

# Networking & System Administration Lab

## ASSIGNMENT 6: LAB EXERCISE

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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\Dell>ping google.com

Pinging google.com [2404:6800:4009:804::200e] with 32 bytes of data:
Reply from 2404:6800:4009:804::200e: time=67ms
Reply from 2404:6800:4009:804::200e: time=72ms
Reply from 2404:6800:4009:804::200e: time=73ms
Reply from 2404:6800:4009:804::200e: time=255ms

Ping statistics for 2404:6800:4009:804::200e:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 67ms, Maximum = 255ms, Average = 116ms

C:\Users\Dell>
```

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

Pinging google.com [2404:6800:4009:804::200e] with 32 bytes of data:
Reply from 2404:6800:4009:804::200e: time=190ms
Reply from 2404:6800:4009:804::200e: time=71ms
Reply from 2404:6800:4009:804::200e: time=160ms
Reply from 2404:6800:4009:804::200e: time=102ms

Ping statistics for 2404:6800:4009:804::200e:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 71ms, Maximum = 190ms, Average = 130ms

C:\Users\Dell>
```

```
C:\Users\Dellping -t google.com

Pinging google.com [2404:6800:4009:804::200e] with 32 bytes of data:
Reply from 2404:6800:4009:804::200e: time=1469ms
Reply from 2404:6800:4009:804::200e: time=616ms
Reply from 2404:6800:4009:804::200e: time=1236ms
Reply from 2404:6800:4009:804::200e: time=167ms
Reply from 2404:6800:4009:804::200e: time=107ms
Reply from 2404:6800:4009:804::200e: time=105ms
Reply from 2404:6800:4009:804::200e: time=73ms
Reply from 2404:6800:4009:804::200e: time=293ms
Reply from 2404:6800:4009:804::200e: time=155ms
Reply from 2404:6800:4009:804::200e: time=69ms
Reply from 2404:6800:4009:804::200e: time=168ms
Reply from 2404:6800:4009:804::200e: time=180ms
Reply from 2404:6800:4009:804::200e: time=100ms
Reply from 2404:6800:4009:804::200e: time=165ms
Reply from 2404:6800:4009:804::200e: time=98ms
Reply from 2404:6800:4009:804::200e: time=77ms
Reply from 2404:6800:4009:804::200e: time=132ms
Reply from 2404:6800:4009:804::200e: time=65ms
Reply from 2404:6800:4009:804::200e: time=85ms
Reply from 2404:6800:4009:804::200e: time=392ms
Reply from 2404:6800:4009:804::200e: time=261ms
Reply from 2404:6800:4009:804::200e: time=99ms
Reply from 2404:6800:4009:804::200e: time=75ms
Reply from 2404:6800:4009:804::200e: time=65ms
Reply from 2404:6800:4009:804::200e: time=170ms
Reply from 2404:6800:4009:804::200e: time=126ms
Reply from 2404:6800:4009:804::200e: time=84ms
Reply from 2404:6800:4009:804::200e: time=115ms

Ping statistics for 2404:6800:4009:804::200e:
    Packets: Sent = 28, Received = 28, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 65ms, Maximum = 1469ms, Average = 240ms
Control-C
^C
```

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

Pinging google.com [216.58.203.14] with 32 bytes of data:
General failure.
General failure.
General failure.
General failure.

Ping statistics for 216.58.203.14:
    Packets: Sent = 4, Received = 0, Lost = 4 (100% loss),

C:\Users\Dell>
```

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

Pinging google.com [216.58.203.14] with 32 bytes of data:
Reply from 216.58.203.14: bytes=32 time=1434ms TTL=114
Reply from 216.58.203.14: bytes=32 time=653ms TTL=114
Reply from 216.58.203.14: bytes=32 time=530ms TTL=114
Reply from 216.58.203.14: bytes=32 time=278ms TTL=114

Ping statistics for 216.58.203.14:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
    Approximate round trip times in milli-seconds:
        Minimum = 278ms, Maximum = 1434ms, Average = 723ms
```

