

## Wireshark Lab 1 – Introduction to Wireshark

1. This program is written in Python 3.

- Run the program by typing in:  
“python traceroute.py” without the parenthesis  
Note: you might need to add “sudo” at the beginning to run the program
- There are four different host hardcoded in the program. Two of them are on different continenets.
- The runner code in the main function has been commented out. To run them, please delete the “#” at the front of each line.
- The ping function will print out the minimum, maxmum, and average RTT at the end.
- The traceroute function will print out in order:  
the hop number, the RTT, the IP address, the host name if available

## 2. Screenshots:

### - Ping [www.google.com](http://www.google.com)

```
((base) 10-197-132-89:traceroute zhixiangye$ sudo python traceroute.py
Pinging (www.google.com) 142.251.33.68
TTL=255 RTT=178 ms Type=0 Code=0 Identifier=58045 Sequence Number=0 142.251.33.68
Pinging (www.google.com) 142.251.33.68
TTL=255 RTT=88 ms Type=0 Code=0 Identifier=58045 Sequence Number=1 142.251.33.68
Pinging (www.google.com) 142.251.33.68
TTL=255 RTT=87 ms Type=0 Code=0 Identifier=58045 Sequence Number=2 142.251.33.68
Pinging (www.google.com) 142.251.33.68
TTL=255 RTT=89 ms Type=0 Code=0 Identifier=58045 Sequence Number=3 142.251.33.68
Packets: Sent = 4, Received = 4, Lost = 0 (0 % loss)
Approximate round trip times in milli-seconds:
Minimum = 87ms, Maximum = 178ms, Average = 110ms
```

### - Traceroute to [www.google.com](http://www.google.com):

```
((base) 10-197-132-89:traceroute zhixiangye$ sudo python traceroute.py
Traceroute to www.google.com over maximum of 30 hops
 1 83ms 10.192.5.2 mbrvpn1-vpn-campus_w.br.net.oregonstate.edu
 2 86ms 10.194.212.17 md3a.dr.net.oregonstate.edu
 3 84ms 10.192.88.201 unknown
 4 82ms 128.193.118.49 mrw3.net.oregonstate.edu
 5 82ms 128.193.6.73 mchub1-hub.cr.net.oregonstate.edu
 6 96ms 128.193.88.33 ob1.oregonstate.edu
 7 85ms 207.98.68.210 ptck-pe2-gw.nero.net
 8 30002ms * * * Time Out
 9 188ms 108.170.245.97 unknown
10 186ms 142.251.50.243 unknown
11 89ms 142.251.33.68 sea09s28-in-f4.1e100.net
(base) 10-197-132-89:traceroute zhixiangye$ █
```

- Ping [www.chinadailyhk.com](http://www.chinadailyhk.com) :

```
[(base) 10-197-132-89:traceroute zhixiangye$ sudo python traceroute.py
Password:
Pinging (www.chinadailyhk.com) 157.185.145.91
TTL=255 RTT=396 ms Type=0 Code=0 Identifier=57963 Sequence Number=0 157.185.145.91
Pinging (www.chinadailyhk.com) 157.185.145.91
TTL=255 RTT=90 ms Type=0 Code=0 Identifier=57963 Sequence Number=1 157.185.145.91
Pinging (www.chinadailyhk.com) 157.185.145.91
TTL=255 RTT=62 ms Type=3 Code=3 125.162.255.111
Destination Unreachable: Port Unreachable
Pinging (www.chinadailyhk.com) 157.185.145.91
TTL=255 RTT=89 ms Type=0 Code=0 Identifier=57963 Sequence Number=2 157.185.145.91
Error: Icmp Packet has wrong sequence number
Sequence Number sent: 3
Sequence Number received: 2
Packets: Sent = 4, Received = 3, Lost = 1 (25 % loss)
```

- Traceroute to [www.chinadailyhk.com](http://www.chinadailyhk.com) in HongKong:

```
[(base) 10-197-132-89:traceroute zhixiangye$ sudo python traceroute.py
Traceroute to www.chinadailyhk.com over maximum of 30 hops
 1 167ms 10.192.5.2 mbrvpn1-vpn-campus_w.br.net.oregonstate.edu
 2 168ms 10.194.212.17 md3a.dr.net.oregonstate.edu
 3 168ms 10.192.88.201 unknown
 4 166ms 128.193.118.49 mrw3.net.oregonstate.edu
 5 167ms 128.193.6.73 mchub1-hub.cr.net.oregonstate.edu
 6 167ms 128.193.88.33 ob1.oregonstate.edu
 7 85ms 207.98.68.210 ptck-pe2-gw.nero.net
 8 30005ms * * * Time Out
 9 30002ms * * * Time Out
10 2491ms 157.185.145.91 unknown
```

