

# Socket program3 – ICMP Pinger Lab

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Lab environment:

Answer: My PC uses macOS Catalina 10.15.6, shows the following setting with *ifconfig*:

```
(base) JesLeedeMBP:~ jeslee$ ifconfig
lo0: flags=8049<UP,LOOPBACK,RUNNING,MULTICAST> mtu 16384
    options=1203<RXCSUM,TXCSUM,TXSTATUS,SW_TIMESTAMP>
    inet 127.0.0.1 netmask 0xff000000
    inet6 ::1 prefixlen 128
    inet6 fe80::1%lo0 prefixlen 64 scopeid 0x1
    nd6 options=201<PERFORMNUD,DAD>
gif0: flags=8010<POINTOPOINT,MULTICAST> mtu 1280
stf0: flags=0<> mtu 1280
en0: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_IO>
    ether ac:bc:32:7b:7f:83
    inet6 fe80::1c81:c11c:970e:3b33%en0 prefixlen 64 secured scopeid 0x4
    inet 192.168.1.155 netmask 0xfffff00 broadcast 192.168.1.255
    nd6 options=201<PERFORMNUD,DAD>
    media: autoselect
    status: active
en1: flags=8963<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
    options=460<TSO4,TSO6,CHANNEL_IO>
    ether 82:13:09:8a:17:40
    media: autoselect <full-duplex>
    status: inactive
en2: flags=8963<UP,BROADCAST,SMART,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1500
    options=460<TSO4,TSO6,CHANNEL_IO>
    ether 82:13:09:8a:17:41
    media: autoselect <full-duplex>
    status: inactive
bridge0: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=63<RXCSUM,TXCSUM,TSO4,TSO6>
    ether 82:13:09:8a:17:40
    Configuration:
        id 0:0:0:0:0:0 priority 0 hellotime 0 fwddelay 0
        maxage 0 holdcnt 0 proto stp maxaddr 100 timeout 1200
        root id 0:0:0:0:0:0 priority 0 ifcost 0 port 0
        ipfilter disabled flags 0x0
        member: en1 flags=3<LEARNING,DISCOVER>
            ifmaxaddr 0 port 5 priority 0 path cost 0
        member: en2 flags=3<LEARNING,DISCOVER>
            ifmaxaddr 0 port 6 priority 0 path cost 0
        nd6 options=201<PERFORMNUD,DAD>
        media: <unknown type>
        status: inactive
p2p0: flags=8843<UP,BROADCAST,RUNNING,SIMPLEX,MULTICAST> mtu 2304
    options=400<CHANNEL_IO>
    ether 0e:bc:32:7b:7f:83
    media: autoselect
    status: inactive
awdl0: flags=8943<UP,BROADCAST,RUNNING,PROMISC,SIMPLEX,MULTICAST> mtu 1484
    options=400<CHANNEL_IO>
    ether e2:8b:ae:0c:af:c5
    inet6 fe80::e08b:aeff:fe0c:afc5%awdl0 prefixlen 64 scopeid 0x9
    nd6 options=201<PERFORMNUD,DAD>
    media: autoselect
    status: active
llw0: flags=8863<UP,BROADCAST,SMART,RUNNING,SIMPLEX,MULTICAST> mtu 1500
    options=400<CHANNEL_IO>
    ether e2:8b:ae:0c:af:c5
    inet6 fe80::e08b:aeff:fe0c:afc5%llw0 prefixlen 64 scopeid 0xa
    nd6 options=201<PERFORMNUD,DAD>
    media: autoselect
    status: active
utun0: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 1380
    inet6 fe80::f58d:6031:ca37:b987%utun0 prefixlen 64 scopeid 0xb
    nd6 options=201<PERFORMNUD,DAD>
utun1: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 2000
    inet6 fe80::af3a:6b7e:729f:e148%utun1 prefixlen 64 scopeid 0xc
    nd6 options=201<PERFORMNUD,DAD>
utun2: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 1380
    inet6 fe80::888b:4408:7f6e:76ea%utun2 prefixlen 64 scopeid 0xd
    nd6 options=201<PERFORMNUD,DAD>
utun3: flags=8051<UP,POINTOPOINT,RUNNING,MULTICAST> mtu 1380
    inet6 fe80::2b53:b72c:6e42:c414%utun3 prefixlen 64 scopeid 0xe
    nd6 options=201<PERFORMNUD,DAD>
```

Here are the ping results:

### 1. ping '127.0.0.1'

```
(base) JesLeedeMBP:computer_networking jeslee$ sudo python2 ICMP-ping.py
Pinging 127.0.0.1 using Python:

From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.110 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.154 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.186 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.137 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.178 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.190 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.191 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.172 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.191 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.094 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.190 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.185 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.194 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.193 ms, size=16 bytes
From 127.0.0.1: icmp_seq=1, ttl=64, rtt=0.316 ms, size=16 bytes
^C----- Optinal Exercises Output-----
Statistics of ping127.0.0.1
15 packts sent, 15 packets received. Packet loss rate: 0.00000%
RTTs min: 0.09394 ms, RTTs max: 0.31590 ms, RTT average: 0.17869 ms
(base) JesLeedeMBP:computer_networking jeslee$
```