## Route:

```

C:\Users\Dell>route print
=====
Interface List
13...c0 3e ba 28 d5 fb .....Realtek PCIe GbE Family Controller
4...0a 00 27 00 00 04 .....VirtualBox Host-Only Ethernet Adapter
8...ac 12 03 50 5a 51 .....Microsoft Wi-Fi Direct Virtual Adapter
18...ae 12 03 50 5a 50 .....Microsoft Wi-Fi Direct Virtual Adapter #2
19...ac 12 03 50 5a 50 .....Intel(R) Wireless-AC 9462
10...ac 12 03 50 5a 54 .....Bluetooth Device (Personal Area Network)
1.....Software Loopback Interface 1
=====

IPv4 Route Table
=====
Active Routes:
Network Destination        Netmask          Gateway           Interface        Metric
0.0.0.0          0.0.0.0          192.168.43.1      192.168.43.195    55
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
192.168.43.0     255.255.255.0    On-link           192.168.43.195    311
192.168.43.195   255.255.255.255  On-link           192.168.43.195    311
192.168.43.255   255.255.255.255  On-link           192.168.43.195    311
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           192.168.43.195    311
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           192.168.43.195    311
=====

Persistent Routes:
None

IPv6 Route Table
=====
Active Routes:
If Metric Network Destination      Gateway
19      71 ::/0 fe80::e0e9:35ff:febf:f3b1
1      331 ::1/128 On-link
19      71 2402:3a80:108c:b194::/64 On-link
19      311 2402:3a80:108c:b194:1483:bdc4:a1d2:d8a8/128
On-link
19      311 2402:3a80:108c:b194:859c:5139:1bea:9b8d/128
On-link
4      281 fe80::/64 On-link
19      311 fe80::/64 On-link

```

```
C:\Users\ DELL\route print -4
=====
Interface List
13...c0 3e ba 28 d5 fb .....Realtek PCIe GbE Family Controller
4...0a 00 27 00 00 04 .....VirtualBox Host-Only Ethernet Adapter
8...ac 12 03 50 5a 51 .....Microsoft Wi-Fi Direct Virtual Adapter
18...ae 12 03 50 5a 50 .....Microsoft Wi-Fi Direct Virtual Adapter #2
19...ac 12 03 50 5a 50 .....Intel(R) Wireless-AC 9462
10...ac 12 03 50 5a 54 .....Bluetooth Device (Personal Area Network)
1.....Software Loopback Interface 1
=====

IPv4 Route Table
=====
Active Routes:
Network Destination        Netmask          Gateway            Interface          Metric
0.0.0.0                    0.0.0.0          192.168.43.1       192.168.43.195     55
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
192.168.43.0               255.255.255.0    On-link            192.168.43.195     311
192.168.43.195             255.255.255.255 On-link            192.168.43.195     311
192.168.43.255             255.255.255.255 On-link            192.168.43.195     311
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            192.168.43.195     311
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            192.168.43.195     311
=====
Persistent Routes:
None
```

```
C:\Users\Dell>route print -6
=====
Interface List
13...c0 3e ba 28 d5 fb .....Realtek PCIe GbE Family Controller
4...0a 00 27 00 00 04 .....VirtualBox Host-Only Ethernet Adapter
8...ac 12 03 50 5a 51 .....Microsoft Wi-Fi Direct Virtual Adapter
18...ae 12 03 50 5a 50 .....Microsoft Wi-Fi Direct Virtual Adapter #2
19...ac 12 03 50 5a 50 .....Intel(R) Wireless-AC 9462
10...ac 12 03 50 5a 54 .....Bluetooth Device (Personal Area Network)
1.....Software Loopback Interface 1
=====

IPv6 Route Table
=====
Active Routes:
If Metric Network Destination      Gateway
19      71      ::0
19      331     ::1/128
19      71      2402:3a80:108c:b194::/64 On-link
19      311     2402:3a80:108c:b194:1483:bdc4:a1d2:d8a8/128
19      311     2402:3a80:108c:b194:859c:5139:1bea:9b8d/128
19      311     fe80::/64 On-link
4       281     fe80::/64 On-link
19      311     fe80::/64 On-link
19      311     fe80::1483:bdc4:a1d2:d8a8/128
19      311     fe80::550d:c0a0:6151:d3c8/128
4       281     ff00::/8 On-link
1       331     ff00::/8 On-link
4       281     ff00::/8 On-link
19      311     ff00::/8 On-link
=====
Persistent Routes:
None
```

```
C:\Users\Dell>route print *157
=====
Interface List
13...c0 3e ba 28 d5 fb .....Realtek PCIe GbE Family Controller
4...0a 00 27 00 00 04 .....VirtualBox Host-Only Ethernet Adapter
8...ac 12 03 50 5a 51 .....Microsoft Wi-Fi Direct Virtual Adapter
18...ae 12 03 50 5a 50 .....Microsoft Wi-Fi Direct Virtual Adapter #2
19...ac 12 03 50 5a 50 .....Intel(R) Wireless-AC 9462
10...ac 12 03 50 5a 54 .....Bluetooth Device (Personal Area Network)
1.....Software Loopback Interface 1
=====

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

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

## Traceroute:

