Networking & System Administration Lab

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1.Try out these network commands in Window as well as in Linux and perform at least 4 options with each command: ping route traceroute, nslookup,Ip Config, NetStat .

Windows

Ping

```
C:\Users\antony>ping google.com

Pinging google.com [142.250.195.110] with 32 bytes of data:
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119

Ping statistics for 142.250.195.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 14ms, Average = 14ms
```

```
C:\Users\antony>ping -a google.com

Pinging google.com [142.250.195.110] with 32 bytes of data:
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119

Ping statistics for 142.250.195.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 14ms, Average = 14ms
```

```
C:\Users\antony>ping  -t google.com

Pinging google.com [142.250.195.110] with 32 bytes of data:
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119

Ping statistics for 142.250.195.110:
    Packets: Sent = 16, Received = 16, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 14ms, Maximum = 14ms, Average = 14ms
```

```
C:\Users\antony>ping -j google.com

Pinging google.com [142.250.195.110] with 32 bytes of data:
General failure.
General failure.
General failure.
General failure.

Ping statistics for 142.250.195.110:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),
```

```
C:\Users\antony>ping -4 google.com

Pinging google.com [142.250.195.110] with 32 bytes of data:
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=13ms TTL=119
Reply from 142.250.195.110: bytes=32 time=14ms TTL=119
Reply from 142.250.195.110: bytes=32 time=76ms TTL=119

Ping statistics for 142.250.195.110:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 13ms, Maximum = 76ms, Average = 29ms
```

Route

```
C:\Users\antony>route print
===========================================================================
Interface List
 16...0a 00 27 00 00 10 ......VirtualBox Host-Only Ethernet Adapter
  6...68 54 5a d0 dd 7a ......Microsoft Wi-Fi Direct Virtual Adapter
  7...6a 54 5a d0 dd 79 ......Microsoft Wi-Fi Direct Virtual Adapter #2
 18...68 54 5a d0 dd 79 ......Intel(R) Wi-Fi 6 AX200 160MHz
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0      192.168.1.1      192.168.1.4     40
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    331
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    331
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    331
      192.168.1.0    255.255.255.0         On-link       192.168.1.4    296
      192.168.1.4  255.255.255.255         On-link       192.168.1.4    296
    192.168.1.255  255.255.255.255         On-link       192.168.1.4    296
     192.168.56.0    255.255.255.0         On-link      192.168.56.1    281
     192.168.56.1  255.255.255.255         On-link      192.168.56.1    281
   192.168.56.255  255.255.255.255         On-link      192.168.56.1    281
        224.0.0.0        240.0.0.0         On-link         127.0.0.1    331
        224.0.0.0        240.0.0.0         On-link      192.168.56.1    281
        224.0.0.0        240.0.0.0         On-link       192.168.1.4    296
  255.255.255.255  255.255.255.255         On-link         127.0.0.1    331
  255.255.255.255  255.255.255.255         On-link      192.168.56.1    281
  255.255.255.255  255.255.255.255         On-link       192.168.1.4    296
===========================================================================
Persistent Routes:
  None
```

```
IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
 18    296 ::/0                     fe80::1
  1    331 ::1/128                  On-link
 16    281 fe80::/64                On-link
 18    296 fe80::/64                On-link
 18    296 fe80::31a1:3adc:8d32:efb7/128
                                    On-link
 16    281 fe80::349b:d58d:75f2:58ec/128
                                    On-link
  1    331 ff00::/8                 On-link
 16    281 ff00::/8                 On-link
 18    296 ff00::/8                 On-link
===========================================================================
Persistent Routes:
  None
```

```
C:\Users\antony>route print -4
===========================================================================
Interface List
 16...0a 00 27 00 00 10 ......VirtualBox Host-Only Ethernet Adapter
  6...68 54 5a d0 dd 7a ......Microsoft Wi-Fi Direct Virtual Adapter
  7...6a 54 5a d0 dd 79 ......Microsoft Wi-Fi Direct Virtual Adapter #2
 18...68 54 5a d0 dd 79 ......Intel(R) Wi-Fi 6 AX200 160MHz
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
          0.0.0.0          0.0.0.0      192.168.1.1      192.168.1.4     40
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    331
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    331
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    331
      192.168.1.0    255.255.255.0         On-link      192.168.1.4    296
      192.168.1.4  255.255.255.255         On-link      192.168.1.4    296
    192.168.1.255  255.255.255.255         On-link      192.168.1.4    296
     192.168.56.0    255.255.255.0         On-link     192.168.56.1    281
     192.168.56.1  255.255.255.255         On-link     192.168.56.1    281
   192.168.56.255  255.255.255.255         On-link     192.168.56.1    281
        224.0.0.0        240.0.0.0         On-link         127.0.0.1    331
        224.0.0.0        240.0.0.0         On-link     192.168.56.1    281
        224.0.0.0        240.0.0.0         On-link      192.168.1.4    296
  255.255.255.255  255.255.255.255         On-link         127.0.0.1    331
  255.255.255.255  255.255.255.255         On-link     192.168.56.1    281
  255.255.255.255  255.255.255.255         On-link      192.168.1.4    296
===========================================================================
Persistent Routes:
  None
```

```
C:\Users\antony>route print -6
===========================================================================
Interface List
 16...0a 00 27 00 00 10 ......VirtualBox Host-Only Ethernet Adapter
  6...68 54 5a d0 dd 7a ......Microsoft Wi-Fi Direct Virtual Adapter
  7...6a 54 5a d0 dd 79 ......Microsoft Wi-Fi Direct Virtual Adapter #2
 18...68 54 5a d0 dd 79 ......Intel(R) Wi-Fi 6 AX200 160MHz
  1...........................Software Loopback Interface 1
===========================================================================

IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
 18    296 ::/0                     fe80::1
  1    331 ::1/128                  On-link
 16    281 fe80::/64                On-link
 18    296 fe80::/64                On-link
 18    296 fe80::31a1:3adc:8d32:efb7/128
                                    On-link
 16    281 fe80::349b:d58d:75f2:58ec/128
                                    On-link
  1    331 ff00::/8                 On-link
 16    281 ff00::/8                 On-link
 18    296 ff00::/8                 On-link
===========================================================================
Persistent Routes:
  None
```

```
C:\Users\antony>route print *157
===========================================================================
Interface List
 16...0a 00 27 00 00 10 ......VirtualBox Host-Only Ethernet Adapter
  6...68 54 5a d0 dd 7a ......Microsoft Wi-Fi Direct Virtual Adapter
  7...6a 54 5a d0 dd 79 ......Microsoft Wi-Fi Direct Virtual Adapter #2
 18...68 54 5a d0 dd 79 ......Intel(R) Wi-Fi 6 AX200 160MHz
  1...........................Software Loopback Interface 1
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
  None
Persistent Routes:
  None

IPv6 Route Table
===========================================================================
Active Routes:
  None
Persistent Routes:
  None
```

