://learn.microsoft.com/it-it/windows/terminal/install>

# FINE



# Wireshark



<https://www.wireshark.org/>

Tutorial e  
manuali

[https://www.wireshark.org/docs/wsug\\_html\\_chunked/](https://www.wireshark.org/docs/wsug_html_chunked/)

[https://imolug.org/sites/default/files/WireShark\\_Manual.p  
df](https://imolug.org/sites/default/files/WireShark_Manual.pdf)

[http://security.polito.it/~lioy/01nbe/wireshark\\_intro.p](http://security.polito.it/~lioy/01nbe/wireshark_intro.p)

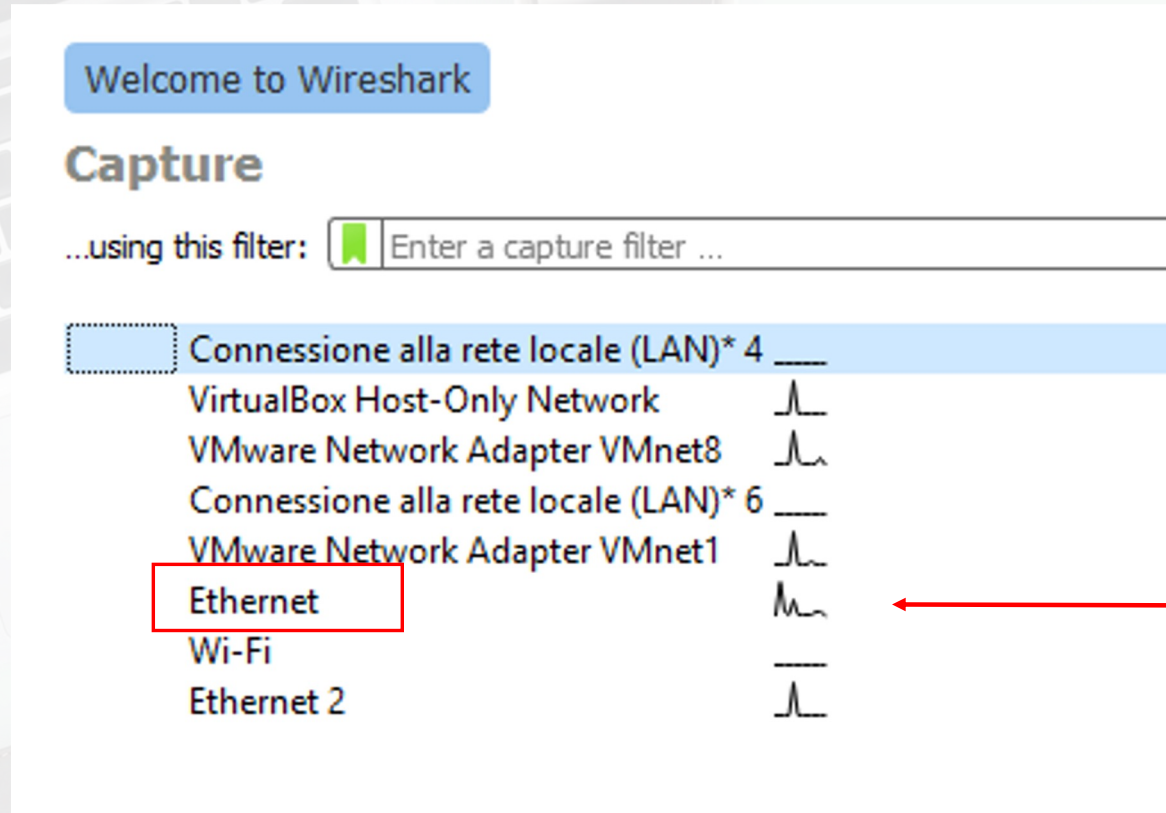
df

<https://www.areanetworking.it/corso-wireshark-prima-lezione.html>

[https://www.lifewire.com/wireshark-tutorial-  
4143298](https://www.lifewire.com/wireshark-tutorial-4143298)

[https://www.guru99.com/wireshark-passwords-  
sniffer.html](https://www.guru99.com/wireshark-passwords-sniffer.html)

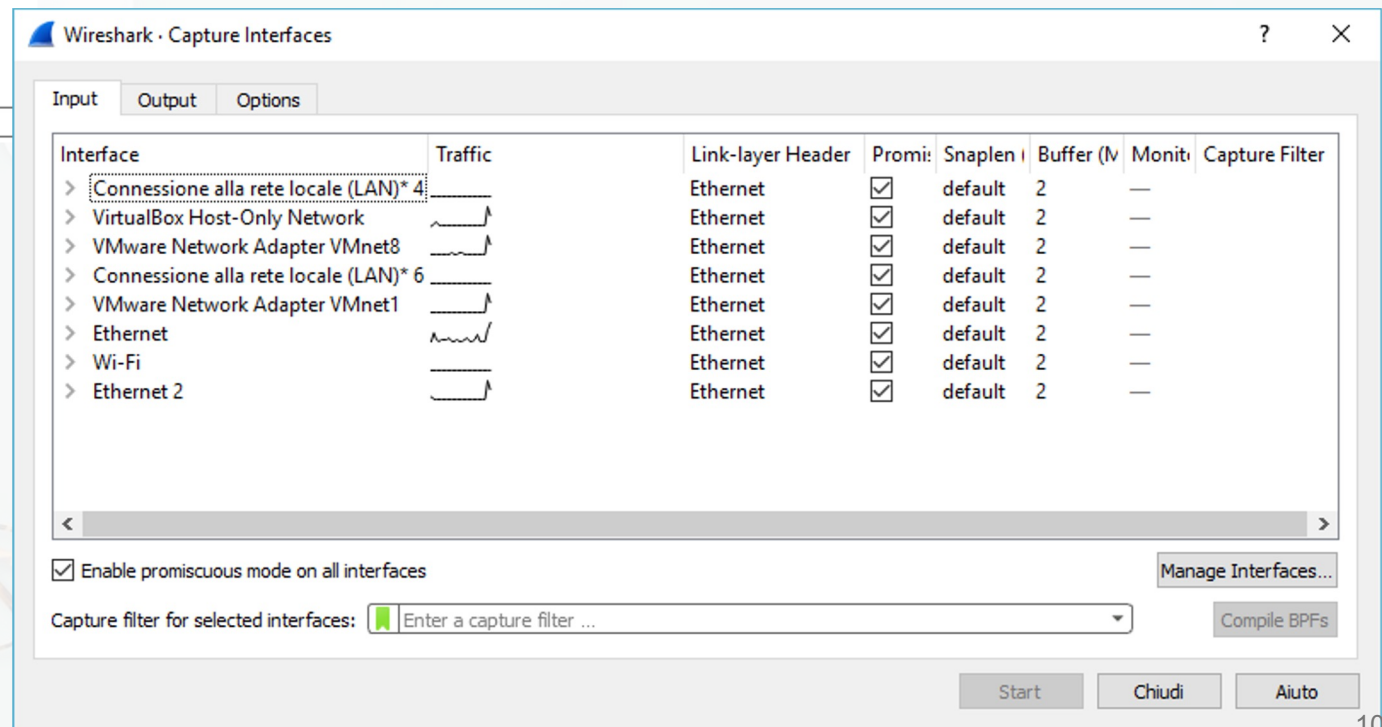
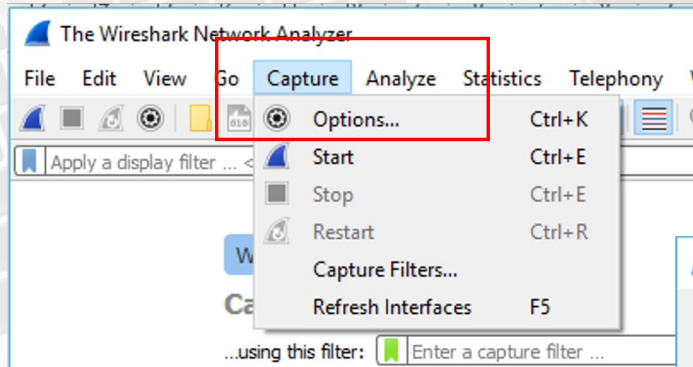
# Wireshark – scegliere l'interfaccia



Vedere il  
traffico



# Wireshark – scegliere l'interfaccia



# Wireshark – pagina principale

Capturing from Ethernet

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

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

| No. | Time      | Source         | Destination                | Protocol | Length | Info                                                                     |
|-----|-----------|----------------|----------------------------|----------|--------|--------------------------------------------------------------------------|
| 389 | 16.492710 | 193.205.92.97  | 146.148.8.25               | TCP      | 571    | [TCP Retransmission] 4508 → 443 [PSH, ACK] Seq=1 Ack=1 Win=66048 Len=517 |
| 390 | 16.508787 | 216.58.205.138 | 193.205.92.97              | TLSv1.2  | 100    | Application Data                                                         |
| 391 | 16.508851 | 31.13.86.36    | 193.205.92.97              | TLSv1.2  | 93     | Application Data                                                         |
| 392 | 16.529764 | 193.205.92.97  | 146.148.8.25               | TCP      | 55     | [TCP Retransmission] 4506 → 443 [ACK] Seq=0 Ack=1 Win=258 Len=1          |
| 393 | 16.548963 | 193.205.92.97  | 31.13.86.36                | TCP      | 54     | 4322 → 443 [ACK] Seq=40 Ack=40 Win=255 Len=0                             |
| 394 | 16.548963 | 193.205.92.97  | 216.58.205.138             | TCP      | 54     | 4251 → 443 [ACK] Seq=47 Ack=47 Win=253 Len=0                             |
| 395 | 16.568150 | Cisco_03:6b:8e | CDP/VTP/DTP/PagP/UD...     | CDP      | 518    | Device ID: CA.N.P.INFO.2960XLODO.unicam Port ID: GigabitEthernet1/0/14   |
| 396 | 16.737593 | 193.205.92.97  | 92.123.21.122              | TLSv1.2  | 85     | Ignored Unknown Record                                                   |
| 397 | 16.737646 | 193.205.92.97  | 92.123.21.122              | TCP      | 54     | 4480 → 443 [FIN, ACK] Seq=33 Ack=1 Win=256 Len=0                         |
| 398 | 16.767666 | 92.123.21.122  | 193.205.92.97              | TCP      | 60     | 443 → 4480 [ACK] Seq=1 Ack=33 Win=273 Len=0                              |
| 399 | 16.767784 | 92.123.21.122  | 193.205.92.97              | TLSv1.2  | 85     | Encrypted Alert                                                          |
| 400 | 16.767785 | 92.123.21.122  | 193.205.92.97              | TCP      | 60     | 443 → 4480 [FIN, ACK] Seq=32 Ack=34 Win=273 Len=0                        |
| 401 | 16.767816 | 193.205.92.97  | 92.123.21.122              | TCP      | 54     | 4480 → 443 [RST, ACK] Seq=34 Ack=32 Win=0 Len=0                          |
| 402 | 16.792451 | 193.205.92.97  | 146.148.8.25               | TCP      | 571    | [TCP Retransmission] 4508 → 443 [PSH, ACK] Seq=1 Ack=1 Win=66048 Len=517 |
| 403 | 16.933341 | Cisco_03:6b:8e | Spanning-tree-(for-... STP | STP      | 119    | HST. Root = 0/0/08:96:ad:f6:83:00 Cost = 0 Port = 0x800e                 |

> Frame 1: 55 bytes on wire (440 bits), 55 bytes captured (440 bits) on interface 0  
 > Ethernet II, Src: AsustekC\_0a:e6:1d (d8:50:e6:0a:e6:1d), Dst: Cisco\_f6:85:00 (08:96:ad:f6:85:00)  
 > Internet Protocol Version 4, Src: 193.205.92.97, Dst: 92.123.21.122  
 > Transmission Control Protocol, Src Port: 4484, Dst Port: 443, Seq: 1, Ack: 1, Len: 1

```

0000  08 96 ad f6 85 00 d8 50 e6 0a e6 1d 08 00 45 00  ....P....E
0010  00 29 32 dd 40 00 40 06 77 85 c1 cd 5c 61 5c 7b  ..2@.  .\a\{
0020  15 7a 11 84 01 bb 15 bb 91 03 5c 23 77 fc 50 10  z.....\##P-
0030  01 02 90 90 00 00 00  ....
  
```

Ethernet: <live capture in progress> | Packets: 403 · Displayed: 403 (100.0%) | Profile: Default