### 2. ping 'google.com'--- IP address is located in US, North America

```
(base) JesLeedeMBP:computer_networking jeslee$ sudo python2 ICMP-ping.py
Pinging 172.217.10.238 using Python:

From 172.217.10.238: icmp_seq=1, ttl=119, rtt=11.644 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=14.583 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=11.755 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=12.128 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=7.843 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=13.269 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=9.595 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=11.777 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=14.858 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=12.394 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=15.136 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=8.618 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=9.007 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=15.116 ms, size=16 bytes
From 172.217.10.238: icmp_seq=1, ttl=119, rtt=12.552 ms, size=16 bytes
^C----- Optinal Exercises Output-----
Statistics of pinggoogle.com
15 packts sent, 15 packets received. Packet loss rate: 0.00000%
RTTs min: 7.84302 ms, RTTs max: 15.13600 ms, RTT average: 12.01831 ms
```

### 3. ping 'baidu.com' --- IP address is located in China, Asia

```
(base) JesLeedeMBP:computer_networking jeslee$ sudo python2 ICMP-ping.py
Pinging 220.181.38.148 using Python:

From 220.181.38.148: icmp_seq=1, ttl=50, rtt=220.179 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=271.803 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=227.893 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=530.409 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=530.686 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=220.370 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=226.619 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=535.598 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=536.273 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=225.998 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=530.857 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=310.943 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=332.062 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=307.478 ms, size=16 bytes
From 220.181.38.148: icmp_seq=1, ttl=50, rtt=262.957 ms, size=16 bytes
^C----- Optinal Exercises Output-----
Statistics of pingingbaidu.com
15 packts sent, 15 packets received. Packet loss rate: 0.00000%
RTTs min: 220.17884 ms, RTTs max: 536.27300 ms, RTT average: 351.34169 ms
(base) JesLeedeMBP:computer_networking jeslee$
```

#### 4.ping 'www.bbc.com' --- IP address is located in UK, Europe

```
(base) JesLeedeMBP:computer_networking jeslee$ sudo python2 ICMP-ping.py
Pinging 212.58.237.252 using Python:

From 212.58.237.252: icmp_seq=1, ttl=54, rtt=78.643 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=80.647 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=73.252 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=74.197 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=76.564 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=81.943 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=82.551 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=75.243 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=81.507 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=81.577 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=81.365 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=77.279 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=78.131 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=75.646 ms, size=16 bytes
From 212.58.237.252: icmp_seq=1, ttl=54, rtt=82.718 ms, size=16 bytes
^C----- Optinal Exercises Output-----
Statistics of pingingwww.bbc.co.uk
15 packts sent, 15 packets received. Packet loss rate: 0.00000%
RTTs min: 73.25196 ms, RTTs max: 82.71790 ms, RTT average: 78.75082 ms
(base) JesLeedeMBP:computer_networking jeslee$
```

#### 5.ping 'lornajane.com.au' --- IP address is located in Australia, Oceania

```
(base) JesLeedeMBP:computer_networking jeslee$ sudo python2 ICMP-ping.py
Pinging 175.45.125.230 using Python:

From 175.45.125.230: icmp_seq=1, ttl=52, rtt=526.432 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=534.420 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=532.563 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=530.888 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=531.962 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=534.284 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=530.976 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=532.596 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=240.668 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=414.909 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=329.976 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=534.700 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=531.563 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=529.649 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=542.381 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=531.651 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=526.594 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=530.244 ms, size=16 bytes
From 175.45.125.230: icmp_seq=1, ttl=52, rtt=534.873 ms, size=16 bytes
^C----- Optinal Exercises Output-----
Statistics of pinginglornajane.com.au
19 packts sent, 19 packets received. Packet loss rate: 0.00000%
RTTs min: 240.66806 ms, RTTs max: 542.38081 ms, RTT average: 500.06994 ms
(base) JesLeedeMBP:computer_networking jeslee$
```

```
(base) JesLeedeMBP:computer_networking jeslee$ sudo python2 ICMP-ping.py
Pinging 164.151.129.20 using Python:
```

7. ping 'www.yppf.com'--- IP address is located in Argentina, South America

```
(base) JesLeedeMBP:computer_networking jeslee$ sudo python2 ICMP-ping.py
Pinging 200.1.118.183 using Python:
```

As we can see, since I'm now in US, if the location of the IP address we ping is more far way, the RTT would be longer. However, I have tries many domain that located in South America, but all of them cannot successfully ping.