Tracert

```
C:\Users\antony>tracert 192.168.1.1

Tracing route to 192.168.1.1 over a maximum of 30 hops

  1     1 ms     1 ms     4 ms  192.168.1.1

Trace complete.
```

```
C:\Users\antony>tracert www.google.com

Tracing route to www.google.com [142.250.67.68]
over a maximum of 30 hops:

  1     1 ms    <1 ms    <1 ms  192.168.1.1
  2     2 ms     2 ms     2 ms  1.105.92.111.asianet.co.in [111.92.105.1]
  3     *        *        *     Request timed out.
  4    14 ms    14 ms    15 ms  130.230.88.202.asianet.co.in [202.88.230.130]
  5    15 ms    13 ms    13 ms  77.252.88.202.asianet.co.in [202.88.252.77]
  6    15 ms    21 ms    13 ms  216.239.54.67
  7    17 ms    14 ms    14 ms  142.250.228.221
  8    14 ms    14 ms    14 ms  maa05s13-in-f4.1e100.net [142.250.67.68]

Trace complete.
```

```
C:\Users\antony>tracert -d www.yahoo.com

Tracing route to new-fp-shed.wg1.b.yahoo.com [202.165.107.49]
over a maximum of 30 hops:

  1     1 ms    <1 ms     1 ms  192.168.1.1
  2     2 ms     2 ms     2 ms  111.92.105.1
  3     *        *        *     Request timed out.
  4     2 ms     2 ms     2 ms  14.142.20.189
  5    31 ms    25 ms    25 ms  172.19.249.170
  6    25 ms    25 ms    24 ms  180.87.36.9
  7    57 ms    57 ms    57 ms  180.87.36.13
  8    59 ms    57 ms    57 ms  180.87.96.21
  9     *        *        *     Request timed out.
 10     *        *        *     Request timed out.
 11     *        *        *     Request timed out.
 12     *        *        *     Request timed out.
 13     *        *        *     Request timed out.
 14     *        *        *     Request timed out.
 15    51 ms    52 ms    51 ms  202.165.107.49

Trace complete.
```

```
C:\Users\antony>tracert 22.110.0.1

Tracing route to 22.110.0.1 over a maximum of 30 hops

  1     3 ms    <1 ms    <1 ms  192.168.1.1
  2     2 ms     1 ms     1 ms  1.105.92.111.asianet.co.in [111.92.105.1]
  3     3 ms     *        *     170.230.88.202.asianet.co.in [202.88.230.170]
  4     7 ms     8 ms     2 ms  14.142.20.189.static-vsnl.net.in [14.142.20.189]
  5    35 ms    30 ms    28 ms  172.28.176.254
  6    35 ms    34 ms    34 ms  ix-ae-1-100.tcore2.mlv-mumbai.as6453.net [180.87.39.25]
  7   152 ms   151 ms   150 ms  if-ae-2-2.tcore1.mlv-mumbai.as6453.net [180.87.38.1]
  8     *      159 ms   155 ms  if-ae-5-2.tcore1.wyn-marseille.as6453.net [80.231.217.29]
  9   157 ms   155 ms   155 ms  if-ae-21-2.tcore1.pye-paris.as6453.net [80.231.154.208]
 10     *        *        *     Request timed out.
 11     *        *        *     Request timed out.
 12     *        *        *     Request timed out.
 13     *        *        *     Request timed out.
 14     *        *        *     Request timed out.
 15     *        *        *     Request timed out.
 16     *        *        *     Request timed out.
 17     *        *        *     Request timed out.
 18     *        *        *     Request timed out.
 19     *        *        *     Request timed out.
 20     *        *        *     Request timed out.
 21     *        *        *     Request timed out.
 22     *        *        *     Request timed out.
 23     *        *        *     Request timed out.
 24     *        *        *     Request timed out.
 25     *        *        *     Request timed out.
 26     *        *        *     Request timed out.
 27     *        *        *     Request timed out.
 28     *        *        *     Request timed out.
 29     *        *        *     Request timed out.
 30     *        *        *     Request timed out.

Trace complete.
```

Nslookup

```
C:\Users\antony>nslookup
Default Server:  UnKnown
Address:  192.168.1.1
```

```
C:\Users\antony>nslookup google.com
Server:  UnKnown
Address:  192.168.1.1

Non-authoritative answer:
Name:    google.com
Addresses:  2404:6800:4007:824::200e
          142.250.195.110
```

```
C:\Users\antony>nslookup -q=MX google.com
Server:  UnKnown
Address:  192.168.1.1

Non-authoritative answer:
google.com      MX preference = 30, mail exchanger = alt2.aspmx.l.google.com
google.com      MX preference = 20, mail exchanger = alt1.aspmx.l.google.com
google.com      MX preference = 50, mail exchanger = alt4.aspmx.l.google.com
google.com      MX preference = 40, mail exchanger = alt3.aspmx.l.google.com
google.com      MX preference = 10, mail exchanger = aspmx.l.google.com
```

```
C:\Users\antony>nslookup -type=ns google.com
Server:  UnKnown
Address:  192.168.1.1

Non-authoritative answer:
google.com      nameserver = ns3.google.com
google.com      nameserver = ns2.google.com
google.com      nameserver = ns4.google.com
google.com      nameserver = ns1.google.com
```