# Wireshark – Statistiche

Statistics Telephony Wireless Tools Help

Capture File Properties Ctrl+Alt+Shift+C

Resolved Addresses

Protocol Hierarchy

Conversations

Endpoints

Packet Lengths

I/O Graph

Service Response Time

DHCP (BOOTP) Statistics

ONC-RPC Programs

29West

ANCP

BACnet

Collectd

DNS

Flow Graph

HART-IP

HPFEEDS

HTTP

HTTP2

Sametime

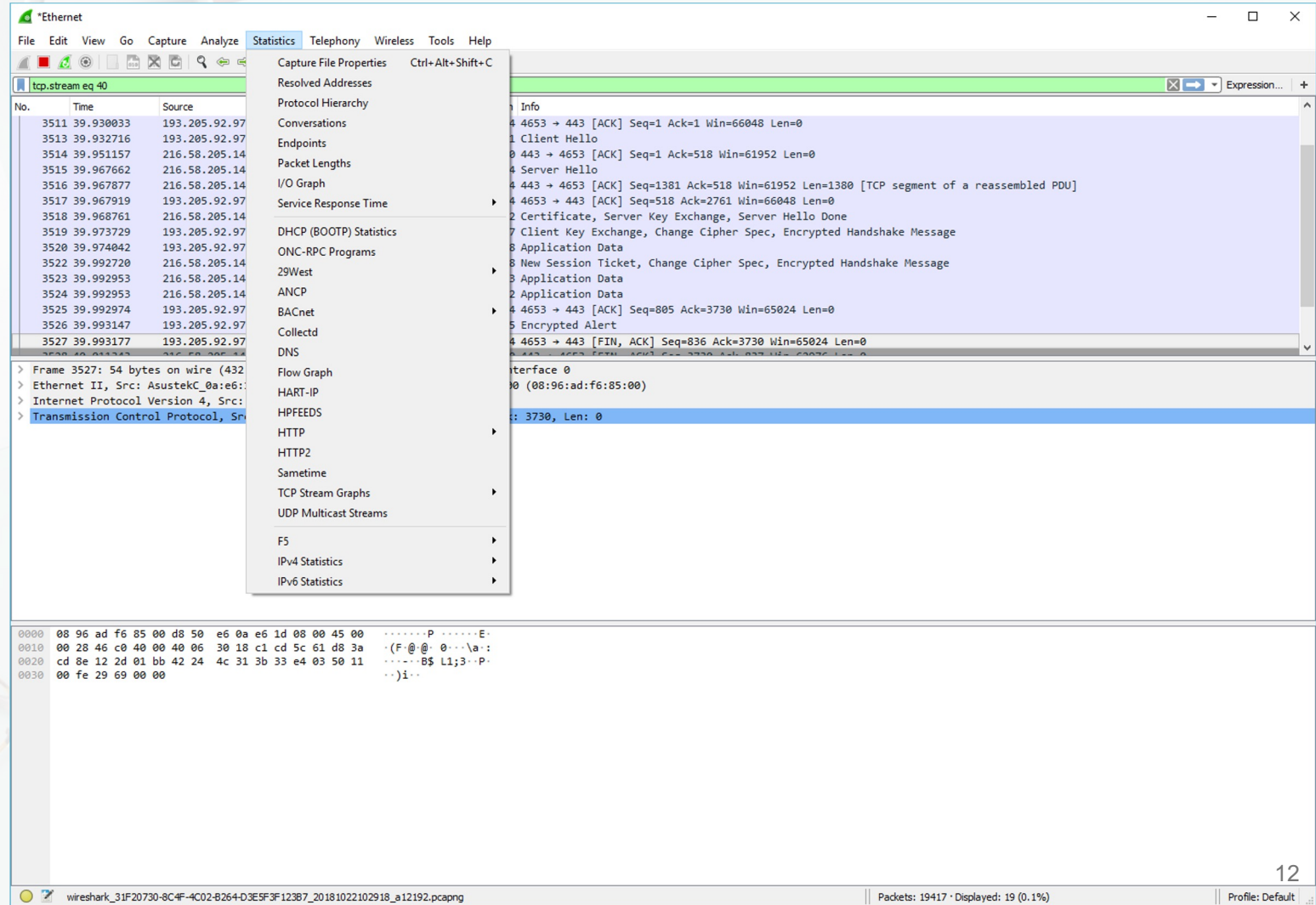
TCP Stream Graphs

UDP Multicast Streams

F5

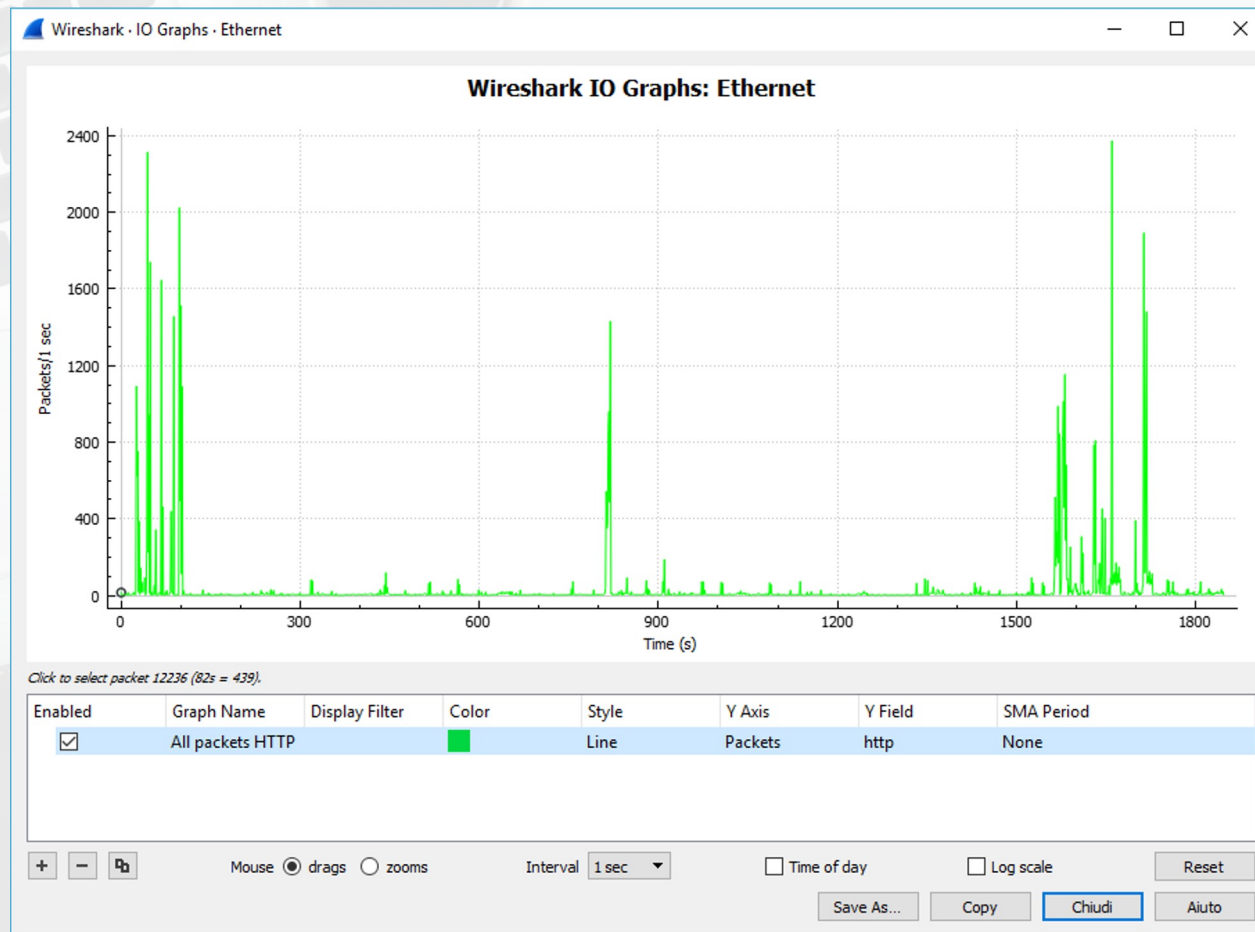
IPv4 Statistics

IPv6 Statistics



The image shows the Wireshark network protocol analyzer interface. The top menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. The 'Statistics' menu is open, displaying a list of statistical tools such as Capture File Properties, Resolved Addresses, Protocol Hierarchy, Conversations, Endpoints, Packet Lengths, I/O Graph, Service Response Time, DHCP (BOOTP) Statistics, ONC-RPC Programs, 29West, ANCP, BACnet, Collectd, DNS, Flow Graph, HART-IP, HPFEEDS, HTTP, HTTP2, Sametime, TCP Stream Graphs, UDP Multicast Streams, F5, IPv4 Statistics, and IPv6 Statistics. The main packet list on the left shows a capture of traffic on the 'eth0' interface, with the selected packet being a TCP segment (No. 3527, Time 39.993177, Source 193.205.92.97, Destination 193.205.92.97). The packet details pane on the right shows the structure of the selected packet, including Ethernet II, Internet Protocol Version 4, and Transmission Control Protocol. The packet bytes pane at the bottom shows the raw data of the selected packet.

# Wireshark – Statistiche - I/O Graph





# Wireshark – Statistiche - Conversation

Wireshark · Conversations · Ethernet

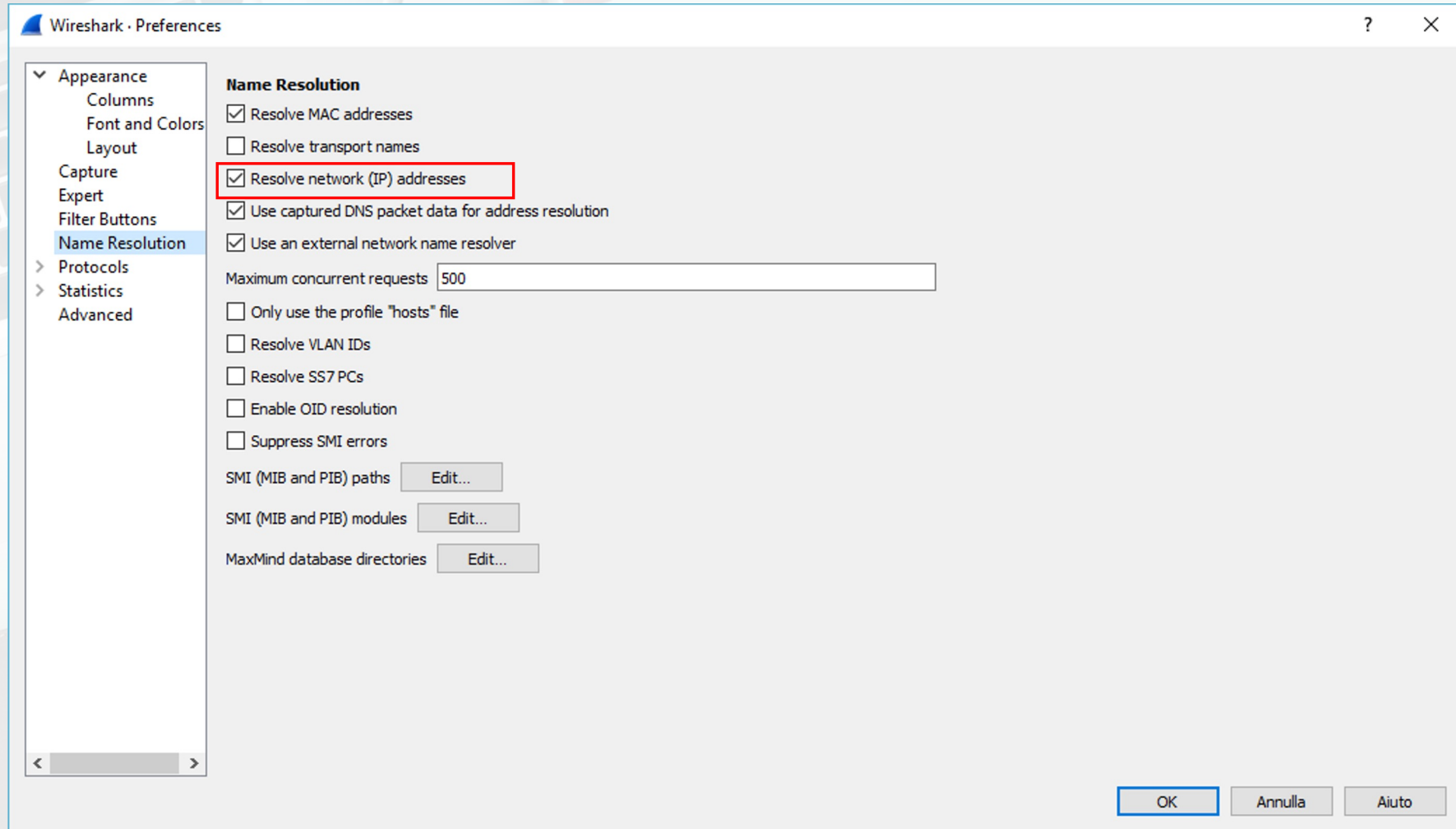
| Ethernet · 170   IPv4 · 198   IPv6 · 29   TCP · 199   UDP · 541 |                 |         |        |               |             |               |             |             |           |              |              |
|-----------------------------------------------------------------|-----------------|---------|--------|---------------|-------------|---------------|-------------|-------------|-----------|--------------|--------------|
| Address A                                                       | Address B       | Packets | Bytes  | Packets A → B | Bytes A → B | Packets B → A | Bytes B → A | Rel Start   | Duration  | Bits/s A → B | Bits/s B → A |
| 0.0.0.0                                                         | 255.255.255.255 | 3       | 1068   | 3             | 1068        | 0             | 0           | 01358.92528 | 0.0664    | 128 k        | 0            |
| 2.237.133.169                                                   | 193.205.92.124  | 1       | 66     | 1             | 66          | 0             | 0           | 01040.14386 | 0.0000    | —            | —            |
| 10.1.0.111                                                      | 193.205.92.164  | 1       | 66     | 1             | 66          | 0             | 0           | 01643.93582 | 0.0000    | —            | —            |
| 13.107.5.88                                                     | 193.205.92.97   | 28      | 9032   | 14            | 7438        | 14            | 1594        | 254.819504  | 67.5835   | 880          | 188          |
| 23.1.75.203                                                     | 193.205.92.131  | 9       | 811    | 9             | 811         | 0             | 0           | 281.927049  | 13.3721   | 485          | 0            |
| 23.13.61.84                                                     | 193.205.92.97   | 14      | 5645   | 8             | 5096        | 6             | 549         | 221.508485  | 3.6941    | 11 k         | 1188         |
| 31.13.86.4                                                      | 193.205.92.97   | 2.906   | 2634 k | 2.092         | 2557 k      | 814           | 76 k        | 1576.55572  | 208.7664  | 98 k         | 2914         |
| 31.13.86.8                                                      | 193.205.92.97   | 381     | 128 k  | 165           | 30 k        | 216           | 97 k        | 1581.19598  | 246.0368  | 1002         | 3167         |
| 31.13.86.15                                                     | 193.205.92.97   | 8.935   | 10 M   | 7.438         | 10 M        | 1.497         | 110 k       | 1630.63330  | 164.1474  | 503 k        | 5386         |
| 31.13.86.36                                                     | 193.205.92.97   | 1.284   | 861 k  | 751           | 652 k       | 533           | 209 k       | 1575.06985  | 270.1891  | 19 k         | 6196         |
| 31.14.131.188                                                   | 193.205.92.27   | 1       | 90     | 1             | 90          | 0             | 0           | 1054.58187  | 0.0000    | —            | —            |
| 35.163.53.118                                                   | 193.205.92.97   | 6       | 452    | 2             | 170         | 4             | 282         | 102.209889  | 0.1946    | 6990         | 11 k         |
| 37.77.114.151                                                   | 193.205.92.67   | 1       | 66     | 1             | 66          | 0             | 0           | 1086.90181  | 0.0000    | —            | —            |
| 40.67.251.132                                                   | 193.205.92.97   | 95      | 11 k   | 32            | 5760        | 63            | 5705        | 41.479365   | 1800.0972 | 25           | 25           |
| 40.70.184.83                                                    | 193.205.92.97   | 37      | 15 k   | 15            | 12 k        | 22            | 2962        | 539.240421  | 914.6945  | 109          | 25           |
| 40.77.226.249                                                   | 193.205.92.97   | 24      | 8442   | 10            | 7070        | 14            | 1372        | 1471.44068  | 95.3014   | 593          | 115          |
| 52.11.162.210                                                   | 193.205.92.97   | 26      | 11 k   | 10            | 4180        | 16            | 7626        | 102.661996  | 0.8051    | 41 k         | 75 k         |
| 52.54.248.107                                                   | 193.205.92.138  | 11      | 1078   | 11            | 1078        | 0             | 0           | 1576.56089  | 160.0151  | 53           | 0            |
| 52.114.158.91                                                   | 193.205.92.97   | 17      | 7329   | 8             | 4655        | 9             | 2674        | 954.706102  | 0.9574    | 38 k         | 22 k         |
| 52.138.216.83                                                   | 193.205.92.97   | 77      | 25 k   | 34            | 21 k        | 43            | 4170        | 249.746002  | 503.0874  | 341          | 66           |
| 54.38.180.81                                                    | 193.205.92.112  | 2       | 140    | 2             | 140         | 0             | 0           | 475.550582  | 0.0246    | 45 k         | 0            |
| 54.187.46.234                                                   | 193.205.92.97   | 24      | 1474   | 12            | 818         | 12            | 656         | 0.332218    | 40.3812   | 162          | 129          |
| 54.201.6.28                                                     | 193.205.92.97   | 10      | 598    | 5             | 325         | 5             | 273         | 6.592993    | 30.4884   | 85           | 71           |
| 54.210.203.205                                                  | 193.205.92.138  | 11      | 1078   | 11            | 1078        | 0             | 0           | 1576.18391  | 160.2319  | 53           | 0            |
| 60.191.38.77                                                    | 193.205.92.117  | 2       | 120    | 2             | 120         | 0             | 0           | 541.862935  | 1.3591    | 706          | 0            |
| 64.233.166.94                                                   | 193.205.92.97   | 303     | 281 k  | 202           | 275 k       | 101           | 6185        | 27.595445   | 16.1797   | 136 k        | 3058         |
| 64.233.166.154                                                  | 193.205.92.97   | 49      | 8921   | 27            | 5950        | 22            | 2971        | 1576.14812  | 259.3192  | 183          | 91           |
| 64.233.166.189                                                  | 193.205.92.131  | 10      | 1164   | 10            | 1164        | 0             | 0           | 8.126912    | 29.9172   | 311          | 0            |
| 64.233.166.189                                                  | 193.205.92.79   | 1       | 105    | 1             | 105         | 0             | 0           | 1089.85023  | 0.0000    | —            | —            |
| 64.233.166.189                                                  | 193.205.92.138  | 12      | 1512   | 12            | 1512        | 0             | 0           | 1565.74641  | 120.8466  | 100          | 0            |
| 64.233.166.189                                                  | 193.205.92.97   | 362     | 65 k   | 212           | 40 k        | 150           | 24 k        | 1581.20582  | 260.6950  | 1253         | 744          |

☐ Name resolution   
 ☐ Limit to display filter   
 ☐ Absolute start time   
 Conversation Types ▾

Copy ▾   Follow Stream...   Graph...   Chiudi   Aiuto



# Wireshark – Preferences



# Wireshark – Statistiche - Conversation

\*Ethernet

File Edit View Go Capture Analyze Statistics Telephony Wireless Tools Help

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

| No.  | Time      | Source                  | Destination             | Protocol | Length | Info                                                  |
|------|-----------|-------------------------|-------------------------|----------|--------|-------------------------------------------------------|
| 21   | 3.867041  | mfausto.amministratz... | a1089.d.akamai.net      | HTTP     | 55     | Continuation                                          |
| 22   | 3.880216  | a1089.d.akamai.net      | mfausto.amministratz... | TCP      | 66     | 80 → 4608 [ACK] Seq=1 Ack=2 Win=237 Len=0 SLE=1 SRE=2 |
| 68   | 13.879620 | mfausto.amministratz... | a1089.d.akamai.net      | TCP      | 55     | [TCP Keep-Alive] 4608 → 80 [ACK] Seq=1 Ack=1 Win=257  |
| 69   | 13.892694 | a1089.d.akamai.net      | mfausto.amministratz... | TCP      | 66     | [TCP Keep-Alive ACK] 80 → 4608 [ACK] Seq=1 Ack=2 Win= |
| 129  | 23.892990 | mfausto.amministratz... | a1089.d.akamai.net      | TCP      | 55     | [TCP Keep-Alive] 4608 → 80 [ACK] Seq=1 Ack=1 Win=257  |
| 130  | 23.905880 | a1089.d.akamai.net      | mfausto.amministratz... | TCP      | 66     | [TCP Keep-Alive ACK] 80 → 4608 [ACK] Seq=1 Ack=2 Win= |
| 3276 | 33.808070 | mfausto.amministratz... | a1089.d.akamai.net      | HTTP     | 373    | GET /success.txt HTTP/1.1                             |
| 3288 | 33.821166 | a1089.d.akamai.net      | mfausto.amministratz... | TCP      | 60     | 80 → 4608 [ACK] Seq=1 Ack=321 Win=245 Len=0           |
| 3289 | 33.821469 | a1089.d.akamai.net      | mfausto.amministratz... | HTTP     | 438    | HTTP/1.1 200 OK (text/plain)                          |
| 3291 | 33.862894 | mfausto.amministratz... | a1089.d.akamai.net      | TCP      | 54     | 4608 → 80 [ACK] Seq=321 Ack=385 Win=255 Len=0         |

> Frame 3289: 438 bytes on wire (3504 bits), 438 bytes captured (3504 bits) on interface 0

> Ethernet II, Src: Cisco\_f6:85:00 (08:96:ad:f6:85:00), Dst: mfausto.amministrazione.unicam (d8:50:e6:0a:e6:1d)

> Internet Protocol Version 4, Src: a1089.d.akamai.net (193.206.135.170), Dst: mfausto.amministrazione.unicam (193.205.92.97)

> Transmission Control Protocol, Src Port: 80, Dst Port: 4608, Seq: 1, Ack: 321, Len: 384

> Hypertext Transfer Protocol

> Line-based text data: text/plain (1 lines)

```

0000  d8 50 e6 0a e6 1d 08 96 ad f6 85 00 08 00 45 00  ·P·····E·
0010  01 a8 86 dc 40 00 3b 06 4f cc c1 ce 87 aa c1 cd  ··@·;·0·····
0020  5c 61 00 50 12 00 c0 1e e7 fc c8 28 60 41 50 18  \a·P·····(`AP·
0030  00 f5 be a9 00 00 48 54 54 50 2f 31 2e 31 20 32  ·····HT TP/1.1 2
0040  30 30 20 4f 4b 0d 0a 43 6f 6e 74 65 6e 74 2d 54  00 OK·C ontent-T
0050  79 70 65 3a 20 74 65 78 74 2f 70 6c 61 69 6e 0d  ype: tex t/plain·
0060  0a 43 6f 6e 74 65 6e 74 2d 4c 65 6e 67 74 68 3a  ·Content -Length:
0070  20 38 0d 0a 4c 61 73 74 2d 4d 6f 64 69 66 69 65  8··Last -Modifie
0080  64 3a 20 4d 6f 6e 2c 20 31 35 20 4d 61 79 20 32  d: Mon, 15 May 2
0090  30 31 37 20 31 38 3a 30 34 3a 34 30 20 47 4d 54  017 18:0 4:40 GMT
00a0  0d 0a 45 54 61 67 3a 20 22 61 65 37 38 30 35 38  ··ETag: "ae78058
00b0  35 66 34 39 62 39 34 63 65 31 34 34 34 65 62 37  5f49b94c e1444eb7
00c0  64 32 38 39 30 36 31 32 33 22 0d 0a 41 63 63 65  d2890612 3"··Acce
00d0  70 74 2d 52 61 6e 67 65 73 3a 20 62 79 74 65 73  pt-Range s: bytes
  
```

wireshark\_31F20730-8C4F-4C02-B264-D3E5F3F123B7\_20181022102918\_a12192.pcapng

Packets: 62145 · Displayed: 13 (0.0%) · Dropped: 0 (0.0%) Profile: Default

| Source                  | Destination             | Protocol |
|-------------------------|-------------------------|----------|
| mfausto.amministratz... | a1089.d.akamai.net      | HTTP     |
| a1089.d.akamai.net      | mfausto.amministratz... | TCP      |
| mfausto.amministratz... | a1089.d.akamai.net      | TCP      |
| a1089.d.akamai.net      | mfausto.amministratz... | TCP      |
| mfausto.amministratz... | a1089.d.akamai.net      | TCP      |
| a1089.d.akamai.net      | mfausto.amministratz... | TCP      |
| mfausto.amministratz... | a1089.d.akamai.net      | HTTP     |
| a1089.d.akamai.net      | mfausto.amministratz... | TCP      |
| a1089.d.akamai.net      | mfausto.amministratz... | HTTP     |
| mfausto.amministratz... | a1089.d.akamai.net      | TCP      |