```
C:\Users\Dell>tracert 192.168.1.1
Tracing route to 192.168.1.1 over a maximum of 30 hops
```

```
  1     1 ms    <1 ms    <1 ms  192.168.43.1
  2    223 ms   190 ms   188 ms  100.91.255.254
  3     *      *      *      Request timed out.
  4    153 ms   216 ms    75 ms  10.174.173.81
  5     *      *      *      Request timed out.
  6     66 ms    65 ms    77 ms  192.168.100.13
  7     *      *      *      Request timed out.
  8    470 ms   917 ms  1097 ms  10.174.173.65
  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     *      *      *      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.

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

```
Tracing route to www.google.com [2404:6800:4009:81e::2004]
over a maximum of 30 hops:
```

```
  1     1 ms     1 ms    <1 ms  2402:3a80:108c:b194::be
  2     *      *      *      Request timed out.
  3    80 ms    47 ms    49 ms  fd00:0:17:1c::2
  4     *      *      *      Request timed out.
  5     *      2094 ms  218 ms  fd00:0:17:1c::2
  6    262 ms    81 ms   106 ms  fd00:0:16:38::1
  7    126 ms   156 ms    72 ms  fd00:0:16:3a::2
  8    305 ms     *    3085 ms  fd00:0:17:29::3
  9     52 ms    41 ms    56 ms  2400:5200:2c10:1::12
 10   533 ms   647 ms   145 ms  2400:5200:401:a::11
 11     *      *      *      Request timed out.
 12    78 ms     *   1440 ms  2404:6800:80dc::1
 13   211 ms    74 ms    67 ms  2001:4860:0:1::43d8
 14     *      *      *      Request timed out.
 15     *      *      *      Request timed out.
 16    98 ms    96 ms    83 ms  2001:4860:0:1::4fa1
 17   142 ms    93 ms   121 ms  bom07s28-in-x04.1e100.net [2404:6800:4009:81e::2004]
```

Trace complete.

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

Tracing route to new-fp-shed.wg1.b.yahoo.com [2406:2000:e4:1605::9000]
over a maximum of 30 hops:
```

```
 1      1 ms      1 ms      2 ms  2402:3a80:108c:b194::be
 2      *          *          *      Request timed out.
 3    267 ms    45 ms    168 ms  fd00:0:17:1c::2
 4      *          *          *      Request timed out.
 5     73 ms    48 ms    121 ms  fd00:0:17:1c::2
 6     36 ms    43 ms    57 ms  fd00:0:16:38::1
 7     97 ms    38 ms    49 ms  fd00:0:16:3a::2
 8    482 ms    331 ms    217 ms  fd00:0:17:29::3
 9     49 ms    46 ms    99 ms  2400:5200:2c10:1::12
10    255 ms    83 ms    86 ms  2400:5200:1800:37::2
11      *          *          *      Request timed out.
12      *    522 ms      *      2403:e800:508:2c::2
13   193 ms      *    1646 ms  2406:2000:f01f:201::1
14      *    1108 ms    245 ms  2406:2000:e4:fc01::1
15      *    277 ms    236 ms  2406:2000:e4:f815::1
16      *    323 ms    218 ms  2406:2000:e4:e408::1
17   266 ms    190 ms    196 ms  2406:2000:e4:1605::9000
```

Trace complete.

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

Tracing route to 22.110.0.1 over a maximum of 30 hops