Ipconfig

```
C:\Users\antony>ipconfig

Windows IP Configuration


Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::349b:d58d:75f2:58ec%16
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Local Area Connection* 1:

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

Wireless LAN adapter Local Area Connection* 2:

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

Wireless LAN adapter Wi-Fi:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::31a1:3adc:8d32:efb7%18
   IPv4 Address. . . . . . . . . . . : 192.168.1.4
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . : fe80::1%18
                                       192.168.1.1
```

```
C:\Users\antony>ipconfig /allcompartments

Windows IP Configuration


================================================================================
Network Information for Compartment 1 (ACTIVE)
================================================================================

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::349b:d58d:75f2:58ec%16
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Local Area Connection* 1:

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

Wireless LAN adapter Local Area Connection* 2:

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

```
C:\Users\antony>ipconfig /displaydns

Windows IP Configuration

    29.217.231.80.in-addr.arpa
    ----------------------------------------
    Record Name . . . . . : 29.217.231.80.in-addr.arpa
    Record Type . . . . . : 12
    Time To Live  . . . . : 227
    Data Length . . . . . : 8
    Section . . . . . . . : Answer
    PTR Record  . . . . . : if-ae-5-2.tcore1.wyn-marseille.as6453.net


    serve.popads.net
    ----------------------------------------
    Record Name . . . . . : serve.popads.net
    Record Type . . . . . : 1
    Time To Live  . . . . : 21318
    Data Length . . . . . : 4
    Section . . . . . . . : Answer
    A (Host) Record . . . : 216.21.13.10


    Record Name . . . . . : serve.popads.net
    Record Type . . . . . : 1
    Time To Live  . . . . : 21318
    Data Length . . . . . : 4
    Section . . . . . . . : Answer
    A (Host) Record . . . : 216.21.13.16


    Record Name . . . . . : serve.popads.net
    Record Type . . . . . : 1
    Time To Live  . . . . : 21318
    Data Length . . . . . : 4
    Section . . . . . . . : Answer
    A (Host) Record . . . : 216.21.13.11
```

```
C:\Users\antony>ipconfig /release

Windows IP Configuration

No operation can be performed on Local Area Connection* 1 while it has its media disconnected.
No operation can be performed on Local Area Connection* 2 while it has its media disconnected.

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::349b:d58d:75f2:58ec%16
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Wireless LAN adapter Local Area Connection* 1:

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

Wireless LAN adapter Local Area Connection* 2:

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

Netstat

```
C:\Users\antony>netstat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:49761        kubernetes:52334       ESTABLISHED
  TCP    127.0.0.1:50608        kubernetes:52334       ESTABLISHED
  TCP    127.0.0.1:52334        kubernetes:49761       ESTABLISHED
  TCP    127.0.0.1:52334        kubernetes:50608       ESTABLISHED
  TCP    192.168.1.4:49411      20.198.162.76:https    ESTABLISHED
  TCP    192.168.1.4:56740      sa-in-f188:5228        ESTABLISHED
  TCP    192.168.1.4:57820      v220201218865137188:4444  ESTABLISHED
  TCP    192.168.1.4:57843      whatsapp-cdn-shv-01-sin6:https  ESTABLISHED
  TCP    192.168.1.4:57844      98:https               ESTABLISHED
  TCP    192.168.1.4:57845      20.189.173.3:https     TIME_WAIT
  TCP    192.168.1.4:57849      52.184.216.174:https   ESTABLISHED
  TCP    192.168.1.4:57850      40.91.73.169:https     TIME_WAIT
  TCP    192.168.1.4:57851      1drv:https             ESTABLISHED
  TCP    192.168.1.4:57852      1drv:https             ESTABLISHED
  TCP    192.168.1.4:58831      sa-in-f188:5228        ESTABLISHED
  TCP    192.168.1.4:60732      20.198.162.76:https    ESTABLISHED
  TCP    192.168.1.4:64708      20.198.162.76:https    ESTABLISHED
```