# Wireshark – Statistiche - Conversation

Wireshark · Conversations · Ethernet

Ethernet · 170   IPv4 · 198   IPv6 · 29   TCP · 199   UDP · 541

| Address A                                                   | Address B                              | Packets | Bytes  | Packets A → B | Bytes A → B | Packets |
|-------------------------------------------------------------|----------------------------------------|---------|--------|---------------|-------------|---------|
| 0.0.0.0                                                     | 255.255.255.255                        | 3       | 1068   | 3             | 1068        |         |
| 2.237.133.169                                               | 4helix.amministrazione.unicam          | 1       | 66     | 1             | 66          |         |
| 10.1.0.111                                                  | 193.205.92.164                         | 1       | 66     | 1             | 66          |         |
| e-0009.e-msedge.net                                         | mfausto.amministrazione.unicam         | 28      | 9032   | 14            | 7438        |         |
| a23-1-75-203.deploy.static.akamaitechnologies.com           | fabriziunicam.local                    | 9       | 811    | 9             | 811         |         |
| e15275.g.akamaiedge.net                                     | mfausto.amministrazione.unicam         | 14      | 5645   | 8             | 5096        |         |
| scontent-mxp1-1.xx.fbcdn.net                                | mfausto.amministrazione.unicam         | 2.906   | 2634 k | 2.092         | 2557 k      |         |
| star.c10r.facebook.com                                      | mfausto.amministrazione.unicam         | 381     | 128 k  | 165           | 30 k        |         |
| video-mxp1-1.xx.fbcdn.net                                   | mfausto.amministrazione.unicam         | 8.935   | 10 M   | 7.438         | 10 M        |         |
| facebook.com                                                | mfausto.amministrazione.unicam         | 1.284   | 861 k  | 751           | 652 k       |         |
| host188-131-14-31.serverdedicati.aruba.it                   | 193.205.92.27                          | 1       | 90     | 1             | 90          |         |
| ec2-35-163-53-118.us-west-2.compute.amazonaws.com           | mfausto.amministrazione.unicam         | 6       | 452    | 2             | 170         |         |
| 37.77.114.151                                               | 193.205.92.67                          | 1       | 66     | 1             | 66          |         |
| 40.67.251.132                                               | mfausto.amministrazione.unicam         | 95      | 11 k   | 32            | 5760        |         |
| ieonline.trafficmanager.net                                 | mfausto.amministrazione.unicam         | 37      | 15 k   | 15            | 12 k        |         |
| db5-ap.settings.data.microsoft.com.akadns.net               | mfausto.amministrazione.unicam         | 24      | 8442   | 10            | 7070        |         |
| pipeline-edge-prod-25-561439127.us-west-2.elb.amazonaws.com | mfausto.amministrazione.unicam         | 26      | 11 k   | 10            | 4180        |         |
| ec2-52-54-248-107.compute-1.amazonaws.com                   | cippus-ThinkPad-13.local               | 11      | 1078   | 11            | 1078        |         |
| oncollector.cloudapp.aria.akadns.net                        | mfausto.amministrazione.unicam         | 17      | 7329   | 8             | 4655        |         |
| db5-eap.settings.data.microsoft.com.akadns.net              | mfausto.amministrazione.unicam         | 77      | 25 k   | 34            | 21 k        |         |
| 81.ip-54-38-180.eu                                          | farmy.amministrazione.unicam           | 2       | 140    | 2             | 140         |         |
| ec2-54-187-46-234.us-west-2.compute.amazonaws.com           | mfausto.amministrazione.unicam         | 24      | 1474   | 12            | 818         |         |
| ec2-54-201-6-28.us-west-2.compute.amazonaws.com             | mfausto.amministrazione.unicam         | 10      | 598    | 5             | 325         |         |
| ec2-54-210-203-205.compute-1.amazonaws.com                  | cippus-ThinkPad-13.local               | 11      | 1078   | 11            | 1078        |         |
| 60.191.38.77                                                | 193.205.92.117                         | 2       | 120    | 2             | 120         |         |
| wm-in-f94.1e100.net                                         | mfausto.amministrazione.unicam         | 303     | 281 k  | 202           | 275 k       |         |
| stats.l.doubleclick.net                                     | mfausto.amministrazione.unicam         | 49      | 8921   | 27            | 5950        |         |
| cello.client-channel.google.com                             | fabriziunicam.local                    | 10      | 1164   | 10            | 1164        |         |
| cello.client-channel.google.com                             | pc-mancin-bea-2.amministrazione.unicam | 1       | 105    | 1             | 105         |         |
| cello.client-channel.google.com                             | cippus-ThinkPad-13.local               | 12      | 1512   | 12            | 1512        |         |

☒ Name resolution   
 ☐ Limit to display filter   
 ☐ Absolute start time

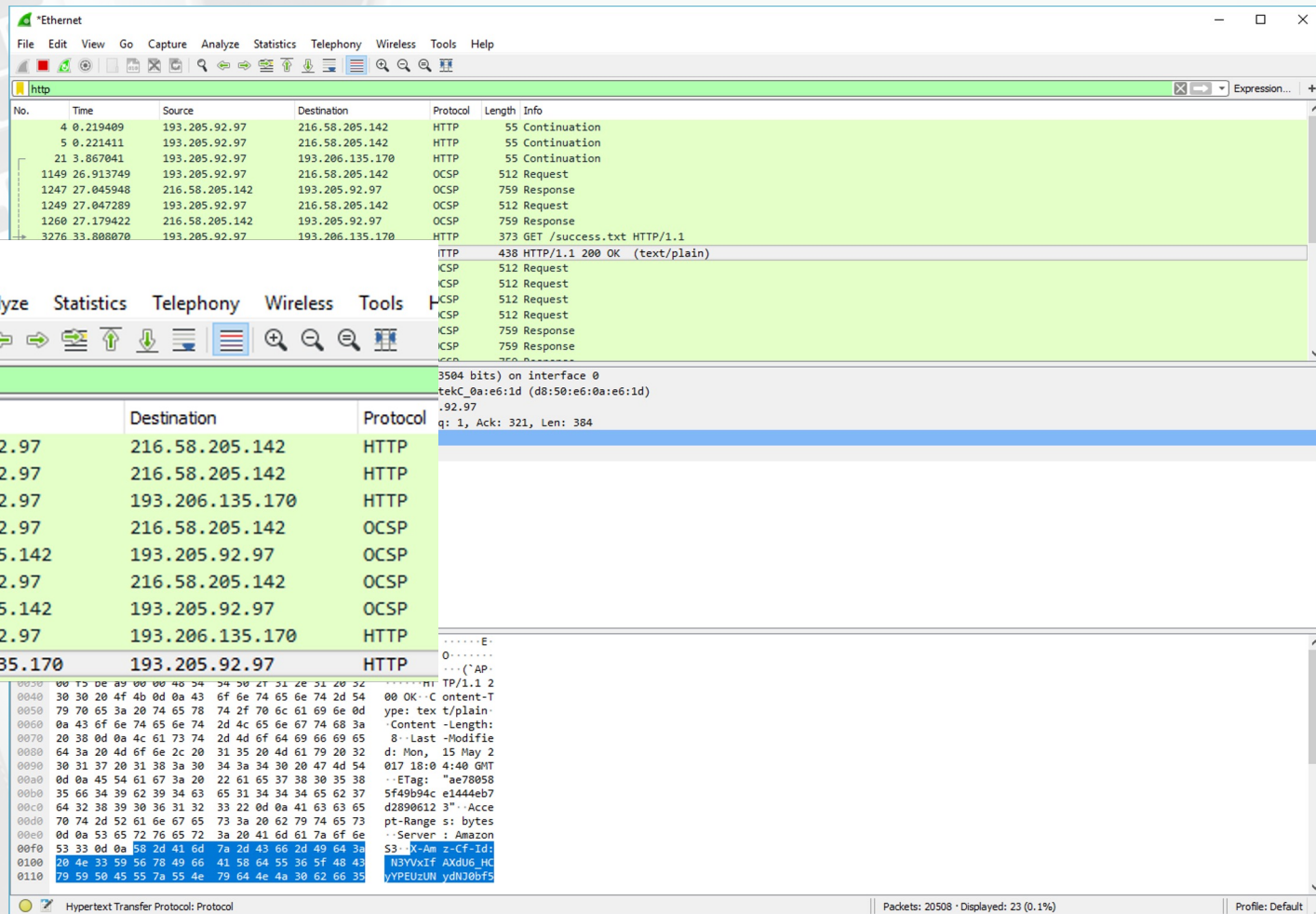
Conversation Types ▾

Copy ▾   Follow Stream...   Graph...   Chiudi   Aiuto



# Wireshark – filtro http

http



Wireshark interface showing a packet capture filtered by 'http'. The filter bar at the top displays 'http'. The packet list shows several HTTP requests and responses. The packet details pane shows the structure of an HTTP 200 OK response.

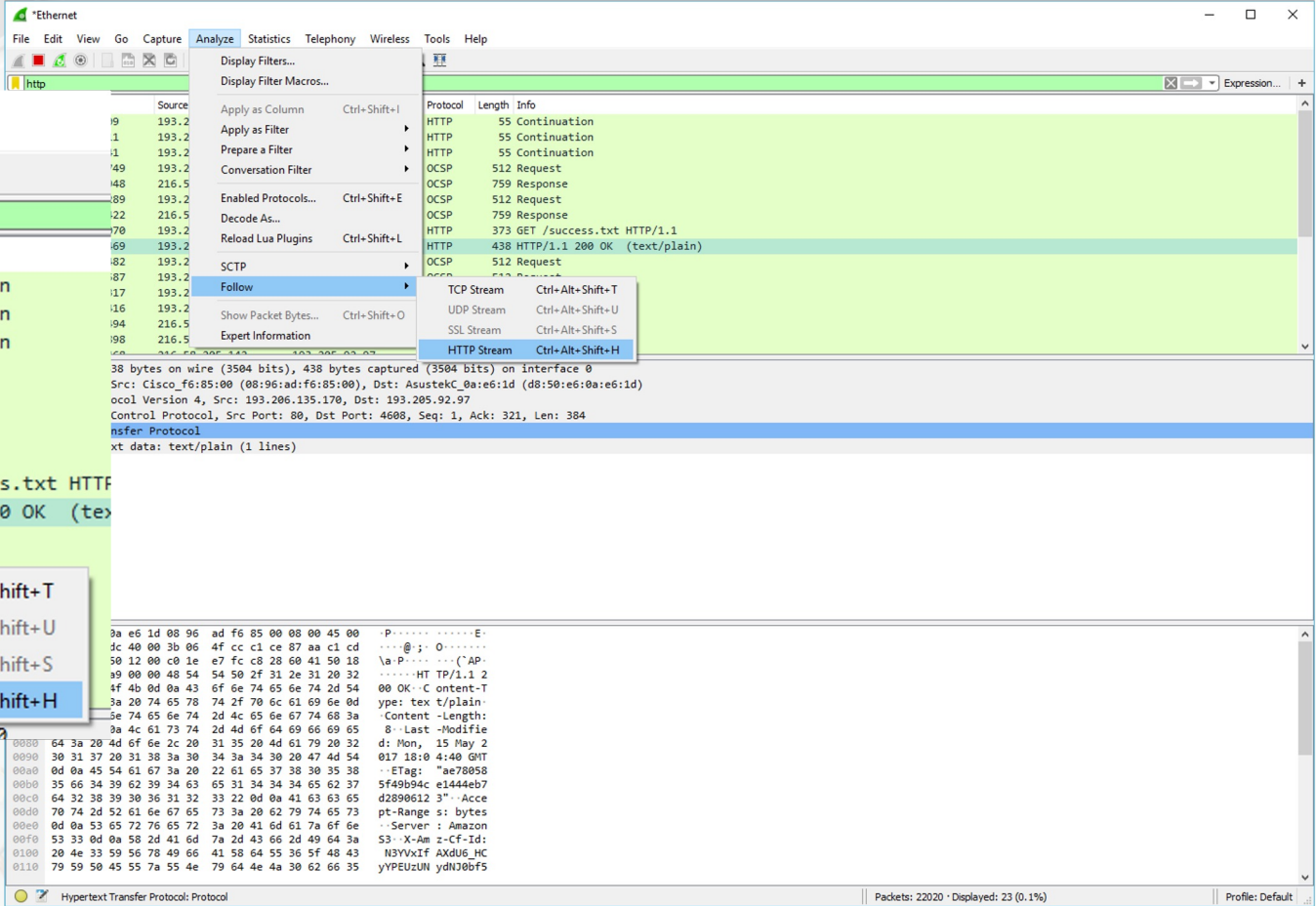
| No.  | Time      | Source          | Destination     | Protocol | Length | Info                         |
|------|-----------|-----------------|-----------------|----------|--------|------------------------------|
| 4    | 0.219409  | 193.205.92.97   | 216.58.205.142  | HTTP     | 55     | Continuation                 |
| 5    | 0.221411  | 193.205.92.97   | 216.58.205.142  | HTTP     | 55     | Continuation                 |
| 21   | 3.867041  | 193.205.92.97   | 193.206.135.170 | HTTP     | 55     | Continuation                 |
| 1149 | 26.913749 | 193.205.92.97   | 216.58.205.142  | OCSP     | 512    | Request                      |
| 1247 | 27.045948 | 216.58.205.142  | 193.205.92.97   | OCSP     | 759    | Response                     |
| 1249 | 27.047289 | 193.205.92.97   | 216.58.205.142  | OCSP     | 512    | Request                      |
| 1260 | 27.179422 | 216.58.205.142  | 193.205.92.97   | OCSP     | 759    | Response                     |
| 3276 | 33.808070 | 193.205.92.97   | 193.206.135.170 | HTTP     | 373    | GET /success.txt HTTP/1.1    |
| 3289 | 33.821469 | 193.206.135.170 | 193.205.92.97   | HTTP     | 438    | HTTP/1.1 200 OK (text/plain) |

Packet details for the selected packet (3289):

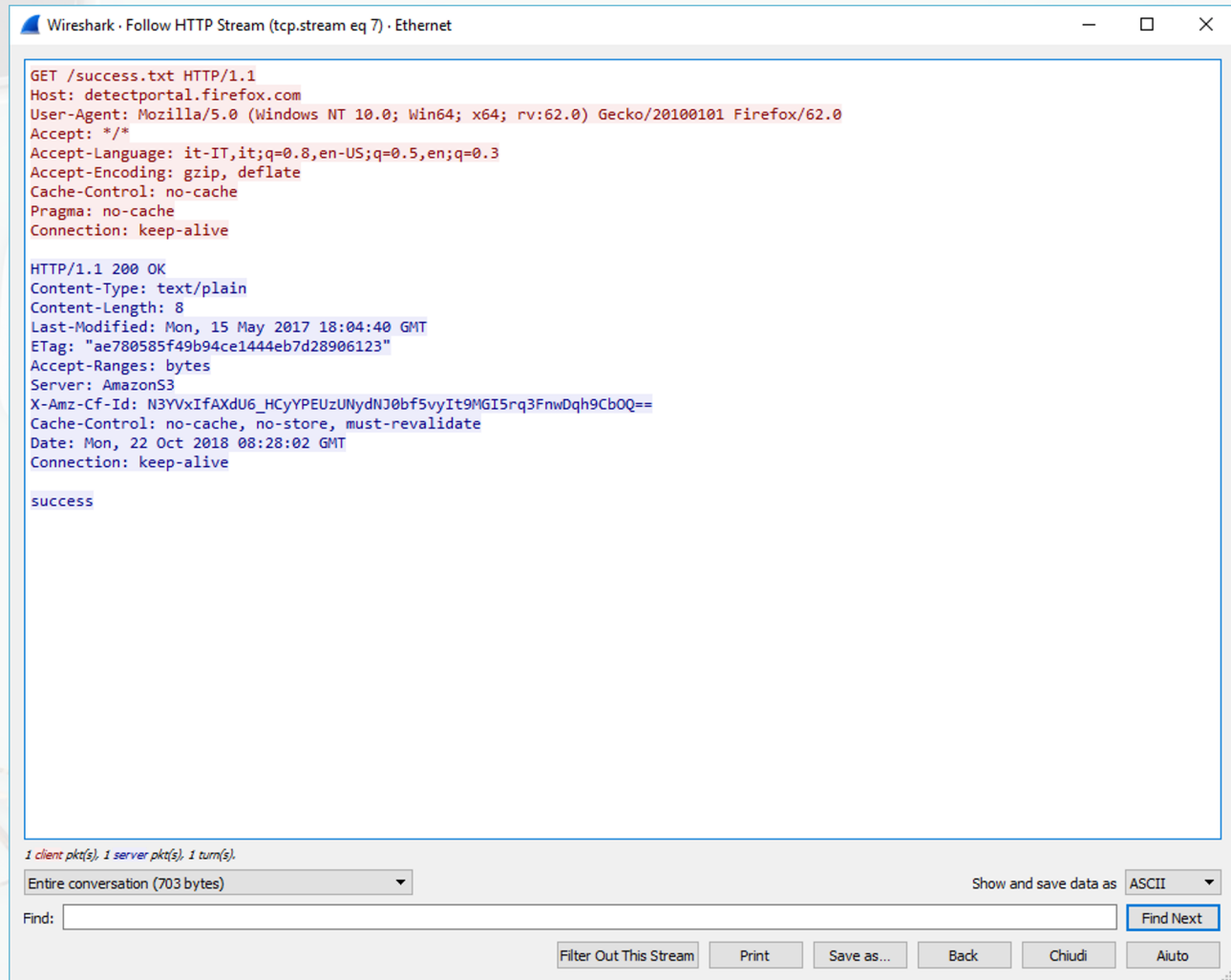
- 3504 bits on interface 0
- Ethernet II, Src: Intel(R) Ethernet Controller (d8:50:e6:0a:e6:1d), Dst: 193.205.92.97
- TCP, Src Port: 80, Dst Port: 80
- HTTP, GET /success.txt HTTP/1.1