```
 1      1 ms      <1 ms      <1 ms  192.168.43.1
 2   1546 ms    661 ms    665 ms  100.91.255.254
 3      *          *          *      Request timed out.
 4   626 ms    1934 ms    653 ms  10.174.173.81
 5      *          *          *      Request timed out.
 6   205 ms     78 ms    64 ms  192.168.100.13
 7      *          *          *      Request timed out.
 8      *    1601 ms    372 ms  10.174.173.65
 9   163 ms     76 ms    67 ms  118.185.245.1
10  100 ms     83 ms    224 ms  182.19.106.200
11  258 ms    217 ms    218 ms  ae11-100-xcr1.mar.cw.net [213.185.219.53]
12  181 ms    174 ms    231 ms  ae10-xcr1.ptl.cw.net [195.2.30.213]
13  269 ms    218 ms    216 ms  10gigabitethernet-2-2.par2.he.net [195.42.144.104]
14  784 ms    617 ms    728 ms  100ge12-2.core2.ash1.he.net [184.104.196.241]
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\Dell>nslookup
Default Server:  Unknown
Address:  192.168.43.1
```

```
C:\Users\Dell>nslookup google.com
Server:  Unknown
Address:  192.168.43.1

Non-authoritative answer:
DNS request timed out.
  timeout was 2 seconds.
Name:    google.com
Address:  142.250.192.110
```

```
C:\Users\Dell>
```



```

C:\Users\Dell>nslookup -q=MX google.com
Server:   Unknown
Address:  192.168.43.1

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

aspmx.l.google.com      AAAA IPv6 address = 64:ff9b::4a7d:181a
aspmx.l.google.com      AAAA IPv6 address = 2404:6800:4003:c04::1a
alt2.aspmx.l.google.com AAAA IPv6 address = 64:ff9b::8efa:8d1a
alt2.aspmx.l.google.com AAAA IPv6 address = 2607:f8b0:4023:c0b::1b
alt4.aspmx.l.google.com AAAA IPv6 address = 64:ff9b::40e9:ab1a
alt4.aspmx.l.google.com AAAA IPv6 address = 2607:f8b0:4003:c15::1b
alt1.aspmx.l.google.com AAAA IPv6 address = 64:ff9b::adc2:ca1a
alt1.aspmx.l.google.com AAAA IPv6 address = 2607:f8b0:400e:c00::1b
alt3.aspmx.l.google.com AAAA IPv6 address = 64:ff9b::8efa:731a
alt3.aspmx.l.google.com AAAA IPv6 address = 2607:f8b0:4023:1004::1b

```

```

C:\Users\Dell>nslookup -type=ns google.com
Server:   Unknown
Address:  192.168.43.1

DNS request timed out.
    timeout was 2 seconds.
Non-authoritative answer:
google.com      nameserver = ns3.google.com
google.com      nameserver = ns4.google.com
google.com      nameserver = ns1.google.com
google.com      nameserver = ns2.google.com

ns3.google.com  AAAA IPv6 address = 64:ff9b::d8ef:240a
ns3.google.com  AAAA IPv6 address = 2001:4860:4802:36::a
ns4.google.com  AAAA IPv6 address = 64:ff9b::d8ef:260a
ns4.google.com  AAAA IPv6 address = 2001:4860:4802:38::a
ns1.google.com  AAAA IPv6 address = 64:ff9b::d8ef:200a
ns1.google.com  AAAA IPv6 address = 2001:4860:4802:32::a
ns2.google.com  AAAA IPv6 address = 64:ff9b::d8ef:220a
ns2.google.com  AAAA IPv6 address = 2001:4860:4802:34::a

```

## Ip Config:



```
C:\Users\Dell>ipconfig

Windows IP Configuration

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : maa.apac.dell.com

Ethernet adapter VirtualBox Host-Only Network:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::550d:c0a0:6151:d3c8%4
    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  . : 
    IPv6 Address. . . . . : 2402:3a80:108c:b194:1483:bdc4:a1d2:d8a8
    Temporary IPv6 Address. . . . . : 2402:3a80:108c:b194:859c:5139:1bea:9b8d
    Link-local IPv6 Address . . . . . : fe80::1483:bdc4:a1d2:d8a8%19
    IPv4 Address. . . . . : 192.168.43.195
    Subnet Mask . . . . . : 255.255.255.0
    Default Gateway . . . . . : fe80::e0e9:35ff:febf:f3b1%19
                                192.168.43.1

Ethernet adapter Bluetooth Network Connection:

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

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

Windows IP Configuration

No operation can be performed on Ethernet while it has its media disconnected.
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.
No operation can be performed on Bluetooth Network Connection while it has its media disconnected.