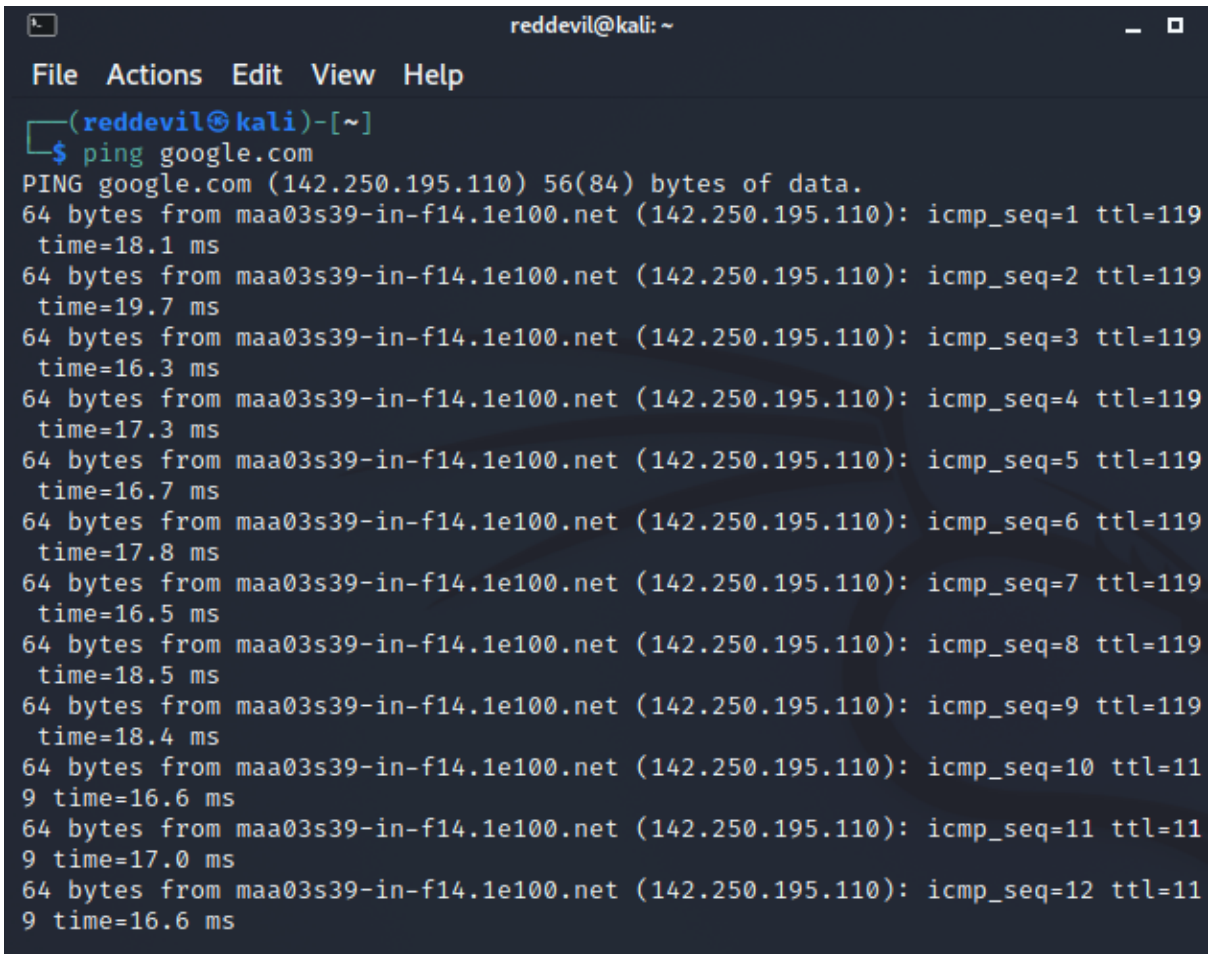
```
C:\Users\antony>netstat -n

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:49761        127.0.0.1:52334        ESTABLISHED
  TCP    127.0.0.1:50608        127.0.0.1:52334        ESTABLISHED
  TCP    127.0.0.1:52334        127.0.0.1:49761        ESTABLISHED
  TCP    127.0.0.1:52334        127.0.0.1:50608        ESTABLISHED
  TCP    192.168.1.4:49411      20.198.162.76:443      ESTABLISHED
  TCP    192.168.1.4:56740      74.125.200.188:5228    ESTABLISHED
  TCP    192.168.1.4:57820      45.132.246.208:4444    ESTABLISHED
  TCP    192.168.1.4:57843      157.240.7.54:443       ESTABLISHED
  TCP    192.168.1.4:57856      20.44.229.112:443      TIME_WAIT
  TCP    192.168.1.4:58831      74.125.200.188:5228    ESTABLISHED
  TCP    192.168.1.4:60732      20.198.162.76:443      ESTABLISHED
  TCP    192.168.1.4:64708      20.198.162.76:443      ESTABLISHED
```

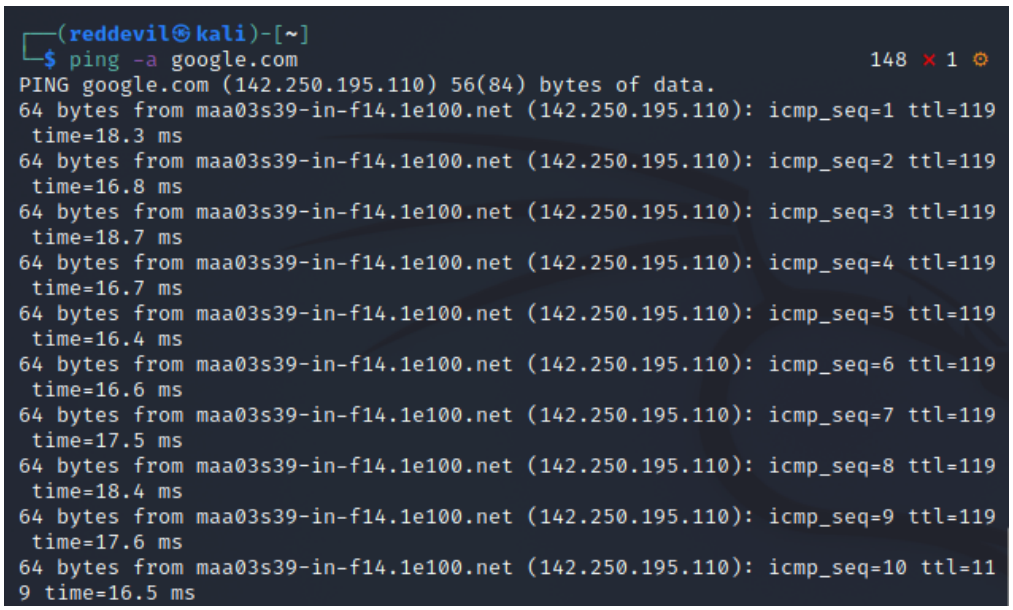
```
C:\Users\antony>netstat -n 5

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:49761        127.0.0.1:52334        ESTABLISHED
  TCP    127.0.0.1:50608        127.0.0.1:52334        ESTABLISHED
  TCP    127.0.0.1:52334        127.0.0.1:49761        ESTABLISHED
  TCP    127.0.0.1:52334        127.0.0.1:50608        ESTABLISHED
  TCP    192.168.1.4:49411      20.198.162.76:443      ESTABLISHED
  TCP    192.168.1.4:56740      74.125.200.188:5228    ESTABLISHED
  TCP    192.168.1.4:57820      45.132.246.208:4444    ESTABLISHED
  TCP    192.168.1.4:57843      157.240.7.54:443       ESTABLISHED
  TCP    192.168.1.4:57856      20.44.229.112:443      TIME_WAIT
  TCP    192.168.1.4:57857      13.107.42.12:443       ESTABLISHED
  TCP    192.168.1.4:57858      20.44.229.112:443      ESTABLISHED
  TCP    192.168.1.4:58831      74.125.200.188:5228    ESTABLISHED
  TCP    192.168.1.4:60732      20.198.162.76:443      ESTABLISHED
  TCP    192.168.1.4:64708      20.198.162.76:443      ESTABLISHED

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    127.0.0.1:49761        127.0.0.1:52334        ESTABLISHED
  TCP    127.0.0.1:50608        127.0.0.1:52334        ESTABLISHED
  TCP    127.0.0.1:52334        127.0.0.1:49761        ESTABLISHED
  TCP    127.0.0.1:52334        127.0.0.1:50608        ESTABLISHED
  TCP    192.168.1.4:49411      20.198.162.76:443      ESTABLISHED
  TCP    192.168.1.4:56740      74.125.200.188:5228    ESTABLISHED
  TCP    192.168.1.4:57820      45.132.246.208:4444    ESTABLISHED
  TCP    192.168.1.4:57843      157.240.7.54:443       ESTABLISHED
  TCP    192.168.1.4:57856      20.44.229.112:443      TIME_WAIT
  TCP    192.168.1.4:57857      13.107.42.12:443       ESTABLISHED
  TCP    192.168.1.4:57858      20.44.229.112:443      ESTABLISHED
  TCP    192.168.1.4:58831      74.125.200.188:5228    ESTABLISHED
  TCP    192.168.1.4:60732      20.198.162.76:443      ESTABLISHED
  TCP    192.168.1.4:64708      20.198.162.76:443      ESTABLISHED

Active Connections
```

```
C:\Users\antony>netstat -a

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    0.0.0.0:80             DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:135            DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:443            DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:445            DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:3306           DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:5040           DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:5357           DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:7680           DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:49664          DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:49665          DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:49666          DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:49667          DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:49668          DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:49669          DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:49670          DESKTOP-IU4O5JG:0      LISTENING
  TCP    0.0.0.0:49671          DESKTOP-IU4O5JG:0      LISTENING
  TCP    127.0.0.1:1001         DESKTOP-IU4O5JG:0      LISTENING
  TCP    127.0.0.1:5939         DESKTOP-IU4O5JG:0      LISTENING
  TCP    127.0.0.1:9222         DESKTOP-IU4O5JG:0      LISTENING
  TCP    127.0.0.1:27017        DESKTOP-IU4O5JG:0      LISTENING
  TCP    127.0.0.1:49761        kubernetes:52334       ESTABLISHED
  TCP    127.0.0.1:50608        kubernetes:52334       ESTABLISHED
  TCP    127.0.0.1:52334        DESKTOP-IU4O5JG:0      LISTENING
  TCP    127.0.0.1:52334        kubernetes:49761       ESTABLISHED
  TCP    127.0.0.1:52334        kubernetes:50608       ESTABLISHED
  TCP    192.168.1.4:139        DESKTOP-IU4O5JG:0      LISTENING
  TCP    192.168.1.4:49229      117.18.232.200:https   ESTABLISHED
  TCP    192.168.1.4:49230      52.184.216.174:https   ESTABLISHED
```