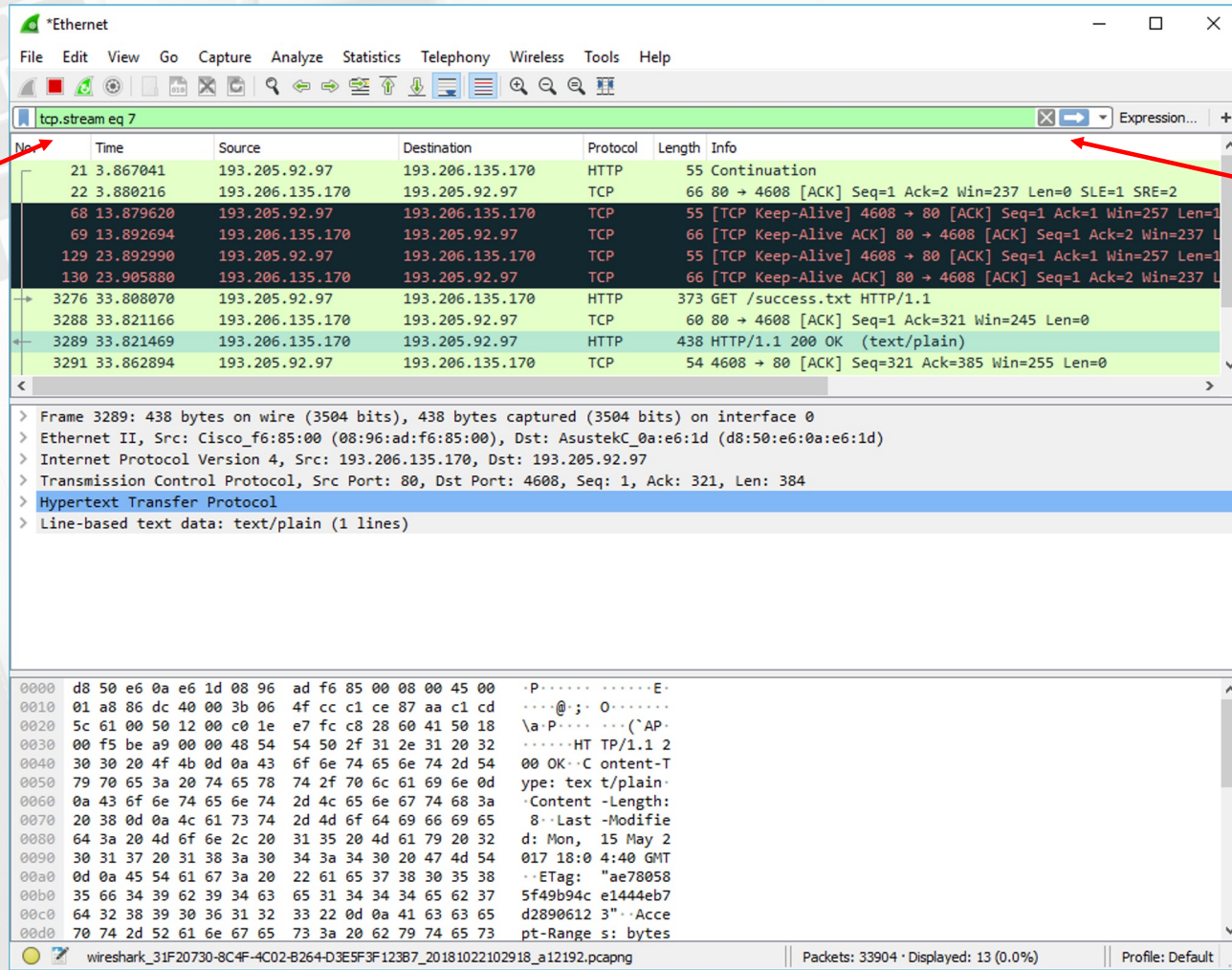
# Wireshark – Analisi



# Wireshark – Follow HTTP Stream



# Wireshark – rimuovere filtri



The screenshot shows the Wireshark interface with a packet capture filter 'tcp.stream eq 7' applied. The packet list shows several HTTP and TCP packets. The packet details pane shows the selected packet (No. 3289) and its structure: Ethernet II, Internet Protocol Version 4, Transmission Control Protocol, and Hypertext Transfer Protocol. The packet bytes pane shows the raw data in hexadecimal and ASCII.

| No.  | Time      | Source          | Destination     | Protocol | Length | Info                                                       |
|------|-----------|-----------------|-----------------|----------|--------|------------------------------------------------------------|
| 21   | 3.867041  | 193.205.92.97   | 193.206.135.170 | HTTP     | 55     | Continuation                                               |
| 22   | 3.880216  | 193.206.135.170 | 193.205.92.97   | TCP      | 66     | 80 → 4608 [ACK] Seq=1 Ack=2 Win=237 Len=0 SLE=1 SRE=2      |
| 68   | 13.879620 | 193.205.92.97   | 193.206.135.170 | TCP      | 55     | [TCP Keep-Alive] 4608 → 80 [ACK] Seq=1 Ack=1 Win=257 Len=1 |
| 69   | 13.892694 | 193.206.135.170 | 193.205.92.97   | TCP      | 66     | [TCP Keep-Alive ACK] 80 → 4608 [ACK] Seq=1 Ack=2 Win=237 L |
| 129  | 23.892990 | 193.205.92.97   | 193.206.135.170 | TCP      | 55     | [TCP Keep-Alive] 4608 → 80 [ACK] Seq=1 Ack=1 Win=257 Len=1 |
| 130  | 23.905880 | 193.206.135.170 | 193.205.92.97   | TCP      | 66     | [TCP Keep-Alive ACK] 80 → 4608 [ACK] Seq=1 Ack=2 Win=237 L |
| 3276 | 33.808070 | 193.205.92.97   | 193.206.135.170 | HTTP     | 373    | GET /success.txt HTTP/1.1                                  |
| 3288 | 33.821166 | 193.206.135.170 | 193.205.92.97   | TCP      | 60     | 80 → 4608 [ACK] Seq=1 Ack=321 Win=245 Len=0                |
| 3289 | 33.821469 | 193.206.135.170 | 193.205.92.97   | HTTP     | 438    | HTTP/1.1 200 OK (text/plain)                               |
| 3291 | 33.862894 | 193.205.92.97   | 193.206.135.170 | TCP      | 54     | 4608 → 80 [ACK] Seq=321 Ack=385 Win=255 Len=0              |

Frame 3289: 438 bytes on wire (3504 bits), 438 bytes captured (3504 bits) on interface 0  
> Ethernet II, Src: Cisco\_f6:85:00 (08:96:ad:f6:85:00), Dst: AsustekC\_0a:e6:1d (d8:50:e6:0a:e6:1d)  
> Internet Protocol Version 4, Src: 193.206.135.170, Dst: 193.205.92.97  
> Transmission Control Protocol, Src Port: 80, Dst Port: 4608, Seq: 1, Ack: 321, Len: 384  
> Hypertext Transfer Protocol  
> Line-based text data: text/plain (1 lines)

0000 d8 50 e6 0a e6 1d 08 96 ad f6 85 00 08 00 45 00 .P.....E.  
0010 01 a8 86 dc 40 00 3b 06 4f cc c1 ce 87 aa c1 cd ....@; O.....  
0020 5c 61 00 50 12 00 c0 1e e7 fc c8 28 60 41 50 18 \aP....(`AP.  
0030 00 f5 be a9 00 00 48 54 54 50 2f 31 2e 31 20 32 .....HT TP/1.1 2  
0040 30 30 20 4f 4b 0d 0a 43 6f 6e 74 65 6e 74 2d 54 00 OK..Content-T  
0050 79 70 65 3a 20 74 65 78 74 2f 70 6c 61 69 6e 0d ype: tex t/plain.  
0060 0a 43 6f 6e 74 65 6e 74 2d 4c 65 6e 67 74 68 3a .Content -Length:  
0070 20 38 0d 0a 4c 61 73 74 2d 4d 6f 64 69 66 69 65 8..Last -Modifie  
0080 64 3a 20 4d 6f 6e 2c 20 31 35 20 4d 61 79 20 32 d: Mon, 15 May 2  
0090 30 31 37 20 31 38 3a 30 34 3a 34 30 20 47 4d 54 017 18:0 4:40 GMT  
00a0 0d 0a 45 54 61 67 3a 20 22 61 65 37 38 30 35 38 ..ETag: "ae78058  
00b0 35 66 34 39 62 39 34 63 65 31 34 34 65 62 37 5f49b94c e1444eb7  
00c0 64 32 38 39 30 36 31 32 33 22 0d 0a 41 63 63 65 d2890612 3"..Acce  
00d0 70 74 2d 52 61 6e 67 65 73 3a 20 62 79 74 65 73 pt-Range s: bytes

wireshark\_31F20730-8C4F-4C02-B264-D3E5F3F123B7\_20181022102918\_a12192.pcapng | Packets: 33904 · Displayed: 13 (0.0%) | Profile: Default



# Wireshark – esercitazione individuale



telnet 90.147.42.31 80

- digitare e commentare:
  - abcdef
  - GET /index.html HTTP/1.0
  - HEAD
  - HEAD /index.html HTTP/1.0
  - POST
  - GET /index.html HTTP/1.1

The image shows the Wireshark network protocol analyzer interface. The top menu bar includes File, Edit, View, Go, Capture, Analyze, Statistics, Telephony, Wireless, Tools, and Help. The toolbar contains various icons for file operations, capture control, and analysis. The packet list pane shows two captured packets:

| No. | Time     | Source        | Destination   | Protocol | Length | Info                           |
|-----|----------|---------------|---------------|----------|--------|--------------------------------|
| 51  | 7.248349 | 193.205.92.97 | 172.16.0.8    | HTTP     | 56     | GET /index.html HTTP/1.0       |
| 53  | 7.279989 | 172.16.0.8    | 193.205.92.97 | HTTP     | 615    | HTTP/1.1 302 Found (text/html) |

The packet details pane for the selected packet (No. 51) shows the following structure:

- Frame 51: 56 bytes on wire (448 bits), 56 bytes captured (448 bits) on interface 0
- Ethernet II, Src: AsustekC\_0a:e6:1d (d8:50:e6:0a:e6:1d), Dst: Cisco\_f6:85:00 (08:96:ad:f6:85:00)
- Internet Protocol Version 4, Src: 193.205.92.97, Dst: 172.16.0.8
- Transmission Control Protocol, Src Port: 7000, Dst Port: 80, Seq: 27, Ack: 1, Len: 2
- [4 Reassembled TCP Segments (28 bytes): #39(1), #41(23), #46(2), #51(2)]
- Hypertext Transfer Protocol
  - GET /index.html HTTP/1.0\r\n
  - \r\n
  - [HTTP request 1/1]
  - [Response in frame: 53]

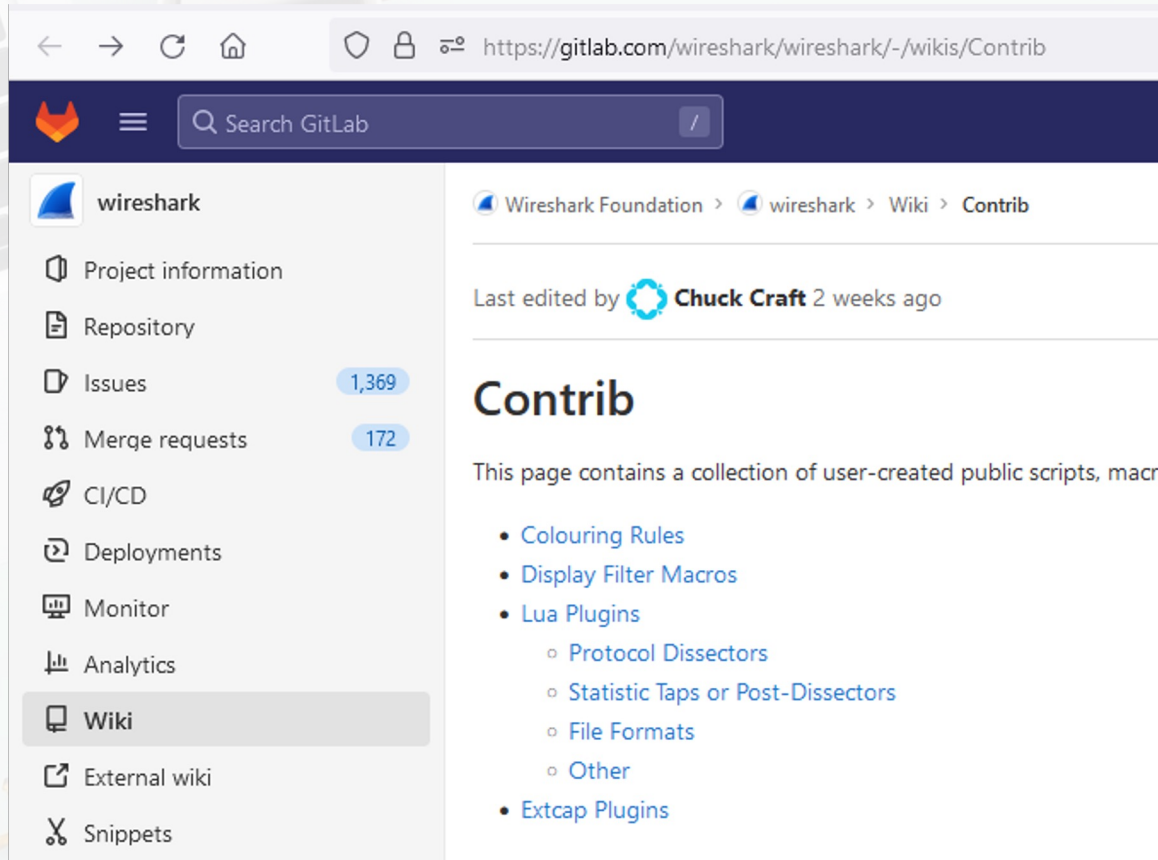
The packet bytes pane shows the raw data in hexadecimal and ASCII:

```
0000 47 45 54 20 2f 69 6e 64 65 78 2e 68 74 6d 6c 20  GET /index.html
0010 48 54 54 50 2f 31 2e 30 0d 0a 0d 0a          HTTP/1.0 ..
```

The status bar at the bottom indicates: Frame (56 bytes) | Reassembled TCP (28 bytes) | Text item (text), 2 bytes | Packets: 70 · Displayed: 2 (2.9%) · Dropped: 0 (0.0%) | Profile: Default



# Wireshark contrib



The screenshot shows the GitLab web interface for the Wireshark project's 'Contrib' wiki page. The browser address bar displays the URL <https://gitlab.com/wireshark/wireshark/-/wikis/Contrib>. The left sidebar contains a navigation menu for the 'wireshark' project, with 'Wiki' highlighted. The main content area shows the 'Contrib' page, last edited by Chuck Craft 2 weeks ago. The page title is 'Contrib', and the description states: 'This page contains a collection of user-created public scripts, macros, and plugins.' A list of links is provided:

- [Colouring Rules](#)
- [Display Filter Macros](#)
- [Lua Plugins](#)
  - [Protocol Dissectors](#)
  - [Statistic Taps or Post-Dissectors](#)
  - [File Formats](#)
  - [Other](#)
- [Extcap Plugins](#)

<https://gitlab.com/wireshark/wireshark/-/wikis/Contrib>

FINE

The Wireshark logo consists of a stylized shark fin above a horizontal line.  
**WIRESHARK**



# Virtual Machine



## Che cos'è una macchina virtuale?

Una macchina virtuale è **un file di computer**, chiamato in genere immagine, che si comporta come un vero computer. In altre parole, si tratta di **creare un computer all'interno di un computer**. Viene eseguito in una finestra, come qualsiasi altra applicazione, e offre all'utente finale la stessa esperienza fornita dal sistema operativo host stesso. La macchina virtuale è isolata dal resto del sistema in modo che il software al suo interno non possa fuoriuscire o interagire con il computer stesso. Si tratta quindi di un ambiente ideale per testare altri sistemi operativi e versioni beta, accedere a dati infettati da virus, creare backup di sistemi operativi ed eseguire software o applicazioni in sistemi operativi diversi da quelli originariamente supportati. È possibile **eseguire contemporaneamente più macchine virtuali nello stesso computer fisico**. Per i server, i vari sistemi operativi vengono eseguiti in modalità affiancata grazie a un software, chiamato **hypervisor**, che li gestisce, mentre in genere per i computer desktop viene usato un solo sistema operativo che esegue gli altri sistemi all'interno delle finestre del programma. Ogni macchina virtuale ha il suo **hardware virtuale**, che include CPU, memoria, unità disco rigido, interfacce di rete e altri dispositivi. L'hardware virtuale viene quindi mappato all'hardware reale nel computer fisico per ridurre i costi relativi ai sistemi hardware fisici necessari e i costi di gestione associati, oltre a ridurre la domanda di alimentazione e raffreddamento.

<https://azure.microsoft.com/it-it/overview/what-is-a-virtual-machine/>



# The Top Open-Source Hypervisor Technologies



<https://slashdot.org/software/hypervisors/>

<https://wire19.com/comparison-top-server-virtualization-software/>

<https://opensourceforu.com/2016/03/the-top-open-source-hypervisor-technologies/>

<https://www.how2shout.com/tools/8-free-best-open-source-bare-metal-hypervisors-foss.html>

# List of Best Open Source Hypervisors

## 1. Xen:

Xen is among the most popular open-source hypervisors in the present era, and it also comes with a commercial version of Citrix and Oracle VM. Moreover, since XEN gets cloud support, it is widely prevalent among all business enterprises.

## 2. Linux KVM:

If you are looking for hypervisors for Linux, kernel-based Linux is among the best. It has a kernel module KVM.ko which is a loadable kernel, and it can quickly turn the Linux kernel into a hypervisor. The Linux KVM belongs to the type 2 hypervisors because of the involvement of the kernel.

## 3. Microsoft Hyper V:

Microsoft Hyper V is a free hypervisor you can download easily from the net and use. It is an open-source application. The primary aim of the Microsoft Hyper V was to compete with the other open-source hypervisors. It is one of the best free hypervisors as it is a standalone software and includes all the features of Windows Server 2012.

## 4. VMware Free ESXi:

VMware ESXi is free software that you can download easily from the net. The benefit of using open-source software is that you can customize it according to your requirement. Hence, it is pretty popular among users.

## 5. Guest:

Guest is a lightweight hypervisor that is built into the Linux kernel. The software is apt to develop and test the kernel boot. Moreover, the functioning of the software is also interesting and exciting. During initialization, the Guest allocates memory and maps it to the kernel's address space, and it loads a small hypervisor in this allocated memory.