Ethernet adapter Ethernet:

    Media State . . . . . : Media disconnected
    Connection-specific DNS Suffix  . : maa.apac.dell.com

Ethernet adapter VirtualBox Host-Only Network:

    Connection-specific DNS Suffix  . : 
    Link-local IPv6 Address . . . . . : fe80::550d:c0a0:6151:d3c8%4
    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  . : 
    IPv6 Address. . . . . : 2402:3a80:108c:b194:1483:bdc4:a1d2:d8a8
    Temporary IPv6 Address. . . . . : 2402:3a80:108c:b194:859c:5139:1bea:9b8d
    Link-local IPv6 Address . . . . . : fe80::1483:bdc4:a1d2:d8a8%19
    Default Gateway . . . . . : fe80::e0e9:35ff:febf:f3b1%19

Ethernet adapter Bluetooth Network Connection:

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

```

C:\Users\Dell>ipconfig /displaydns

Windows IP Configuration

safebrowsing.googleapis.com
-----
Record Name . . . . . : safebrowsing.googleapis.com
Record Type . . . . . : 28
Time To Live . . . . . : 42
Data Length . . . . . : 16
Section . . . . . : Answer
AAAA Record . . . . . : 2404:6800:4009:821::200a

safebrowsing.googleapis.com
-----
Record Name . . . . . : safebrowsing.googleapis.com
Record Type . . . . . : 1
Time To Live . . . . . : 39
Data Length . . . . . : 4
Section . . . . . : Answer
A (Host) Record . . . . : 142.250.183.42

mtalk.google.com
-----
Record Name . . . . . : mtalk.google.com
Record Type . . . . . : 5
Time To Live . . . . . : 160
Data Length . . . . . : 8
Section . . . . . : Answer
CNAME Record . . . . . : mobile-gtalk.l.google.com

Record Name . . . . . : mobile-gtalk.l.google.com
Record Type . . . . . : 28
Time To Live . . . . . : 160
Data Length . . . . . : 16
Section . . . . . : Answer
AAAA Record . . . . . : 2404:6800:4003:c00:bc

mtalk.google.com

```

```

C:\Users\Dell>ipconfig /showclassid

Error: unrecognized or incomplete command line.

USAGE:
    ipconfig [/allcompartments] [/? | /all |
        /renew [adapter] | /release [adapter] |
        /renew6 [adapter] | /release6 [adapter] |
        /flushdns | /displaydns | /registerdns |
        /showclassid adapter |
        /setclassid adapter [classid] |
        /showclassid6 adapter |
        /setclassid6 adapter [classid] ]

where
    adapter          Connection name
                     (wildcard characters * and ? allowed, see examples)

Options:
    /?              Display this help message
    /all            Display full configuration information.
    /release        Release the IPv4 address for the specified adapter.
    /release6       Release the IPv6 address for the specified adapter.
    /renew          Renew the IPv4 address for the specified adapter.
    /renew6         Renew the IPv6 address for the specified adapter.
    /flushdns       Purges the DNS Resolver cache.
    /registerdns    Refreshes all DHCP leases and re-registers DNS names
    /displaydns     Display the contents of the DNS Resolver Cache.
    /showclassid    Displays all the dhcp class IDs allowed for adapter.
    /setclassid     Modifies the dhcp class id.
    /showclassid6   Displays all the IPv6 DHCP class IDs allowed for adapter.
    /setclassid6    Modifies the IPv6 DHCP class id.

The default is to display only the IP address, subnet mask and
default gateway for each adapter bound to TCP/IP.

For Release and Renew, if no adapter name is specified, then the IP address
leases for all adapters bound to TCP/IP will be released or renewed.

For Setclassid and Setclassid6, if no ClassId is specified, then the ClassId is removed.

Examples:
    > ipconfig          ... Show information
    > ipconfig /all      ... Show detailed information
    > ipconfig /renew    ... renew all adapters
    > ipconfig /renew EL* ... renew any connection that has its
                        name starting with EL