Linux

Ping


reddevil@kali: ~
File Actions Edit View Help
(reddevil㉿kali)-[~]
$ ping google.com
PING google.com (142.250.195.110) 56(84) bytes of data.
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=1 ttl=119 time=18.1 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=2 ttl=119 time=19.7 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=3 ttl=119 time=16.3 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=4 ttl=119 time=17.3 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=5 ttl=119 time=16.7 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=6 ttl=119 time=17.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=7 ttl=119 time=16.5 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=8 ttl=119 time=18.5 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=9 ttl=119 time=18.4 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=10 ttl=119 time=16.6 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=11 ttl=119 time=17.0 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=12 ttl=119 time=16.6 ms


(reddevil㉿kali)-[~]
$ ping -a google.com
148 × 1
PING google.com (142.250.195.110) 56(84) bytes of data.
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=1 ttl=119 time=18.3 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=2 ttl=119 time=16.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=3 ttl=119 time=18.7 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=4 ttl=119 time=16.7 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=5 ttl=119 time=16.4 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=6 ttl=119 time=16.6 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=7 ttl=119 time=17.5 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=8 ttl=119 time=18.4 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=9 ttl=119 time=17.6 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=10 ttl=119 time=16.5 ms

```
┌──(reddevil㉿kali)-[~]
└─$ ping -V
ping from iputils 20210202
```

```
┌──(reddevil㉿kali)-[~]
└─$ ping -b google.com                                          148 ✕ 4 ⚙
PING google.com (142.250.195.110) 56(84) bytes of data.
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=1 ttl=119
 time=19.0 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=2 ttl=119
 time=16.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=3 ttl=119
 time=19.4 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=4 ttl=119
 time=17.1 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=5 ttl=119
 time=16.7 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=6 ttl=119
 time=17.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=7 ttl=119
 time=18.9 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=8 ttl=119
 time=16.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=9 ttl=119
 time=16.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=10 ttl=11
9 time=17.9 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=11 ttl=11
9 time=18.2 ms
```

Route

```
┌──(reddevil㉿kali)-[~]
└─$ route                                                       3 ✕ 5 ⚙
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
default         192.168.1.1     0.0.0.0         UG    100    0        0 eth0
192.168.1.0     0.0.0.0         255.255.255.0   U     100    0        0 eth0
```

```
┌──(reddevil㉿kali)-[~]
└─$ route -n                                                            5 ⚙
Kernel IP routing table
Destination     Gateway         Genmask         Flags Metric Ref    Use Iface
0.0.0.0         192.168.1.1     0.0.0.0         UG    100    0        0 eth0
192.168.1.0     0.0.0.0         255.255.255.0   U     100    0        0 eth0
```

```
┌──(reddevil㉿kali)-[~]
└─$ route -Cn                                                          5 ⚙
Kernel IP routing cache
Source          Destination     Gateway         Flags Metric Ref    Use Iface
```

```
┌──(reddevil㉿kali)-[~]
└─$ ip route                                                           5 ⚙
default via 192.168.1.1 dev eth0 proto dhcp metric 100
192.168.1.0/24 dev eth0 proto kernel scope link src 192.168.1.6 metric 100
```