## 6. Oracle VirtualBox:

The Oracle VirtualBox is a type 2 hypervisor that you can run on any operating system, such as Solaris, Linux, Mac, and Windows. It is also compatible with both x86 and x64 operating systems. One of the benefits of using the Oracle VirtualBox is that it is pretty portable. It also allows virtual machines to be imported or exported using the Open Virtualization Format (OVF). It is one of the prominent features of this product.

## 7. Xvisor:

The Xvisor provides virtualization to various types of architectures. You can quickly transfer its code to most 32 and 64-bit architectures until they have PMMU.

## 8. VMware Workstation Player:

The VMware Workstation Player is a type 2 open-source hypervisor. It is one of the ideal software that can find a place in any enterprise, and it is because the software is simple and easy to use. The VMware Workstation Player is ideal for running and evaluating operating systems and applications on a virtual machine with either Linux or Windows.

## 9. OpenVZ:

OpenVZ is open-source container-based virtualization specially created for Linux. It also can create as many virtual machines as possible in a Linux container. Hence, it becomes easy for the admin to use each container as an individual server, and you can reboot without any hassles on the same physical server.

## 10. SmartOS:

The SmartOS is based on Linux's Kernel-based Virtual Machine Virtualization technology. You can easily download the VM hypervisor free from the net. One of the significant advantages of using the SmartOs is that anyone can use them according to their convenience.

# Top 10 Virtualization SoftwareVirtualization Systems

## Comparison Table

<https://www.softwaretestinghelp.com/virtualization-software/>

#1) SolarWinds Virtualization Manager

#2) Parallels Desktop

#3) V2 Cloud

#4) VMware Fusion

#5) Oracle VM Virtual Box

#6) VMware Workstation

#7) QEMU

#8) Windows Virtual PC

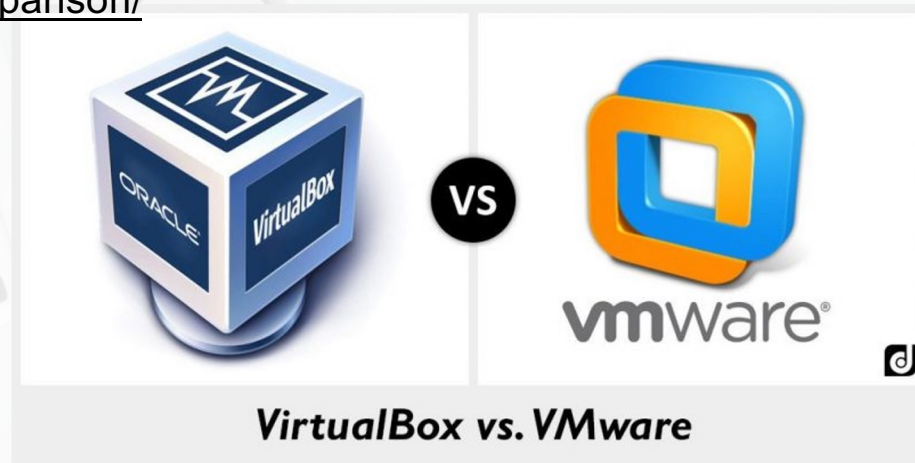
#9) Microsoft Hyper-V

#10) RedHat Virtualization

#11) Veertu for Mac

#12) Boot Camp

<https://www.youlicense.com/virtualbox-vs-vmware-comparison/>



# VirtualBox

## Download VirtualBox

Here you will find links to VirtualBox binaries and its source code.

### VirtualBox binaries

By downloading, you agree to the terms and conditions of the license.

If you're looking for the latest VirtualBox 5.1 packages, see [VirtualBox 5.1 packages](#).

### VirtualBox 5.2.18 platform packages

- Windows hosts
- OS X hosts
- Linux distributions
- Solaris hosts

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Home > All Downloads > VMware Workstation Player

## Download VMware Workstation Player

Major Version: 14.0 Minor Version: 14.1.3 (latest)

Product Downloads Drivers & Tools Open Source

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(exe | 112.75 MB)

[Show Details](#)

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**VMware Workstation 14.1.3 Player for Linux 64-bit.** [Download](#)

(bundle | 111.03 MB)

[Show Details](#)



<https://www.oracle.com/it/virtualization/virtualbox/>

Crea macchina virtuale

Virtual machine Name and Operating System

Crea macchina virtuale

Crea macchina virtuale

Crea macchina virtuale



### Summary

The following table summarizes the configuration you have chosen for the new virtual machine. When you are happy with the configuration press Finish to create the virtual machine. Alternatively you can go back and modify the configuration.

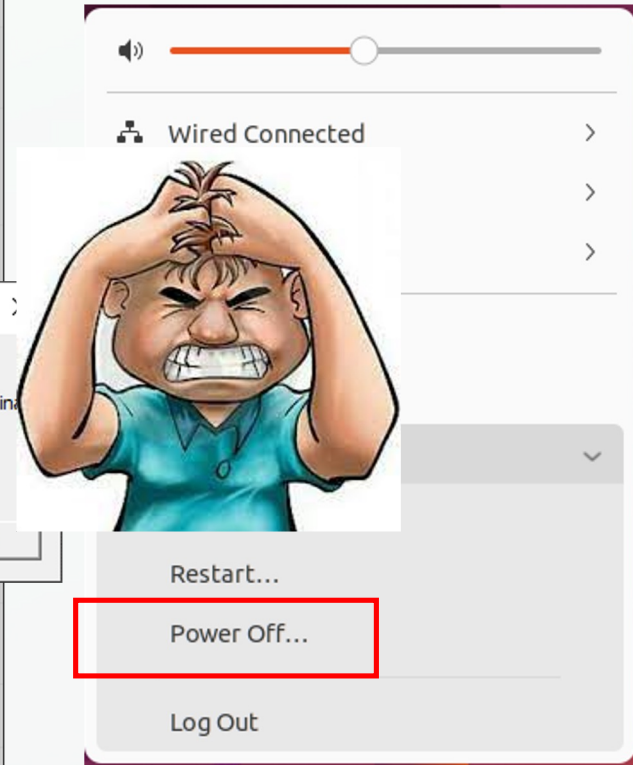
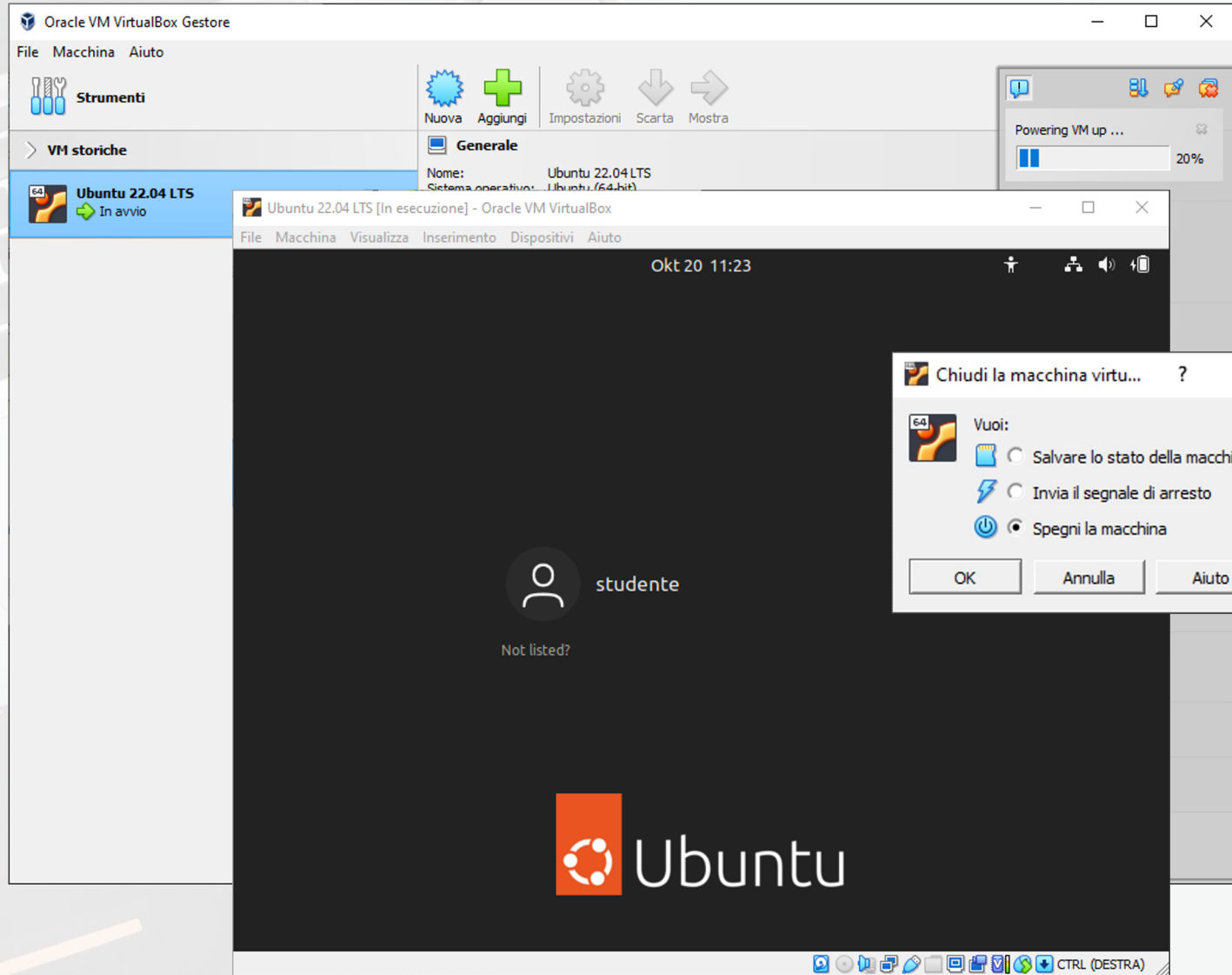
|                                 |                                                                 |
|---------------------------------|-----------------------------------------------------------------|
| <b>Machine Name and OS Type</b> |                                                                 |
| Machine Name                    | Ubuntu 22.04 LTS                                                |
| Machine Folder                  | C:/Users/fausto.mfausto/VirtualBox VMs/Ubuntu 22.04 LTS         |
| ISO Image                       | C:/Users/fausto.mfausto/Downloads/ubuntu-22.04.1-desktop-amd... |
| Sistema operativo guest         | Ubuntu (64-bit)                                                 |
| Skip Unattended Install         | false                                                           |
| <b>Unattended Install</b>       |                                                                 |
| Username                        | studente                                                        |
| Product Key                     | true                                                            |
| Hostname/Domain Name            | vm-ubuntu.unicam.it                                             |
| Install in Background           | false                                                           |
| Install Guest Additions         | true                                                            |
| Guest Additions ISO             | C:\Program Files\Oracle\VirtualBox\VBxGuestAdditions.iso        |
| <b>Hardware</b>                 |                                                                 |
| Memoria di base                 | 2048                                                            |
| Processori                      | 4                                                               |
| EFI Enable                      | false                                                           |
| <b>Disk</b>                     |                                                                 |
| Disk Size                       | 25,00 GB                                                        |
| Pre-allocate Full Size          | false                                                           |

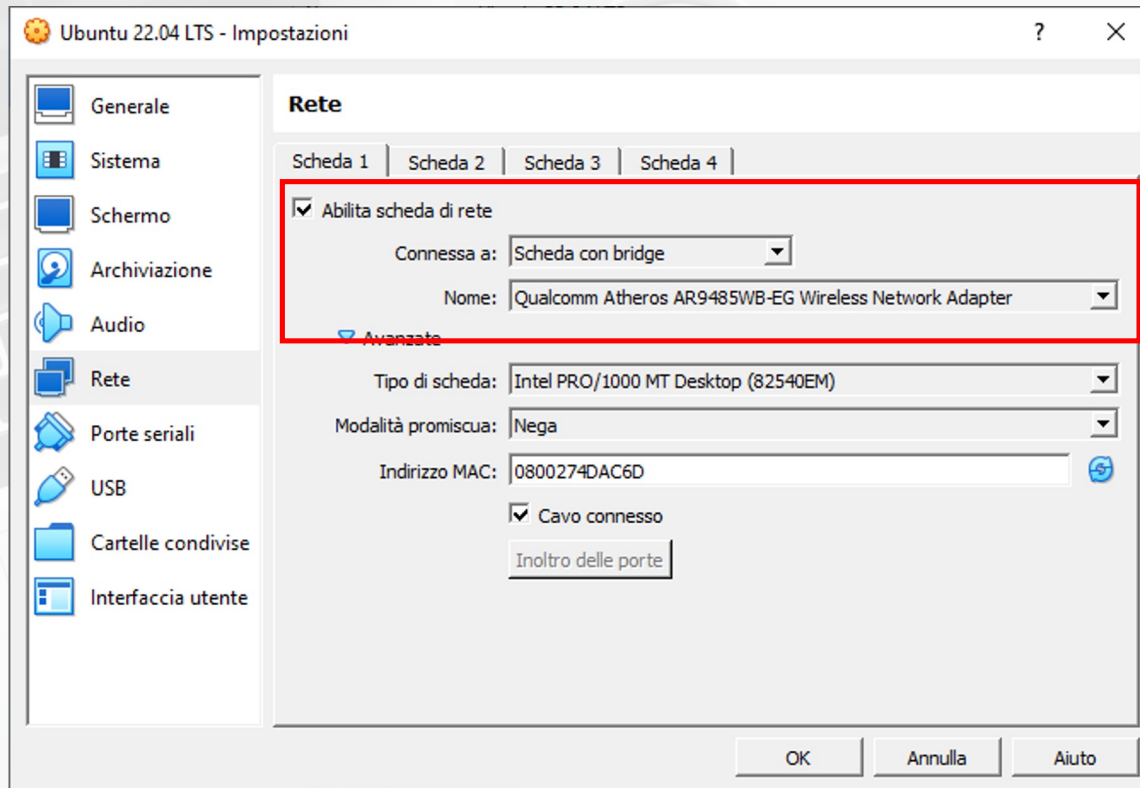
Aiuto

Indietro

Fine

Annulla





F2

## Oracle VM VirtualBox Extension Pack

Free for personal, educational or evaluation use under the terms of the [VirtualBox Personal Use and Evaluation License](#) on Windows, |

| Platform                                                                                 | File                                                                                                               |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|
| For use with Version 7.0.10 only<br>All Platforms (Windows, Mac OS X, Solaris and Linux) |  <a href="#">7.0.10 ExtPack</a> |

Depending on your browser, you may need to right click and "Save As..." this file.

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# Installing VMware Tools

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Selected product version:

VMware Workstation Player for Windows 17.0

Installing VMware Tools is part of the process of creating a new virtual machine, and keeping your virtual machine up to current standards. Although your guest operating system