```

## NetStat:

```
C:\Users\Dell>netstat
```

Active Connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:54170	DESKTOP-PCFNB09:54171	ESTABLISHED
TCP	127.0.0.1:54171	DESKTOP-PCFNB09:54170	ESTABLISHED
TCP	127.0.0.1:54172	DESKTOP-PCFNB09:54173	ESTABLISHED
TCP	127.0.0.1:54173	DESKTOP-PCFNB09:54172	ESTABLISHED
TCP	127.0.0.1:54174	DESKTOP-PCFNB09:54175	ESTABLISHED
TCP	127.0.0.1:54175	DESKTOP-PCFNB09:54174	ESTABLISHED
TCP	127.0.0.1:54176	DESKTOP-PCFNB09:54177	ESTABLISHED
TCP	127.0.0.1:54177	DESKTOP-PCFNB09:54176	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:50507	[2606:2800:147:120f:30c:1ba0:fc6:265a]:https	CLOSE_WAIT
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51887	[64:ff9b::14c6:a24e]:https	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51888	[64:ff9b::14c6:a24e]:https	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51889	[64:ff9b::14c6:a24e]:https	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:58745	sa-in-xbc:5228	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:58770	ldrv:https	TIME_WAIT
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63260	bom12s11-in-x0a:https	ESTABLISHED

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

Active Connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:54170	127.0.0.1:54171	ESTABLISHED
TCP	127.0.0.1:54171	127.0.0.1:54170	ESTABLISHED
TCP	127.0.0.1:54172	127.0.0.1:54173	ESTABLISHED
TCP	127.0.0.1:54173	127.0.0.1:54172	ESTABLISHED
TCP	127.0.0.1:54174	127.0.0.1:54175	ESTABLISHED
TCP	127.0.0.1:54175	127.0.0.1:54174	ESTABLISHED
TCP	127.0.0.1:54176	127.0.0.1:54177	ESTABLISHED
TCP	127.0.0.1:54177	127.0.0.1:54176	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:50507	[2606:2800:147:120f:30c:1ba0:fc6:265a]:443	CLOSE_WAIT
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51887	[64:ff9b::14c6:a24e]:443	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51888	[64:ff9b::14c6:a24e]:443	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51889	[64:ff9b::14c6:a24e]:443	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:58745	[2404:6800:4003:c00:bc]:5228	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63260	[2404:6800:4009:821::200a]:443	ESTABLISHED

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

Active Connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:54170	127.0.0.1:54171	ESTABLISHED
TCP	127.0.0.1:54171	127.0.0.1:54170	ESTABLISHED
TCP	127.0.0.1:54172	127.0.0.1:54173	ESTABLISHED
TCP	127.0.0.1:54173	127.0.0.1:54172	ESTABLISHED
TCP	127.0.0.1:54174	127.0.0.1:54175	ESTABLISHED
TCP	127.0.0.1:54175	127.0.0.1:54174	ESTABLISHED
TCP	127.0.0.1:54176	127.0.0.1:54177	ESTABLISHED
TCP	127.0.0.1:54177	127.0.0.1:54176	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:50507	[2606:2800:147:120f:30c:1ba0:fc6:265a]:443	CLOSE_WAIT
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51887	[64:ff9b::14c6:a24e]:443	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51888	[64:ff9b::14c6:a24e]:443	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51889	[64:ff9b::14c6:a24e]:443	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:58745	[2404:6800:4003:c00:bc]:5228	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63260	[2404:6800:4009:821::200a]:443	ESTABLISHED