Traceroute

```
┌──(reddevil㉿kali)-[~]
└─$ traceroute google.com                                          2 ✕ 5 ⚙
traceroute to google.com (142.250.195.110), 30 hops max, 60 byte packets
 1  192.168.1.1 (192.168.1.1)  0.427 ms  0.505 ms  0.595 ms
 2  * * *
 3  * * *
 4  130.230.88.202.asianet.co.in (202.88.230.130)  19.721 ms  20.027 ms  19.7
65 ms
 5  77.252.88.202.asianet.co.in (202.88.252.77)  18.736 ms  18.773 ms  19.055
 ms
 6  * * *
 7  74.125.242.129 (74.125.242.129)  30.965 ms 142.251.55.90 (142.251.55.90)
 25.422 ms 74.125.242.129 (74.125.242.129)  28.094 ms
 8  142.251.55.69 (142.251.55.69)  30.022 ms 142.251.55.71 (142.251.55.71)  3
3.742 ms 142.251.55.69 (142.251.55.69)  35.672 ms
 9  maa03s39-in-f14.1e100.net (142.250.195.110)  32.153 ms  22.027 ms  16.529
 ms
```

```
┌──(reddevil㉿kali)-[~]
└─$ traceroute -4 google.com                                           5 ⚙
traceroute to google.com (142.250.195.110), 30 hops max, 60 byte packets
 1  192.168.1.1 (192.168.1.1)  0.365 ms  0.476 ms  0.503 ms
 2  * * *
 3  * * *
 4  130.230.88.202.asianet.co.in (202.88.230.130)  19.244 ms  15.406 ms  19.3
46 ms
 5  * 77.252.88.202.asianet.co.in (202.88.252.77)  15.908 ms  19.669 ms
 6  * * *
 7  142.251.55.120 (142.251.55.120)  33.494 ms 142.251.55.74 (142.251.55.74)
 30.279 ms 142.251.55.42 (142.251.55.42)  33.196 ms
 8  74.125.242.130 (74.125.242.130)  32.873 ms 142.251.55.69 (142.251.55.69)
 31.429 ms 74.125.242.138 (74.125.242.138)  39.660 ms
 9  maa03s39-in-f14.1e100.net (142.250.195.110)  19.437 ms  18.884 ms  16.910
 ms
```

```
┌──(reddevil㉿kali)-[~]
└─$ traceroute -6 google.com                                           5 ⚙
traceroute to google.com (2404:6800:4007:824::200e), 30 hops max, 80 byte pac
kets
 1  fe80::1%eth0 (fe80::1%eth0)  3.292 ms !N  3.272 ms !N  3.253 ms !N
```

```
┌──(reddevil㉿kali)-[~]
└─$ traceroute -d google.com                                                5 ⚙
traceroute to google.com (142.250.195.110), 30 hops max, 60 byte packets
setsockopt SO_DEBUG: Permission denied
```

Nslookup

```
┌──(reddevil㉿kali)-[~]
└─$ nslookup google.com
Server:         192.168.1.1
Address:        192.168.1.1#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.195.110
Name:   google.com
Address: 2404:6800:4007:824::200e
```

```
┌──(reddevil㉿kali)-[~]
└─$ nslookup -q=MX google.com                                               6 ⚙
Server:         192.168.1.1
Address:        192.168.1.1#53

Non-authoritative answer:
google.com      mail exchanger = 30 alt2.aspmx.l.google.com.
google.com      mail exchanger = 40 alt3.aspmx.l.google.com.
google.com      mail exchanger = 10 aspmx.l.google.com.
google.com      mail exchanger = 50 alt4.aspmx.l.google.com.
google.com      mail exchanger = 20 alt1.aspmx.l.google.com.
```

```
┌──(reddevil㉿kali)-[~]
└─$ nslookup -type=soa google.com
Server:         192.168.1.1
Address:        192.168.1.1#53

Non-authoritative answer:
google.com
        origin = ns1.google.com
        mail addr = dns-admin.google.com
        serial = 396090275
        refresh = 900
        retry = 900
        expire = 1800
        minimum = 60
```

```
┌──(reddevil㉿kali)-[~]
└─$ nslookup -type=a google.com
Server:         192.168.1.1
Address:        192.168.1.1#53

Non-authoritative answer:
Name:   google.com
Address: 142.250.195.110
```

Ifconfig

```
┌──(reddevil㉿kali)-[~]
└─$ ifconfig                                                    255 × 7 ⚙
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.1.6  netmask 255.255.255.0  broadcast 192.168.1.255
        inet6 fe80::129a:ddff:fe44:3699  prefixlen 64  scopeid 0×20<link>
        ether 10:9a:dd:44:36:99  txqueuelen 1000  (Ethernet)
        RX packets 1345  bytes 916585 (895.1 KiB)
        RX errors 0  dropped 376  overruns 0  frame 0
        TX packets 915  bytes 77837 (76.0 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
        device interrupt 16

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0×10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 16  bytes 712 (712.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 16  bytes 712 (712.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

```
┌──(reddevil㉿kali)-[~]
└─$ ifconfig -a                                                 1 × 7 ⚙
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.1.6  netmask 255.255.255.0  broadcast 192.168.1.255
        inet6 fe80::129a:ddff:fe44:3699  prefixlen 64  scopeid 0×20<link>
        ether 10:9a:dd:44:36:99  txqueuelen 1000  (Ethernet)
        RX packets 1366  bytes 918603 (897.0 KiB)
        RX errors 0  dropped 395  overruns 0  frame 0
        TX packets 918  bytes 78115 (76.2 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
        device interrupt 16

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0×10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 16  bytes 712 (712.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 16  bytes 712 (712.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

wlan0: flags=4098<BROADCAST,MULTICAST>  mtu 1500
        ether d6:92:9f:ba:94:d6  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
```

```
┌──(reddevil㉿kali)-[~]
└─$ ifconfig -s                                                    7 ⚙
Iface      MTU    RX-OK RX-ERR RX-DRP RX-OVR    TX-OK TX-ERR TX-DRP TX-OVR Fl
g
eth0      1500     1377      0    405 0           918      0      0      0 BM
RU
lo       65536       16      0      0 0            16      0      0      0 LR
U
```