34

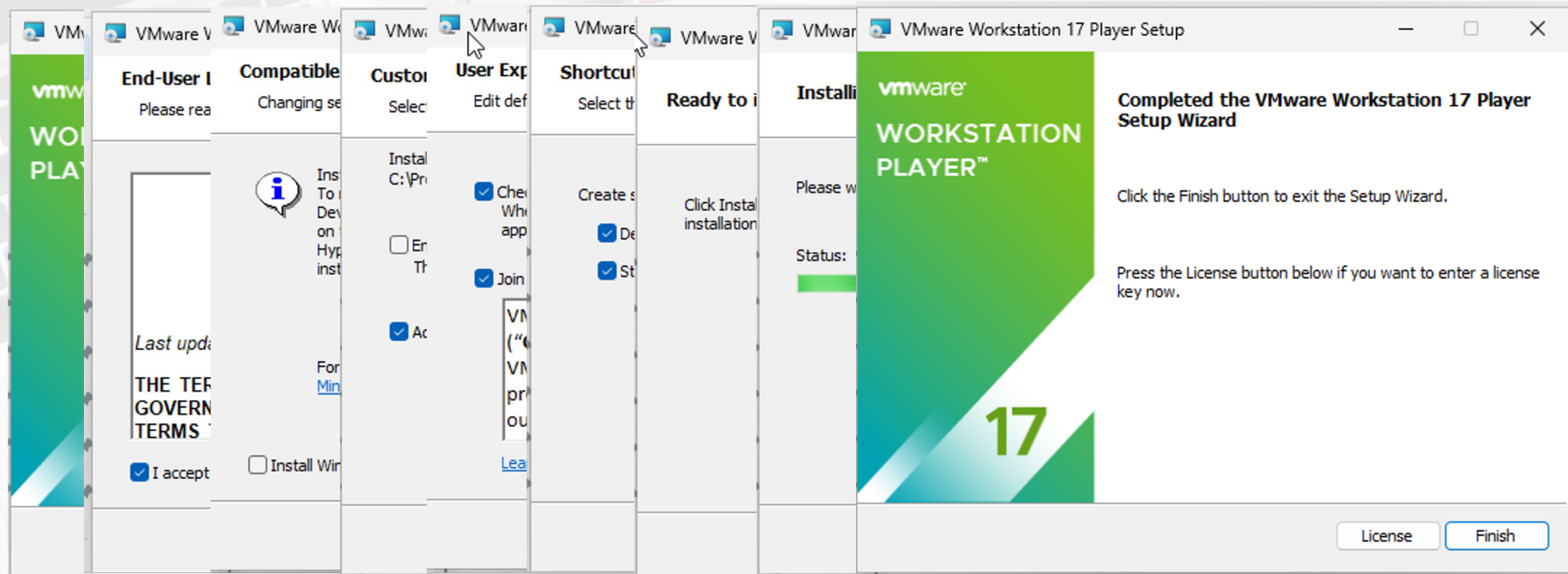


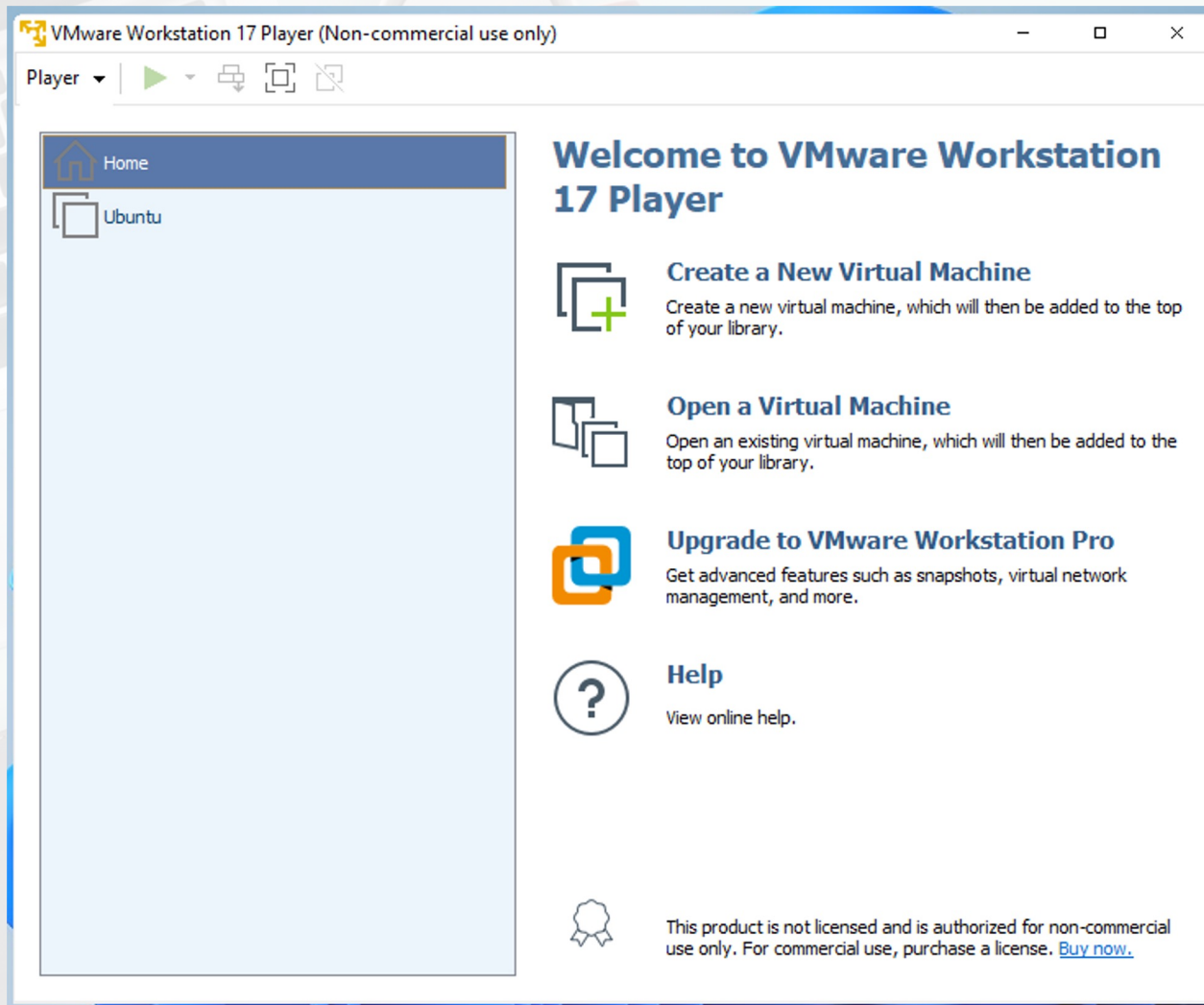
The logo for VMware Workstation Player 17. It features the text 'VMWARE' in a small, grey, sans-serif font, followed by 'WORKSTATION' in a larger, bold, grey, sans-serif font, and 'PLAYER™' in a green, sans-serif font. To the right of this text is a large, stylized number '17' in a green-to-blue gradient. The background of the logo is a light blue and green geometric design.

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<https://support.broadcom.com/group/ecx/productdownloads?subfamily=VMware+Workstation+Pro>





# Debian

## IL SISTEMA OPERATIVO

Debian è un sistema operativo completamente Libero!



Scarica

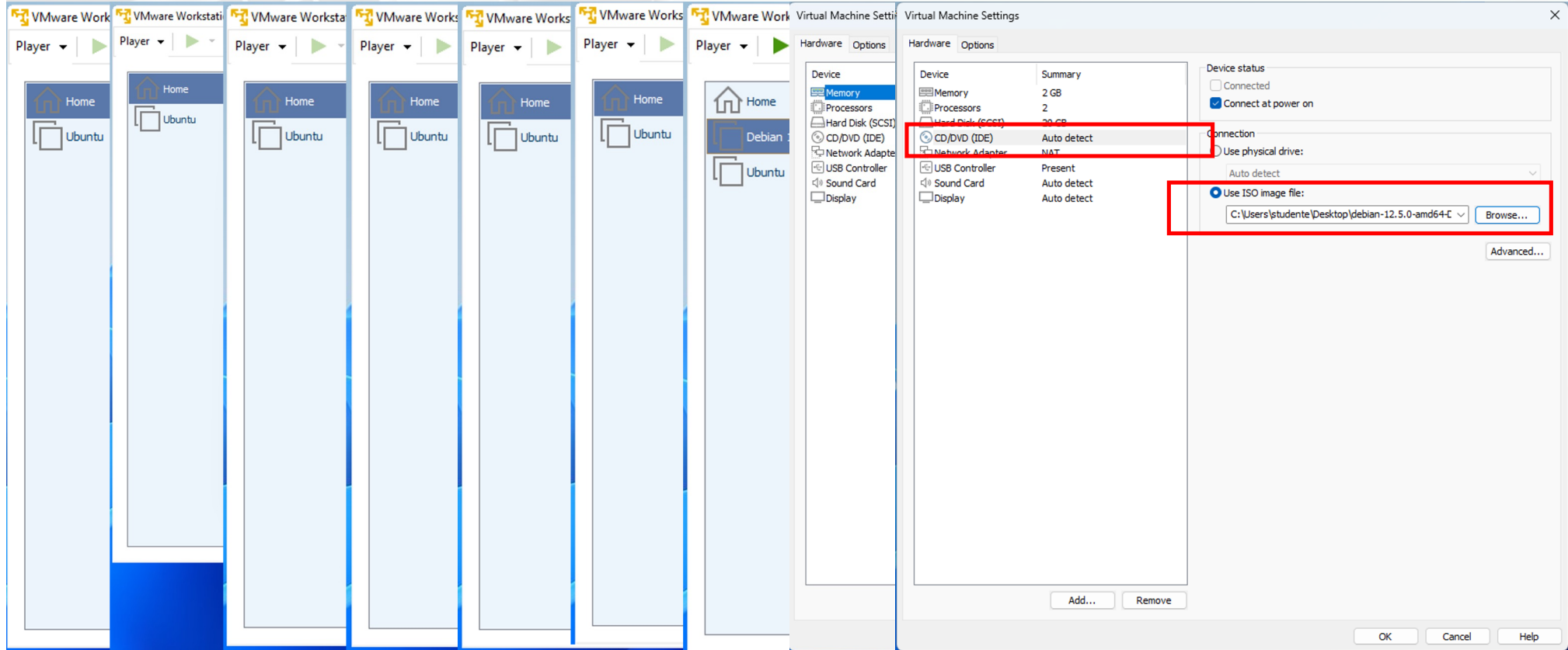
[Altri download](#)

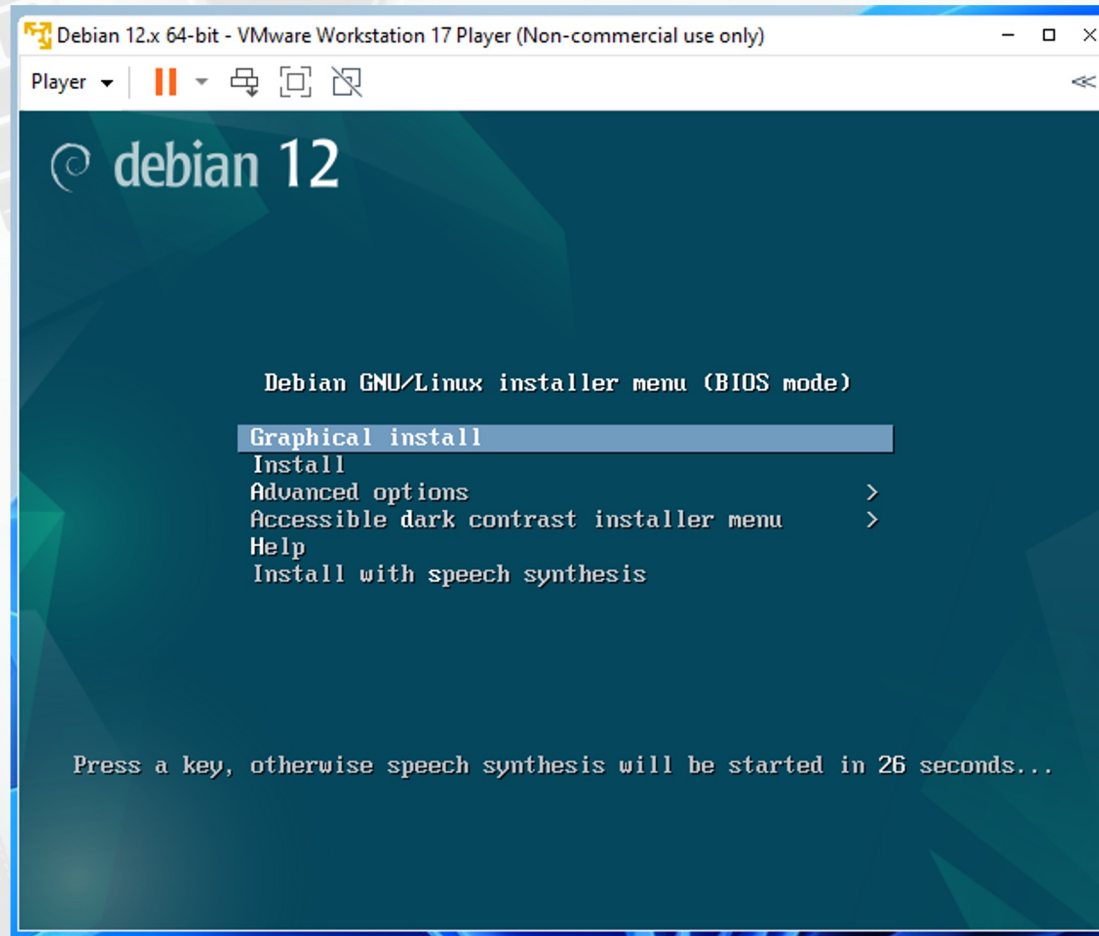
| File Name ↓                                   | File Size ↓ |
|-----------------------------------------------|-------------|
| Parent directory/                             | -           |
| <a href="#">HEADER.html</a>                   | 3.9 KiB     |
| <a href="#">SHA256SUMS</a>                    | 2.0 KiB     |
| <a href="#">SHA256SUMS.sign</a>               | 833 B       |
| <a href="#">SHA512SUMS</a>                    | 3.3 KiB     |
| <a href="#">SHA512SUMS.sign</a>               | 833 B       |
| <a href="#">debian-12.5.0-amd64-DVD-1.iso</a> | 3.7 GiB     |

<https://www.debian.org/distrib/index.en.html>

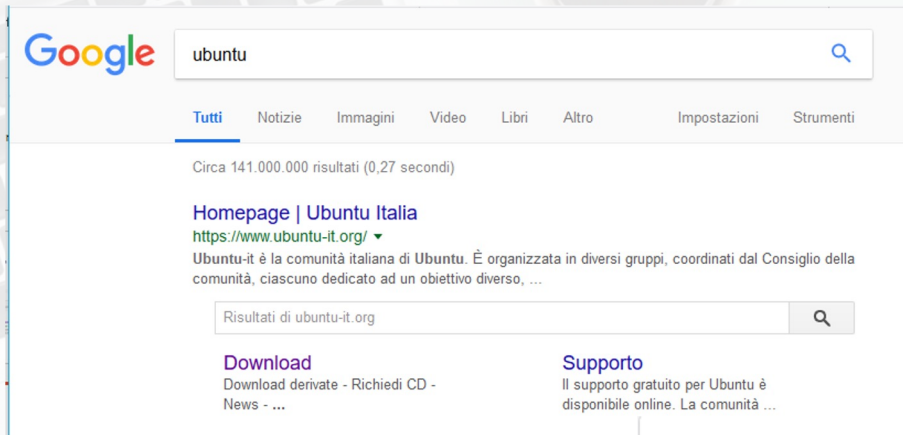
<http://giano.com.dist.unige.it/debian-cd/12.5.0/amd64/iso-dvd/>







## Scaricare l'ultima versione della iso di Ubuntu



## Scarica Ubuntu

Fai clic sul pulsante arancione per scaricare l'ultima versione di Ubuntu.  
 Dovrai creare un **DVD** o una **pennetta USB** per installarlo.

Se hai dei dubbi in merito alla scelta fra 32bit e 64bit consulta [questa pagina](#).

Le versioni non LTS sono supportate per nove mesi e garantiscono tutte le novità più recenti.  
 Le versioni LTS (long-term support) offrono invece aggiornamenti per cinque anni: l'ideale per chi ha bisogno di maggiore stabilità.

### Configura il tuo download!

Ubuntu 18.04.1 LTS ▼

64bit ▼

Desktop ▼

☐ Download tramite **torrent**

**Avvia il download**

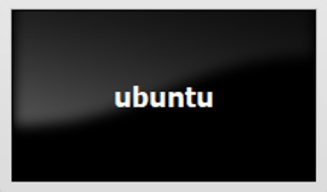
Scarica la versione selezionata.

## Caratteristiche VM

| Hardware Options                                                                                   |                                   |
|----------------------------------------------------------------------------------------------------|-----------------------------------|
| Device                                                                                             | Summary                           |
|  Memory           | 2 GB                              |
|  Processors       | 2                                 |
|  Hard Disk (SCSI) | 20 GB                             |
|  CD/DVD (SATA)    | Using file D:\ISO\ubuntu-18.04... |
|  Network Adapter  | Bridged (Automatic)               |
|  USB Controller   | Present                           |
|  Sound Card      | Auto detect                       |
|  Printer        | Present                           |
|  Display        | Auto detect                       |

**Generale**

Nome: ubuntu  
Sistema operativo: Ubuntu (64-bit)

**Anteprima**


**Sistema**

Memoria di base: 2048 MB  
Ordine di avvio: Floppy, Ottico, Disco fisso  
Accelerazione: VT-x/AMD-V, Paginazione nidificata, Paravirtualizzazione KVM

**Schermo**

Memoria video: 16 MB  
Server di desktop remoto: Disabilitato  
Acquisizione video: Disabilitata

**Archiviazione**

Controller: IDE  
IDE master secondario: [Lettori ottici] Vuoto  
Controller: SATA  
Porta SATA 0: ubuntu.vdi (Normale, 20,00 GB)

**Audio**

Driver host: Windows DirectSound  
Controller: ICH AC97

**Rete**

Scheda 1: Intel PRO/1000 MT Desktop (Scheda con bridge, Realtek PCIe GbE Family Controller)

**USB**

Controller USB: OHCI  
Filtri dispositivi: 0 (0 attivo)