## - Ping en.wikipedia.org

```
((base) 10-197-132-89:traceroute zhixiangye$ sudo python traceroute.py
Pinging (en.wikipedia.org) 198.35.26.96
  TTL=255    RTT=190 ms    Type=0    Code=0    Identifier=58056    Sequence Number=0    198.35.26.96
Pinging (en.wikipedia.org) 198.35.26.96
  TTL=255    RTT=101 ms    Type=0    Code=0    Identifier=58056    Sequence Number=1    198.35.26.96
Pinging (en.wikipedia.org) 198.35.26.96
  TTL=255    RTT=101 ms    Type=0    Code=0    Identifier=58056    Sequence Number=2    198.35.26.96
Pinging (en.wikipedia.org) 198.35.26.96
  TTL=255    RTT=100 ms    Type=0    Code=0    Identifier=58056    Sequence Number=3    198.35.26.96
Packets: Sent = 4, Received = 4, Lost = 0 (0 % loss)
Approximate round trip times in milli-seconds:
Minimum = 100ms, Maximum = 190ms, Average = 123ms
```

## - Traceroute to en.wikipedia.org:

```
Traceroute to en.wikipedia.org over maximum of 30 hops
 1 83ms 10.192.5.2 mbrvpn1-vpn-campus_w.br.net.oregonstate.edu
 2 83ms 10.194.212.17 md3a.dr.net.oregonstate.edu
 3 83ms 10.192.88.201 unknown
 4 82ms 128.193.118.49 mrw3.net.oregonstate.edu
 5 84ms 128.193.6.73 mchub1-hub.cr.net.oregonstate.edu
 6 99ms 128.193.88.33 ob1.oregonstate.edu
 7 85ms 207.98.68.210 ptck-pe2-gw.nero.net
 8 173ms 207.98.64.85 ptck-p2-gw.nero.net
 9 167ms 207.98.64.80 ptck-pe1-gw.nero.net
10 169ms 198.71.47.136 hundredge-0-0-0-24.702.core1.port.net.internet2.edu
11 30004ms * * * Time Out
12 30000ms * * * Time Out
13 30005ms * * * Time Out
14 30000ms * * * Time Out
15 251ms 198.35.26.96 text-lb.ulsfo.wikimedia.org
((base) 10-197-132-89:traceroute zhixiangye$ █
```

- Ping [www.louvre.fr](http://www.louvre.fr) located in France :

```
((base) 10-197-132-89:traceroute zhixiangye$ sudo python traceroute.py
Pinging (www.louvre.fr) 89.185.38.196
  TTL=255    RTT=520 ms    Type=0    Code=0    Identifier=58141    Sequence Number=0    89.185.38.196
Pinging (www.louvre.fr) 89.185.38.196
  TTL=255    RTT=247 ms    Type=0    Code=0    Identifier=58141    Sequence Number=1    89.185.38.196
Pinging (www.louvre.fr) 89.185.38.196
  TTL=255    RTT=264 ms    Type=0    Code=0    Identifier=58141    Sequence Number=2    89.185.38.196
Pinging (www.louvre.fr) 89.185.38.196
  TTL=255    RTT=308 ms    Type=0    Code=0    Identifier=58141    Sequence Number=3    89.185.38.196
Packets: Sent = 4, Received = 4, Lost = 0 (0 % loss)
Approximate round trip times in milli-seconds:
Minimum = 247ms, Maximum = 520ms, Average = 335ms
```

- Traceroute to [www.louvre.fr](http://www.louvre.fr) located in France:

```
((base) 10-197-132-89:traceroute zhixiangye$ sudo python traceroute.py
Traceroute to www.louvre.fr over maximum of 30 hops
 1 84ms 10.192.5.2 mbrvpn1-vpn-campus_w.br.net.oregonstate.edu
 2 86ms 10.194.212.17 md3a.dr.net.oregonstate.edu
 3 84ms 10.192.88.201 unknown
 4 83ms 128.193.118.49 mrw3.net.oregonstate.edu
 5 83ms 128.193.6.73 mchub1-hub.cr.net.oregonstate.edu
 6 86ms 128.193.88.33 ob1.oregonstate.edu
 7 85ms 207.98.68.210 ptck-pe2-gw.nero.net
 8 88ms 207.98.64.85 ptck-p2-gw.nero.net
 9 88ms 207.98.64.210 eugn-p2-gw.nero.net
10 88ms 207.98.64.205 eugn-pe1-gw.nero.net
11 103ms 137.164.3.102 cenic--lon-100ge.cenic.net
12 99ms 4.15.122.45 lag-106-91.ear1.sanjose1.level3.net
13 434ms 4.69.143.178 ae-2-3210.edge6.paris1.level3.net
14 511ms 213.242.120.70 unknown
15 674ms 212.43.193.120 sd-mse2-te-0-0-1-7.router.fr.clara.net
16 649ms 212.43.193.149 sd-ar11-te-0-0-2-1.router.fr.clara.net
17 819ms 89.185.58.93 mail.mdlsit-pw-web.msp.fr.clara.net
18 613ms 89.185.38.196 unknown
```

### 3. Sources used:

- Explanation about what Ping and Traceroute do:

<https://www.youtube.com/watch?v=vJV-GBZ6PeM>

- How does Traceroute(8) program perform the route tracing:

<https://man7.org/linux/man-pages/man8/traceroute.8.html>

- A simple traceroute(8) implementation in Python

<https://dnaeon.github.io/traceroute-in-python/>

- Ping results explained | NETVN

<https://www.youtube.com/watch?v=OwXClvHvuKc>