```
┌──(reddevil㉿kali)-[~]
└─$ ifconfig -v                                                    7 ⚙
eth0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.1.6  netmask 255.255.255.0  broadcast 192.168.1.255
        inet6 fe80::129a:ddff:fe44:3699  prefixlen 64  scopeid 0×20<link>
        ether 10:9a:dd:44:36:99  txqueuelen 1000  (Ethernet)
        RX packets 1382  bytes 920330 (898.7 KiB)
        RX errors 0  dropped 408  overruns 0  frame 0
        TX packets 919  bytes 78209 (76.3 KiB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
        device interrupt 16

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
        inet 127.0.0.1  netmask 255.0.0.0
        inet6 ::1  prefixlen 128  scopeid 0×10<host>
        loop  txqueuelen 1000  (Local Loopback)
        RX packets 16  bytes 712 (712.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 16  bytes 712 (712.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

Netstat

```
┌──(reddevil㉿kali)-[~]
└─$ netstat                                                    7 ⚙
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State

udp        0      0 192.168.1.6:bootpc      192.168.1.1:bootps      ESTABLISH
ED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                    17319    /run/user/1000/sys
temd/notify
unix  3      [ ]         DGRAM                    12611    /run/systemd/notif
y
unix  2      [ ]         DGRAM                    12626    /run/systemd/journ
al/syslog
unix  13     [ ]         DGRAM                    12632    /run/systemd/journ
al/dev-log
unix  7      [ ]         DGRAM                    12634    /run/systemd/journ
al/socket
unix  3      [ ]         STREAM     CONNECTED     20497
unix  3      [ ]         STREAM     CONNECTED     17889
unix  3      [ ]         STREAM     CONNECTED     17703
unix  3      [ ]         STREAM     CONNECTED     20666    @/tmp/.ICE-unix/74
3
unix  3      [ ]         STREAM     CONNECTED     17893
```

```
┌──(reddevil㉿kali)-[~]
└─$ netstat -n                                                 7 ⚙
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State

udp        0      0 192.168.1.6:68          192.168.1.1:67          ESTABLISH
ED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                    17319    /run/user/1000/sys
temd/notify
unix  3      [ ]         DGRAM                    12611    /run/systemd/notif
y
unix  2      [ ]         DGRAM                    12626    /run/systemd/journ
al/syslog
unix  13     [ ]         DGRAM                    12632    /run/systemd/journ
al/dev-log
unix  8      [ ]         DGRAM                    12634    /run/systemd/journ
al/socket
unix  3      [ ]         STREAM     CONNECTED     20497
unix  3      [ ]         STREAM     CONNECTED     17889
unix  3      [ ]         STREAM     CONNECTED     17703
unix  3      [ ]         STREAM     CONNECTED     20666    @/tmp/.ICE-unix/74
```

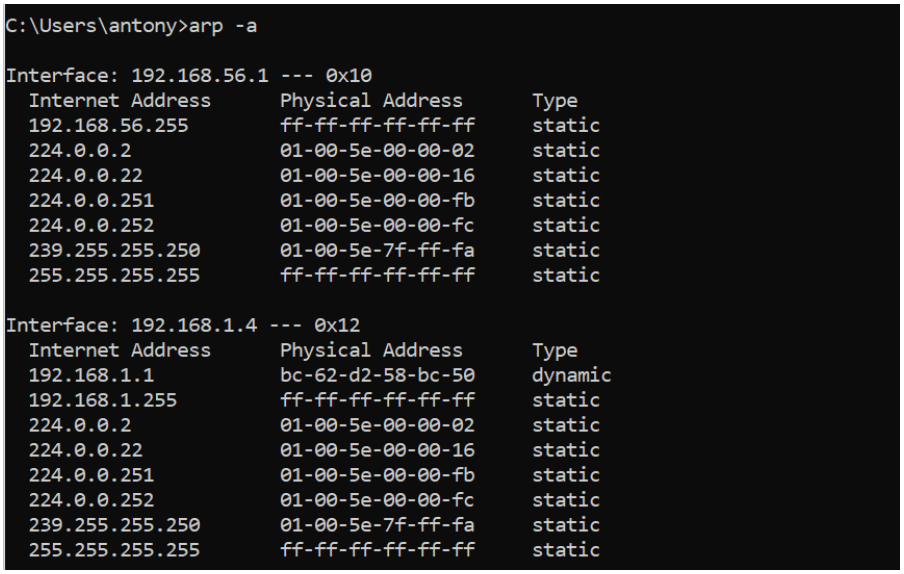
```
┌──(reddevil㉿kali)-[~]
└─$ netstat -n 5                                                    7 ⚙
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State

udp        0      0 192.168.1.6:68          192.168.1.1:67          ESTABLISH
ED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ]         DGRAM                    17319    /run/user/1000/sys
temd/notify
unix  3      [ ]         DGRAM                    12611    /run/systemd/notif
y
unix  2      [ ]         DGRAM                    12626    /run/systemd/journ
al/syslog
unix  13     [ ]         DGRAM                    12632    /run/systemd/journ
al/dev-log
unix  8      [ ]         DGRAM                    12634    /run/systemd/journ
al/socket
unix  3      [ ]         STREAM     CONNECTED     20497
unix  3      [ ]         STREAM     CONNECTED     17889
unix  3      [ ]         STREAM     CONNECTED     17703
unix  3      [ ]         STREAM     CONNECTED     20666    @/tmp/.ICE-unix/74
3
unix  3      [ ]         STREAM     CONNECTED     17893
unix  3      [ ]         STREAM     CONNECTED     18553    @/tmp/dbus-eaUadNk
2Yv
```

```
┌──(reddevil㉿kali)-[~]
└─$ netstat -a                                                      7 ⚙
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State

udp        0      0 192.168.1.6:bootpc      192.168.1.1:bootps      ESTABLISH
ED
raw    30720      0 0.0.0.0:icmp            0.0.0.0:*               7

raw    45312      0 0.0.0.0:icmp            0.0.0.0:*               7

raw    45312      0 0.0.0.0:icmp            0.0.0.0:*               7

raw    45312      0 0.0.0.0:icmp            0.0.0.0:*               7

raw    72192      0 0.0.0.0:icmp            0.0.0.0:*               7

raw6   26880      0 [::]:ipv6-icmp          [::]:*                  7

raw6   26880      0 [::]:ipv6-icmp          [::]:*                  7

raw6   28416      0 [::]:ipv6-icmp          [::]:*                  7

raw6   33792      0 [::]:ipv6-icmp          [::]:*                  7
```