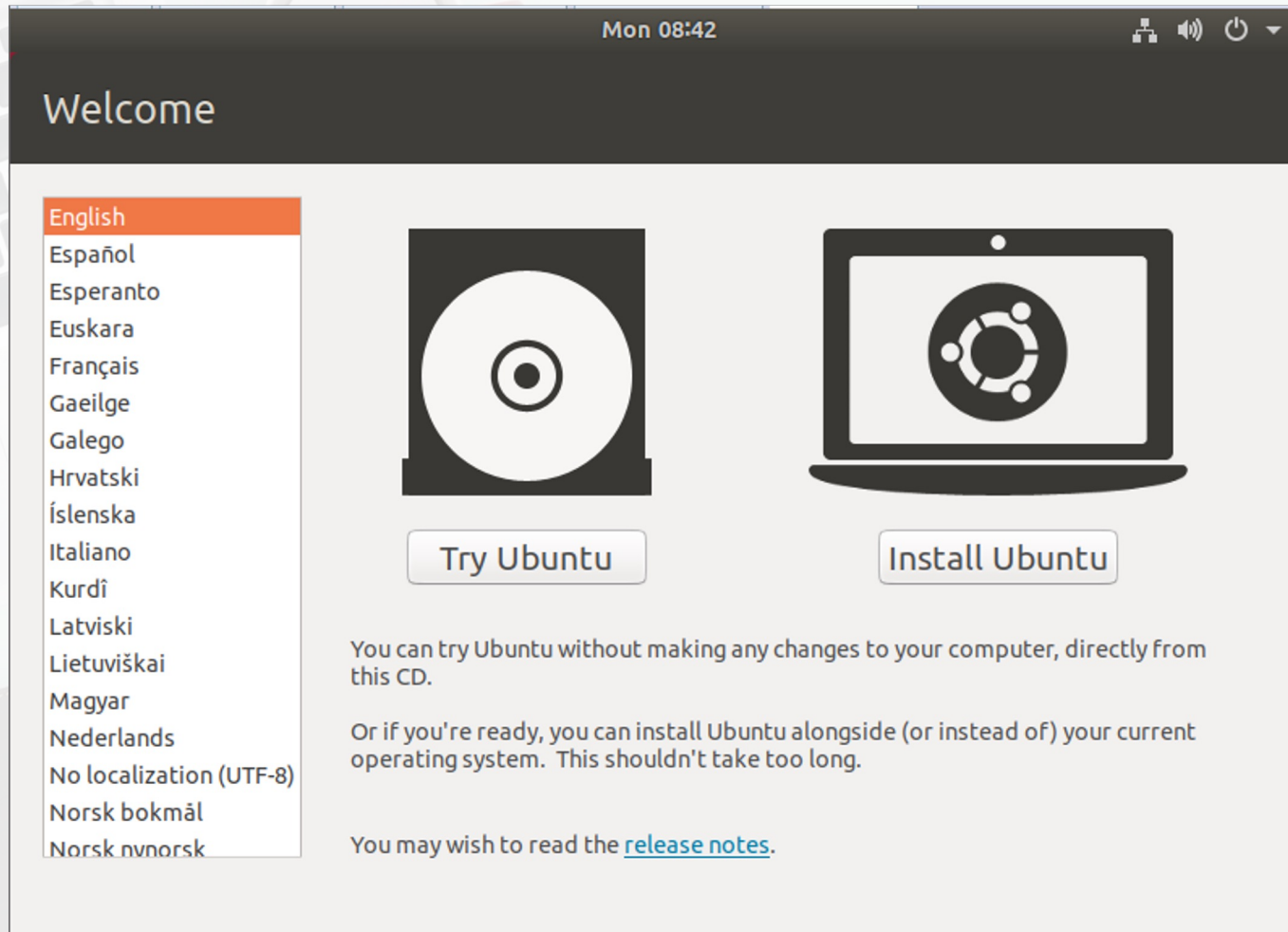
**Cartelle condivise**

Nessuna

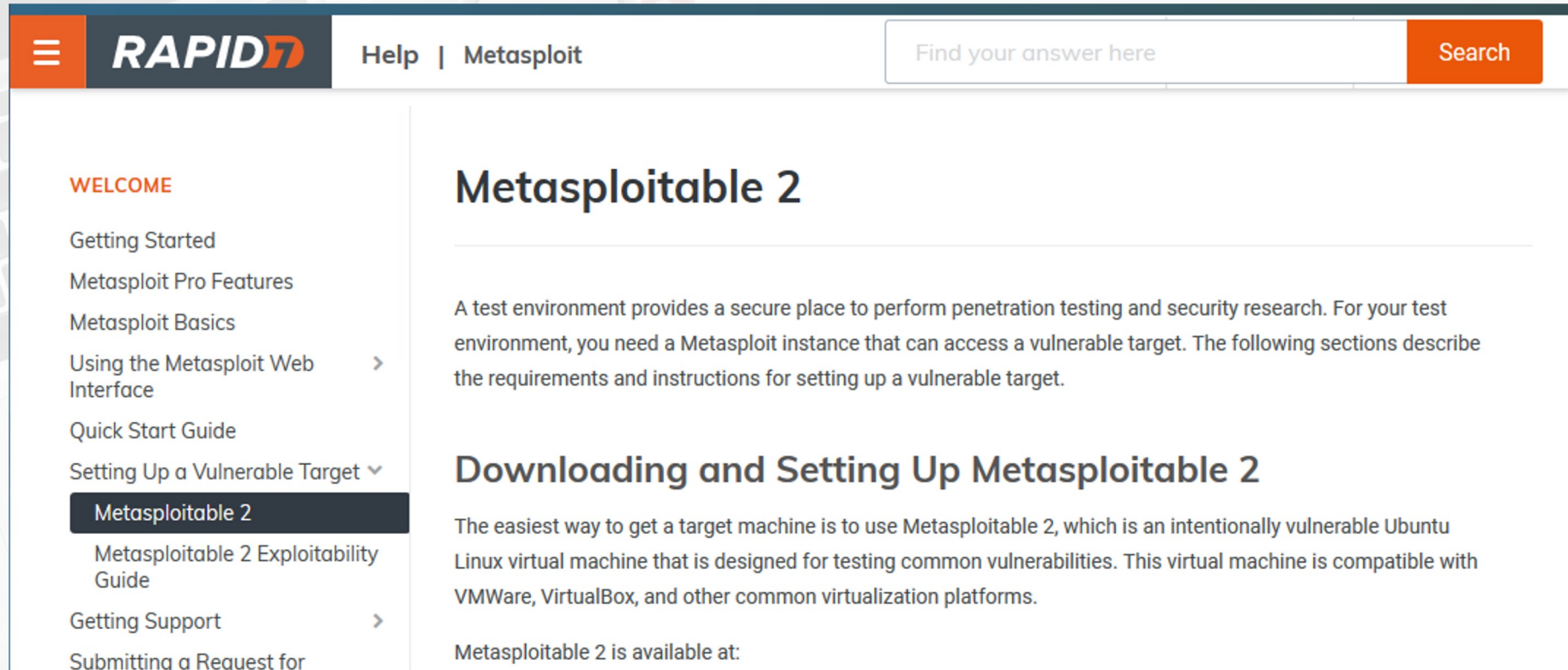
**Descrizione**

Nessuna





# Metasploitable 2



The screenshot shows the Metasploit help page on the rapid7.com website. The page has a dark blue header with the 'RAPID7' logo, a 'Help | Metasploit' link, and a search bar. A left sidebar contains a 'WELCOME' section with a list of links, including 'Metasploitable 2' which is highlighted. The main content area features the title 'Metasploitable 2', a paragraph explaining its purpose as a test environment, and a section titled 'Downloading and Setting Up Metasploitable 2' which describes it as a vulnerable Ubuntu Linux VM.

**WELCOME**

- Getting Started
- Metasploit Pro Features
- Metasploit Basics
- Using the Metasploit Web Interface >
- Quick Start Guide
- Setting Up a Vulnerable Target ▾
  - Metasploitable 2**
  - Metasploitable 2 Exploitability Guide
- Getting Support >
- Submitting a Request for

## Metasploitable 2

A test environment provides a secure place to perform penetration testing and security research. For your test environment, you need a Metasploit instance that can access a vulnerable target. The following sections describe the requirements and instructions for setting up a vulnerable target.

### Downloading and Setting Up Metasploitable 2

The easiest way to get a target machine is to use Metasploitable 2, which is an intentionally vulnerable Ubuntu Linux virtual machine that is designed for testing common vulnerabilities. This virtual machine is compatible with VMWare, VirtualBox, and other common virtualization platforms.

Metasploitable 2 is available at:

<https://metasploit.help.rapid7.com/docs/metasploitable-2>

# Metasploitable2

<https://docs.rapid7.com/metasploit/metasploitable-2/#metasploitable-2>

The Metasploitable virtual machine is an intentionally vulnerable version of Ubuntu Linux designed for testing security tools and demonstrating common vulnerabilities.

Metasploitable 2 is available at:

- <https://information.rapid7.com/metasploitable-download.html>
- <https://sourceforge.net/projects/metasploitable/>

# Metasploitable 2 - VMWARE

## Metasploitable2-Linux

▶ Power on this virtual machine

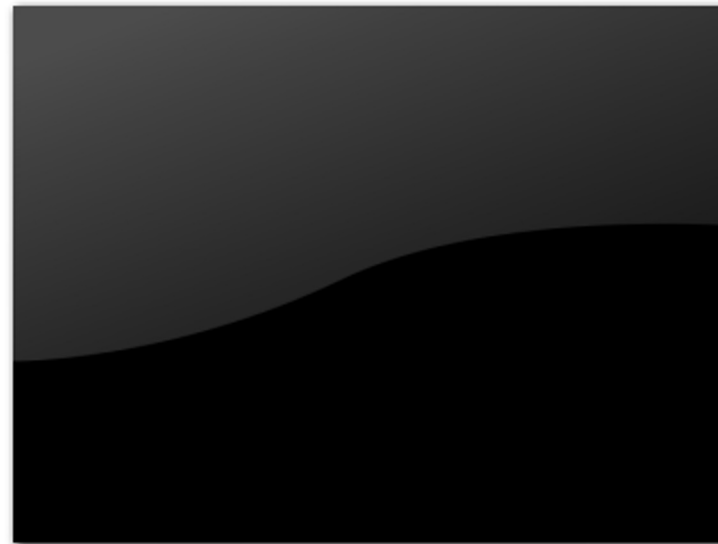
✎ Edit virtual machine settings

### ▼ Devices

|                   |                   |
|-------------------|-------------------|
| Memory            | 512 MB            |
| Processors        | 1                 |
| Hard Disk (SCSI)  | 8 GB              |
| CD/DVD (IDE)      | Auto detect       |
| Network Adapter   | Bridged (Autom... |
| Network Adapter 2 | Host-only         |
| USB Controller    | Present           |
| Display           | Auto detect       |

### ▼ Description

This is Metasploitable2 (Linux) Metasploitable is an intentionally vulnerable Linux virtual machine. This VM can be used to conduct security training, test security tools, and practice common penetration testing techniques. The default login and password is msfadmin:msfadmin. Never expose this VM to an untrusted network (use NAT or Host-only mode if you have any questions what that means). To contact the developers, please send email to msfdev@metasploit.com



### ▼ Virtual Machine Details

**State:** Powered off

**Configuration file:** C:\Users\fausto.mfausto\Desktop\Virtual Machines\Metasploitable2-Linux\Metasploitable.vmx

**Hardware compatibility:** Workstation 15.x virtual machine

**Primary IP address:** Network information is not available



# Metasploitable 2 – VirtualBox

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                     |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|
| <b>Generale</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | <b>Anteprima</b>                                                                    |
| Nome: Metasploitable 2<br>Sistema operativo: Ubuntu (32-bit)<br>Posizione del file delle impostazioni: C:\Users\fausto.mfausto\VirtualBox VMs\Metasploitable 2                                                                                                                                                                                                                                                                                                                                                                                   |  |
| <b>Sistema</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                     |
| Memoria di base: 512 MB<br>Ordine di avvio: Floppy, Ottico, Disco fisso<br>Accelerazione: VT-x/AMD-V, Paginazione nidificata, PAE/NX, Paravirtualizzazione KVM                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                     |
| <b>Schermo</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                     |
| Memoria video: 16 MB<br>Scheda grafica: VBoxVGA<br>Server di desktop remoto: Disabilitato<br>Registrazione: Disabilitata                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |
| <b>Archiviazione</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |
| Controller: IDE<br>Controller: SCSI<br>Porta SCSI 0: Metasploitable2-Linux-disk1.vdi (Normale, 8,00 GB)                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                     |
| <b>Audio</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |                                                                                     |
| Driver host: Windows DirectSound<br>Controller: ICH AC97                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |
| <b>Rete</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                     |
| Scheda 1: PCnet-PCI II (Scheda con bridge, Realtek PCIe GbE Family Controller)<br>Scheda 2: PCnet-PCI II (Scheda solo host, "VirtualBox Host-Only Ethernet Adapter")                                                                                                                                                                                                                                                                                                                                                                             |                                                                                     |
| <b>USB</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                                                                     |
| Controller USB: OHCI<br>Filtri dispositivi: 0 (0 attivo)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                                                                                     |
| <b>Cartelle condivise</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                     |
| Nessuna                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                     |
| <b>Descrizione</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                                                                     |
| <p>This is Metasploitable2 (Linux)<br/>Metasploitable is an intentionally vulnerable Linux virtual machine. This VM can be used to conduct security training, test security tools, and practice common penetration testing techniques.<br/>The default login and password is msfadmin:msfadmin.<br/>Never expose this VM to an untrusted network (use NAT or Host-only mode if you have any questions what that means).<br/>To contact the developers, please send email to <a href="mailto:msfdev@metasploit.com">msfdev@metasploit.com</a></p> |                                                                                     |

## Getting Started

After the virtual machine boots, login to console with username `msfadmin` and password `msfadmin`. From the shell, run the `ifconfig` command to identify the IP address.

```
1 msfadmin@metasploitable:~$ ifconfig
2
3 eth0      Link encap:Ethernet  HWaddr 00:0c:29:9a:52:c1
4           inet addr:192.168.99.131  Bcast:192.168.99.255  Mask:255.255.255.0
5           inet6 addr: fe80::20c:29ff:fe9a:52c1/64 Scope:Link
6           UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
```

# Metasploitable2

```
ifconfig  
sudo loadkeys it  
italiano  
sudo shutdown -h now  
sudo halt
```

per vedere indirizzo IP  
per settare la tastiera in

per spegnere il sistema  
per spegnere il sistema



# Install Apache on Debian

How to Enable and Disable Root User Account in Ubuntu

<https://linuxize.com/post/how-to-enable-and-disable-root-user-account-in-ubuntu/>

```
$ sudo apt update
$ sudo apt upgrade
$ sudo passwd root
Enter new UNIX password:
Retype new UNIX password:
passwd: password updated successfully
```

```
$ ip a (per conoscere il proprio ip address)
```



# Install Apache on Debian

```
studente@debian: ~  
File Edit View Search Terminal Help  
studente@debian:~$ sudo apt install apache2  
[sudo] password for studente:  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
The following additional packages will be installed:  
  apache2-data  
Suggested packages:  
  apache2-doc  
The following NEW packages will be installed:  
  apache2-data  
0 upgraded, 3 new packages to be installed,  
0 to remove and 0 not upgraded.  
Need to get 577 kB of archives.  
After this operation, 2950 kB of additional disk space will be used.  
Do you want to continue? [Y/n] Y  
Get:2 http://deb.debian.org/debian bookworm/main amd64 apache2-data amd64 2.4.57-2 [202 kB]  
Get:3 http://deb.debian.org/debian bookworm/main amd64 apache2-utils amd64 2.4.57-2 [215 kB]  
Get:4 http://deb.debian.org/debian bookworm/main amd64 apache2 amd64 2.4.57-2 [215 kB]  
Fetched 577 kB in 0s (2,589 kB/s)  
Selecting previously unselected package apache2-data.  
(Reading database ... 295018 files and directories currently installed.)  
Preparing to unpack .../apache2-data_2.4.57-2_all.deb ...  
Unpacking apache2-data (2.4.57-2) ...  
Selecting previously unselected package apache2-utils.  
Preparing to unpack .../apache2-utils_2.4.57-2_amd64.deb ...  
Unpacking apache2-utils (2.4.57-2) ...  
Selecting previously unselected package apache2.  
Preparing to unpack .../apache2_2.4.57-2_amd64.deb ...  
Unpacking apache2 (2.4.57-2) ...  
Setting up apache2-data (2.4.57-2) ...  
Setting up apache2-utils (2.4.57-2) ...  
Setting up apache2 (2.4.57-2) ...  
apache-htcacheclean.service is a disabled or a static unit not running, not starting it.  
Processing triggers for man-db (2.11.2-2) ...  
studente@debian:~$
```

```
$ sudo apt install apache2
```

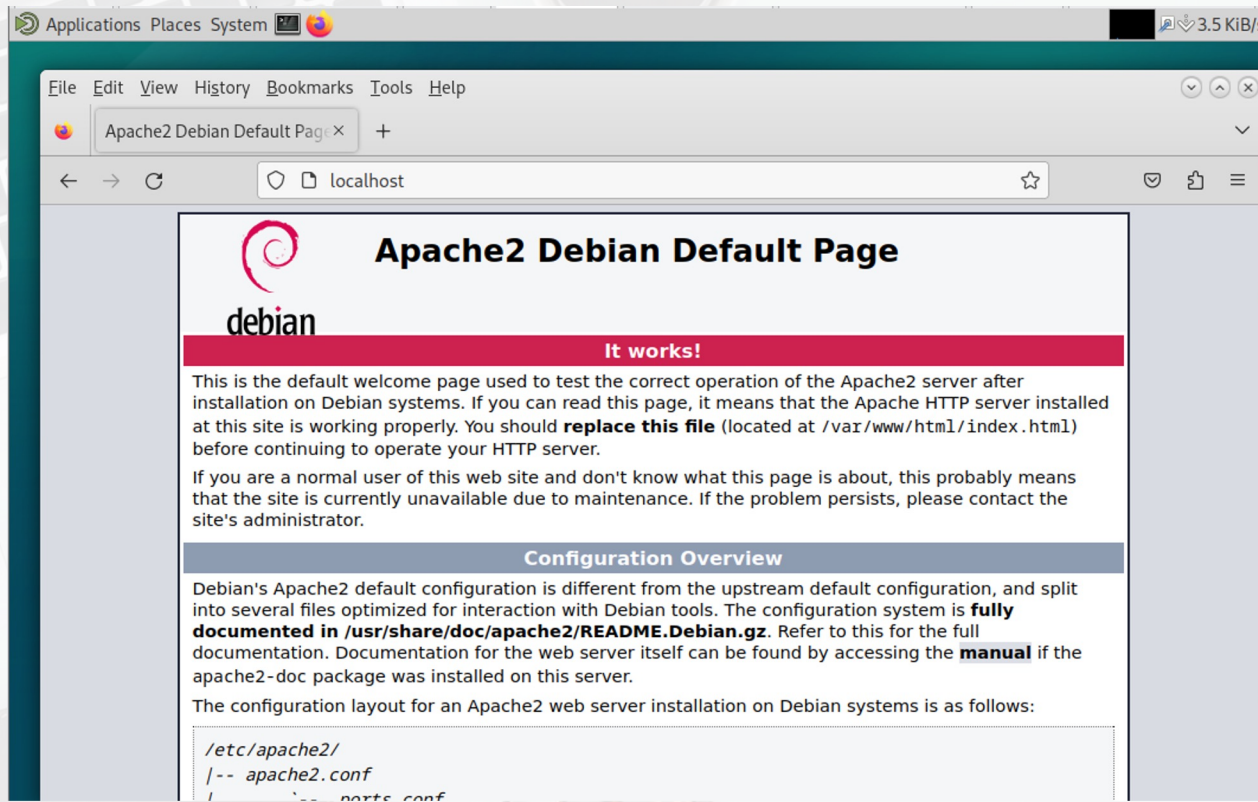
```
$ sudo systemctl status apache2
```

```
$ sudo systemctl stop apache2
```

```
$ sudo systemctl start apache2
```

```
$ sudo systemctl enable apache2
```

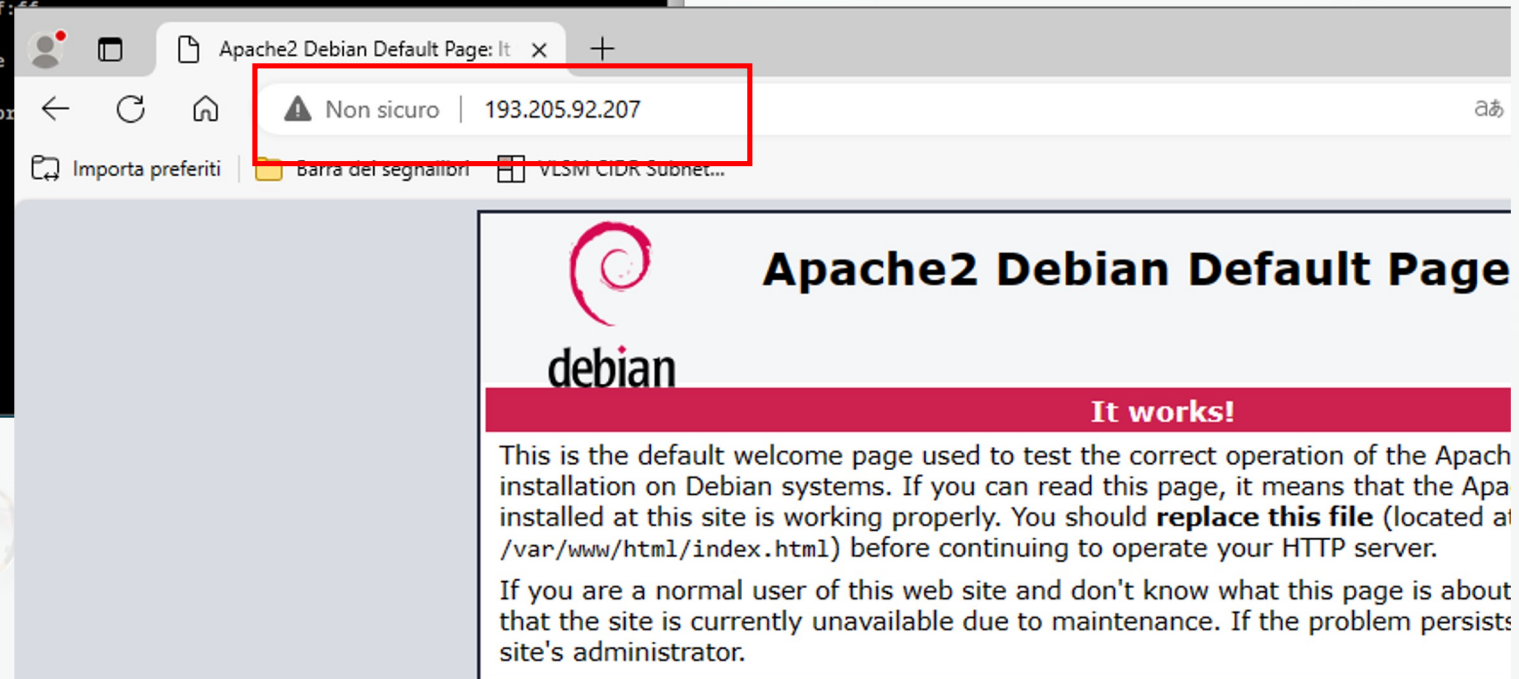
# Test apache - localhost



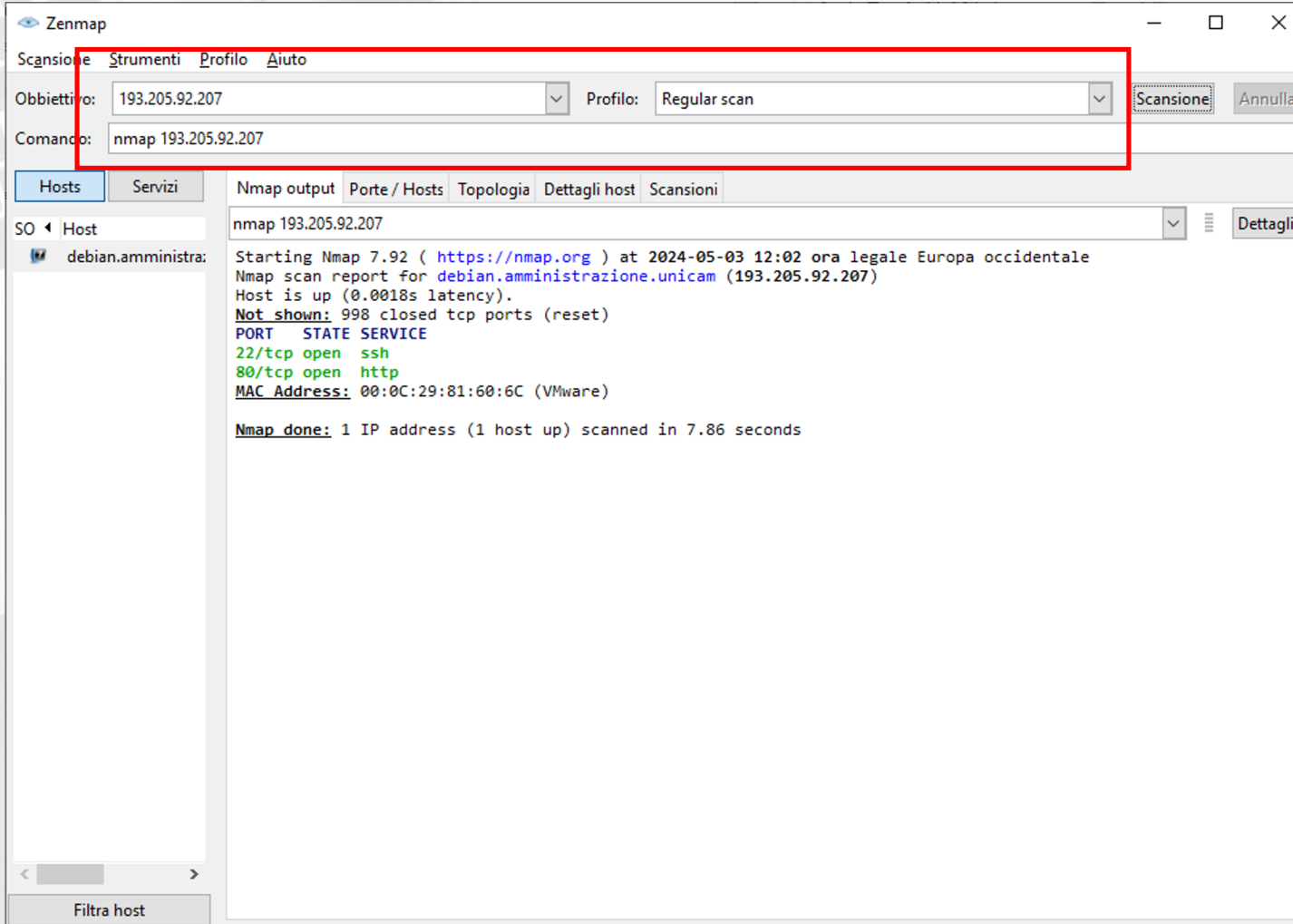
# Test apache - IP

```
studente@debian: ~  
File Edit View Search Terminal Help  
studente@debian:~$ ip a  
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000  
    link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00  
    inet 127.0.0.1/8 scope host lo  
        valid_lft forever preferred_lft forever  
    inet6 ::1/128 scope host noprefixroute  
        valid_lft forever preferred_lft forever  
2: ens33: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UNKNOWN group default qlen 1000  
    link/ether 00:0c:29:81:60:6c brd ff:ff:ff:ff:ff:ff  
    altname enp2s1  
    inet 193.205.92.207/24 brd 193.205.92.255 scope global dynamic noprefixroute  
        valid_lft 2812sec preferred_lft 2812sec  
    inet6 fe80::a8ca:3d7b:626:77c/64 scope link noprefixroute  
        valid_lft forever preferred_lft forever  
studente@debian:~$
```

\$ `ip a` (per conoscere il proprio ip address)



# Test apache - nmap



Zenmap

Scansione Strumenti Profilo Aiuto

Obbiettivo: 193.205.92.207 Profilo: Regular scan Scansione Annulla

Comando: nmap 193.205.92.207

Hosts Servizi

SO Host

debian.amministra:

Nmap output Porte / Hosts Topologia Dettagli host Scansioni

nmap 193.205.92.207 Dettagli

Starting Nmap 7.92 ( <https://nmap.org> ) at 2024-05-03 12:02 ora legale Europa occidentale  
Nmap scan report for [debian.amministrazione.unicam](#) (193.205.92.207)  
Host is up (0.0018s latency).  
Not shown: 998 closed tcp ports (reset)  
**PORT STATE SERVICE**  
22/tcp open ssh  
80/tcp open http  
**MAC Address:** 00:0C:29:81:60:6C (VMware)  
**Nmap done:** 1 IP address (1 host up) scanned in 7.86 seconds

Filtra host



# Test apache - wireshark

\*Ethernet

File Modifica Visualizza Vai Cattura Analizza Statistiche Telefonia Wireless Strumenti Aiuto

ip.addr eq 193.205.92.207 and http

| No.  | Time       | Source                         | Destination                    | Protocol | Length | Info                        |
|------|------------|--------------------------------|--------------------------------|----------|--------|-----------------------------|
| 7064 | 122.070619 | mfausto.amministrazione.unicam | debian.amministrazione.unicam  | HTTP     | 423    | GET / HTTP/1.1              |
| 7074 | 122.072163 | debian.amministrazione.unicam  | mfausto.amministrazione.unicam | HTTP     | 514    | HTTP/1.1 200 OK (text/html) |
| 7077 | 122.108217 | mfausto.amministrazione.unicam | debian.amministrazione.unicam  | HTTP     | 387    | GET /icons/openlogo-75.png  |
| 7091 | 122.109174 | debian.amministrazione.unicam  | mfausto.amministrazione.unicam | HTTP     | 254    | HTTP/1.1 200 OK (PNG)       |
| 7093 | 122.121597 | mfausto.amministrazione.unicam | debian.amministrazione.unicam  | HTTP     | 377    | GET /favicon.ico HTTP/1.1   |
| 7095 | 122.122681 | debian.amministrazione.unicam  | mfausto.amministrazione.unicam | HTTP     | 546    | HTTP/1.1 404 Not Found (te  |

< >

> Frame 7064: 423 bytes on wire (3384 bits), 423 bytes captured (3384 bits) on interface \Device\NPF\_{1C45D50C-D191-43A0-9A6F-DFDA23ECCEA1}, id 0

> Ethernet II, Src: mfausto.amministrazione.unicam (d8:50:e6:0a:e6:1d), Dst: debian.amministrazione.unicam (00:0c:29:81:60:6c)

> Internet Protocol Version 4, Src: mfausto.amministrazione.unicam (193.205.92.226), Dst: debian.amministrazione.unicam (193.205.92.207)

> Transmission Control Protocol, Src Port: 3850, Dst Port: 80, Seq: 1, Ack: 1, Len: 369

> Hypertext Transfer Protocol

```

0000  00 0c 29 81 60 6c d8 50  e6 0a e6 1d 08 00 45 00  ..).l.P .....E.
0010  01 99 9a 74 40 00 80 06  21 9e c1 cd 5c e2 c1 cd  ..t@...!...\...
0020  5c cf 0f 0a 00 50 0d 07  7a 05 1b c1 e2 62 50 18  \....P..z....bP.
0030  20 14 e0 96 00 00 47 45  54 20 2f 20 48 54 54 50  ....GET / HTTP
0040  2f 31 2e 31 0d 0a 48 6f  73 74 3a 20 31 39 33 2e  /1.1..Host: 193.
0050  32 30 35 2e 39 32 2e 32  30 37 0d 0a 55 73 65 72  205.92.207..User
0060  2d 41 67 65 6e 74 3a 20  4d 6f 7a 69 6c 6c 61 2f  -Agent: Mozilla/
0070  35 2e 30 20 28 57 69 6e  64 6f 77 73 20 4e 54 20  5.0 (Windows NT
0080  31 30 2e 30 3b 20 57 69  6e 36 34 3b 20 78 36 34  10.0; Win64; x64
0090  3b 20 72 76 3a 31 32 35  2e 30 29 20 47 65 63 6b  ;rv:125.0) Gecko
00a0  6f 2f 32 30 31 30 30 31  30 31 20 46 69 72 65 66  o/20100101 Firef
00b0  6f 78 2f 31 32 35 2e 30  0d 0a 41 63 63 65 70 74  ox/125.0 ..Accept
00c0  3a 20 74 65 78 74 2f 68  74 6d 6c 2c 61 70 70 6c  : text/html,appl
00d0  69 63 61 74 69 6f 6e 2f  78 68 74 6d 6c 2b 78 6d  ication/xhtml+xml
00e0  6c 2c 61 70 70 6c 69 63  61 74 69 6f 6e 2f 78 6d  l,application/xm
  
```

wireshark\_Ethernet3LQ3M2.pcapng

Pacchetti: 7278 · visualizzati: 6 (0.1%) · scartati: 0 (0.0%)

Profilo: Default

# Test apache - wireshark

\*Ethernet

File Modifica Visualizza Vai Cattura Analizza Statistiche Telefonia Wireless Strumenti Aiuto

ip.addr eq 193.205.92.207 and http

| No.  | Time       | Source                         | Destination                    | Protocol | Length | Info                       |
|------|------------|--------------------------------|--------------------------------|----------|--------|----------------------------|
| 7064 | 122.070619 | mfausto.amministrazione.unicam | debian.amministrazione.unicam  | HTTP     | 423    | GET / HTTP/1.1             |
| 7074 | 122.072163 | debian.amministrazione.unicam  | mfausto.amministrazione.unicam | HTTP     | 514    | HTTP/1.1 200 OK (text/css) |
| 7077 | 122.108217 | mfausto.amministrazione.unicam | debian.amministrazione.unicam  | HTTP     | 387    | GET /icons/openlogo-       |

> Frame 7064: 423 bytes on wire (3384 bits), 423 bytes captured (3384 bits) on interface \Device\NPF\_{1C45D50C-D191-43A0-9A6F-DFDA23ECCEA1}, id 0

Ethernet II, Src: mfausto.amministrazione.unicam (d8:50:e6:0a:e6:1d), Dst: debian.amministrazione.unicam (00:0c:29:81:60:6c)

Internet Protocol Version 4, Src: mfausto.amministrazione.unicam (193.205.92.226), Dst: debian.amministrazione.unicam (193.205.92.207)

Transmission Control Protocol, Src Port: 3050, Dst Port: 80, Seq: 1, Ack: 1, Len: 369

Hypertext Transfer Protocol

> GET / HTTP/1.1\r\n

Host: 193.205.92.207\r\n

User-Agent: Mozilla/5.0 (Windows NT 10.0; Win64; x64; rv:125.0) Gecko/20100101 Firefox/125.0\r\n

Accept: text/html,application/xhtml+xml,application/xml;q=0.9,image/avif,image/webp,\*/\*;q=0.8\r\n

Accept-Language: it-IT,it;q=0.8,en-US;q=0.5,en;q=0.3\r\n

Accept-Encoding: gzip, deflate\r\n

Connection: keep-alive\r\n

Upgrade-Insecure-Requests: 1\r\n

\r\n

[Full request URI: http://193.205.92.207/]

[HTTP request 1/2]

[Response in frame: 7074]

[Next request in frame: 7077]

0000 00 0c 29 81 60 6c d8 50 e6 0a e6 1d 08 00 45 00 ..).`l.P .....E.

0010 01 99 9a 74 40 00 80 06 21 9e c1 cd 5c e2 c1 cd ...t@... !... \...

0020 5c cf 0f 0a 00 50 0d 07 7a 05 1b c1 e2 62 50 18 \...P... z...bP.

0030 20 14 e0 96 00 00 47 45 54 20 2f 20 48 54 54 50 .....GE T / HTTP

0040 2f 31 2e 31 0d 0a 48 6f 73 74 3a 20 31 39 33 2e /1.1..Ho st: 193.

0050 32 30 35 2e 39 32 2e 32 30 37 0d 0a 55 73 65 72 205.92.2 07..User

0060 2d 41 67 65 6e 74 3a 20 4d 6f 7a 69 6c 6c 61 2f -Agent: Mozilla/

0070 35 2e 30 20 28 57 69 6e 64 6f 77 73 20 4e 54 20 5.0 (Win dows NT

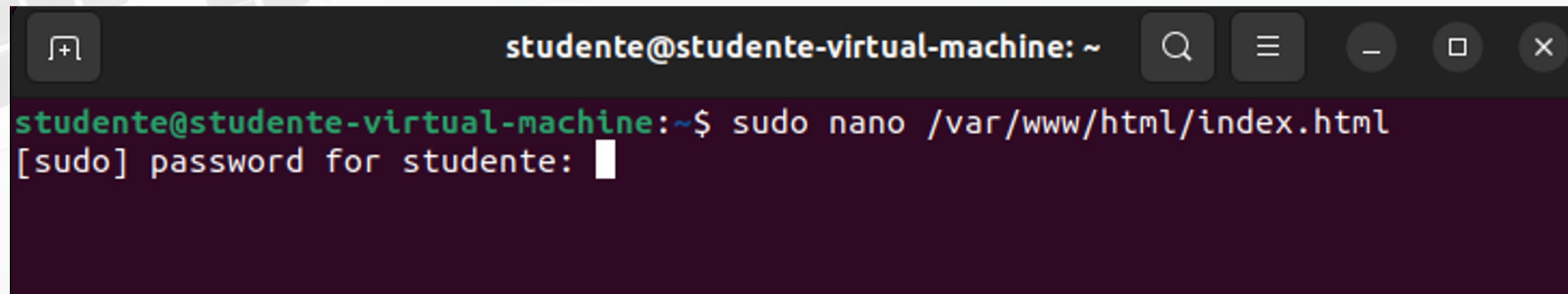
wireshark\_Ethernet3LQ3M2.pcapng

Pacchetti: 7278 · visualizzati: 6 (0.1%) · scartati: 0 (0.0%)

Profilo: Default

# Test apache - home page

```
$ sudo nano /var/www/html/index.html
```



```
studente@studente-virtual-machine: ~  
studente@studente-virtual-machine:~$ sudo nano /var/www/html/index.html  
[sudo] password for studente: 
```

```
$ sudo vi /var/www/html/index.html
```

```
$ sudo gedit /var/www/html/index.html
```



# Codice javascript per visualizzare l'indirizzo ip del client browser

```
<!DOCTYPE html>
<html>
<head>
  <title>Visualizza IP Address</title>
</head>
<body>
  <h1>Il tuo indirizzo IP:</h1>
  <p id="ip-address">Sto cercando il tuo indirizzo IP...</p>
  <script type="text/javascript">
    // Funzione per ottenere l'indirizzo IP del client
    function getIpAddress() {
      fetch("https://api.ipify.org?format=json")
        .then(response => response.json())
        .then(data => {
          const ipAddress = data.ip;
          document.getElementById("ip-address").textContent = "Il tuo indirizzo IP è: " + ipAddress;
        })
        .catch(error => {
          document.getElementById("ip-address").textContent = "Impossibile ottenere l'indirizzo IP.";
        });
    }
    // Chiama la funzione per ottenere l'indirizzo IP quando la pagina si carica
    getIpAddress();
  </script>
</body>
</html>
```



# webmin

<https://webmin.com/>

[http://doxfer.webmin.com/Webmin/Main Page](http://doxfer.webmin.com/Webmin/Main_Page)



```
sudo -s  
apt install curl  
curl -o setup-repos.sh https://raw.githubusercontent.com/webmin/webmin/master/setup-repos.sh  
sh setup-repos.sh  
apt-get install webmin --install-recommends
```

<https://localhost:10000/>

# Virtual Machine

FINE



# Firewall



<https://opnsense.org/>

<https://docs.opnsense.org/>

<https://opnsense.org/download/>

# Firewall



<https://www.ipfire.org/docs/installation>

## Zones

A maximum of four(4) networks is possible: namely **Green**, **Blue**, **Orange** and **Red**.

|               |      |                                                                              |
|---------------|------|------------------------------------------------------------------------------|
| <b>RED</b>    | WAN  | The external network - the connection to an Internet Service Provider (ISP)  |
| <b>GREEN</b>  | LAN  | The local network (LAN) - an internal private network                        |
| <b>ORANGE</b> | DMZ  | The DeMilitarized Zone - an unprotected network accessible from the internet |
| <b>BLUE</b>   | WLAN | The wireless network - separate network for wireless clients                 |

**Note:** When using **BLUE**, it is recommended to assign it to a NIC and connect a separate access point to it. However, it is also possible to assign a **supported wireless card BLUE** status with the **hostapd** addon.

If a Blue network has been setup make sure to configure the MAC filtering on the **Blue Access** page.



# Firewall



<https://www.ipcop.org/docs.html>

<https://192.168.1.1:8443>.

# Firewall

FINE