2. Identify and perform 5 more network commands and it's working.

a). ARP

The ARP command corresponds to the Address Resolution Protocol. Although it is easy to think of network communications in terms of IP addressing, packet delivery is ultimately dependent on the Media Access Control (MAC) address of the device's network adapter. This is where the Address Resolution Protocol comes into play. Its job is to map IP addresses to MAC addresses. Windows devices maintain an ARP cache, which contains the results of recent ARP queries. You can see the contents of this cache by using the ARP -A command. If you are having problems communicating with one specific host, you can append the remote host's IP address to the ARP -A command.

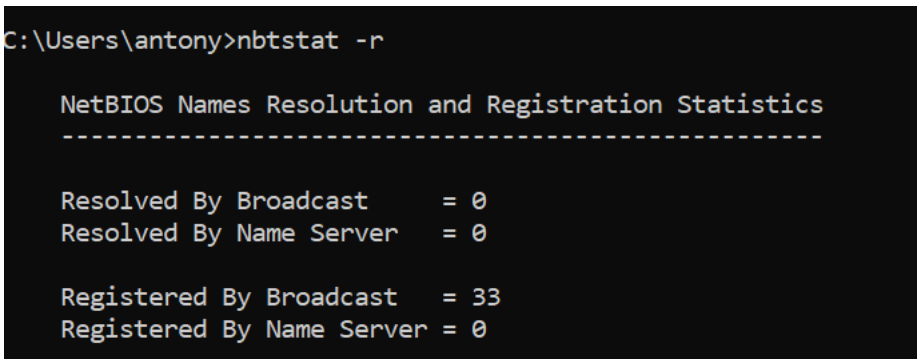


```
C:\Users\antony>arp -a

Interface: 192.168.56.1 --- 0x10
  Internet Address      Physical Address      Type
  192.168.56.255        ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static

Interface: 192.168.1.4 --- 0x12
  Internet Address      Physical Address      Type
  192.168.1.1           bc-62-d2-58-bc-50     dynamic
  192.168.1.255         ff-ff-ff-ff-ff-ff     static
  224.0.0.2             01-00-5e-00-00-02     static
  224.0.0.22            01-00-5e-00-00-16     static
  224.0.0.251           01-00-5e-00-00-fb     static
  224.0.0.252           01-00-5e-00-00-fc     static
  239.255.255.250       01-00-5e-7f-ff-fa     static
  255.255.255.255       ff-ff-ff-ff-ff-ff     static
```

b)NbtStat

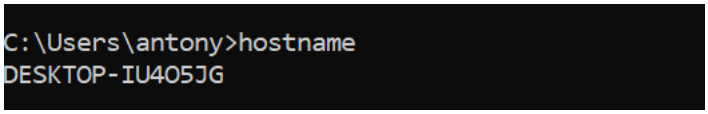
As I am sure you probably know, computers that are running a Windows operating system are assigned a computer name. Oftentimes, there is a domain name or a workgroup name that is also assigned to the computer. The computer name is sometimes referred to as the NetBIOS name. Windows uses several different methods to map NetBIOS names to IP addresses, such as broadcast, LMHost lookup, or even using the nearly extinct method of querying a WINS server. Of course, NetBIOS over TCP/IP can occasionally break down. The NbtStat command can help you to diagnose and correct such problems. The NbtStat -n command for example, shows the NetBIOS names that are in use by

a device. The NbtStat -r command shows how many NetBIOS names the device has been able to resolve recently.



c)Hostname

The previously discussed NbtStat command can provide you with the host name that has been assigned to a Windows device, if you know which switch to use with the command. However, if you're just looking for a fast and easy way of verifying a computer's name, then try using the Hostname command. Typing Hostname at the command prompt returns the local computer name.



d) PathPing

Earlier, I talked about the Ping utility and the Tracert utility, and the similarities between them. As you might have guessed, the PathPing tool is a utility that combines the best aspects of Tracert and Ping. Entering the PathPing command followed by a host name initiates what looks like a somewhat standard Tracert process. Once this process completes however, the tool takes 300 seconds (five minutes) to gather statistics, and then reports latency and packet loss statistics that are more detailed than those provided by Ping or Tracert.

```
C:\Users\antony>pathping www.google.com

Tracing route to www.google.com [142.250.67.36]
over a maximum of 30 hops:
  0  host.docker.internal [192.168.1.4]
  1  192.168.1.1
  2  1.105.92.111.asianet.co.in [111.92.105.1]
  3     *        *        *
Computing statistics for 50 seconds...
            Source to Here   This Node/Link
Hop  RTT    Lost/Sent = Pct  Lost/Sent = Pct  Address
  0                                           host.docker.internal [192.168.1.4]
                                    0/ 100 =  0%   |
  1    2ms     0/ 100 =  0%     0/ 100 =  0%  192.168.1.1
                                    0/ 100 =  0%   |
  2    2ms     0/ 100 =  0%     0/ 100 =  0%  1.105.92.111.asianet.co.in [111.92.105.1]

Trace complete.
```

e) getmac

Command Another very simple command that shows the MAC address of your network interfaces

```
C:\Users\antony>getmac

Physical Address    Transport Name
=================== ============================================================
68-54-5A-D0-DD-79   \Device\Tcpip_{E3BAB5C5-E82D-4A1A-AA2D-048A002BAC9F}
0A-00-27-00-00-10   \Device\Tcpip_{E1C797D7-DE40-4962-8539-985005FFCD79}
```