Active Connections

Proto	Local Address	Foreign Address	State
TCP	127.0.0.1:54170	127.0.0.1:54171	ESTABLISHED
TCP	127.0.0.1:54171	127.0.0.1:54170	ESTABLISHED
TCP	127.0.0.1:54172	127.0.0.1:54173	ESTABLISHED
TCP	127.0.0.1:54173	127.0.0.1:54172	ESTABLISHED
TCP	127.0.0.1:54174	127.0.0.1:54175	ESTABLISHED
TCP	127.0.0.1:54175	127.0.0.1:54174	ESTABLISHED
TCP	127.0.0.1:54176	127.0.0.1:54177	ESTABLISHED
TCP	127.0.0.1:54177	127.0.0.1:54176	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:50507	[2606:2800:147:120f:30c:1ba0:fc6:265a]:443	CLOSE_WAIT
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51887	[64:ff9b::14c6:a24e]:443	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51888	[64:ff9b::14c6:a24e]:443	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51889	[64:ff9b::14c6:a24e]:443	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:58745	[2404:6800:4003:c00:bc]:5228	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63260	[2404:6800:4009:821::200a]:443	ESTABLISHED

```
C:\Users\Deilnetstat -a
Active Connections
Proto Local Address Foreign Address State
TCP 0.0.0.0:135 DESKTOP-PCF8009-0 LISTENING
TCP 0.0.0.0:445 DESKTOP-PCF8009-0 LISTENING
TCP 0.0.0.0:5040 DESKTOP-PCF8009-0 LISTENING
TCP 0.0.0.0:7680 DESKTOP-PCF8009-0 LISTENING
TCP 0.0.0.0:49664 DESKTOP-PCF8009-0 LISTENING
TCP 0.0.0.0:49665 DESKTOP-PCF8009-0 LISTENING
TCP 0.0.0.0:49666 DESKTOP-PCF8009-0 LISTENING
TCP 0.0.0.0:49667 DESKTOP-PCF8009-0 LISTENING
TCP 0.0.0.0:49668 DESKTOP-PCF8009-0 LISTENING
TCP 0.0.0.0:49685 DESKTOP-PCF8009-0 LISTENING
TCP 127.0.0.1:8888 DESKTOP-PCF8009-0 LISTENING
TCP 127.0.0.1:54370 DESKTOP-PCF8009-54370 ESTABLISHED
TCP 127.0.0.1:54371 DESKTOP-PCF8009-54371 ESTABLISHED
TCP 127.0.0.1:54372 DESKTOP-PCF8009-54372 ESTABLISHED
TCP 127.0.0.1:54373 DESKTOP-PCF8009-54373 ESTABLISHED
TCP 127.0.0.1:54374 DESKTOP-PCF8009-54374 ESTABLISHED
TCP 127.0.0.1:54375 DESKTOP-PCF8009-54375 ESTABLISHED
TCP 127.0.0.1:54376 DESKTOP-PCF8009-54376 ESTABLISHED
TCP 127.0.0.1:54377 DESKTOP-PCF8009-54376 ESTABLISHED
TCP 192.168.43.195:139 DESKTOP-PCF8009-0 LISTENING
TCP 192.168.43.195:63262 a-0001:https ESTABLISHED
TCP 192.168.56.1:139 DESKTOP-PCF8009-0 LISTENING
TCP [::]:135 DESKTOP-PCF8009-0 LISTENING
TCP [::]:445 DESKTOP-PCF8009-0 LISTENING
TCP [::]:7680 DESKTOP-PCF8009-0 LISTENING
TCP [::]:49664 DESKTOP-PCF8009-0 LISTENING
TCP [::]:49665 DESKTOP-PCF8009-0 LISTENING
TCP [::]:49666 DESKTOP-PCF8009-0 LISTENING
TCP [::]:49667 DESKTOP-PCF8009-0 LISTENING
TCP [::]:49668 DESKTOP-PCF8009-0 LISTENING
TCP [::]:49685 DESKTOP-PCF8009-0 LISTENING
TCP [::]:49669 DESKTOP-PCF8009-0 LISTENING
TCP [2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51887 [64:ff9b::14c6:a24e]:https ESTABLISHED
TCP [2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51888 [64:ff9b::14c6:a24e]:https ESTABLISHED
TCP [2402:3a80:108c:b194:859c:5139:1bea:9b8d]:51889 [64:ff9b::14c6:a24e]:https ESTABLISHED
TCP [2402:3a80:108c:b194:859c:5139:1bea:9b8d]:58745 sa-in-xbc:5228 ESTABLISHED
TCP [2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63260 bow2311:in-x80:https CLOSE_WAIT
TCP [2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63261 [64:ff9b::ddb:12fe]:https ESTABLISHED
TCP [2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63263 [2606:2800:147:120f:38c:1ba0:fc6:265a]:https ESTABLISHED
TCP [2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63264 [64:ff9b::d6b:2afe]:https ESTABLISHED
TCP [2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63265 [64:ff9b::cc4:c56e]:https ESTABLISHED
TCP [2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63266 [2600:1901:1:c36::]:https ESTABLISHED
```

UBUNTU

Ping



```
akshay07@akshay07-VirtualBox:~$ ping www.google.com
PING www.google.com (142.250.182.196) 56(84) bytes of data.
64 bytes from bom07s28-in-f4.1e100.net (142.250.182.196): icmp_seq=1 ttl=54 time=496 ms
64 bytes from bom07s28-in-f4.1e100.net (142.250.182.196): icmp_seq=2 ttl=54 time=379 ms
64 bytes from bom07s28-in-f4.1e100.net (142.250.182.196): icmp_seq=3 ttl=54 time=495 ms
64 bytes from bom07s28-in-f4.1e100.net (142.250.182.196): icmp_seq=4 ttl=54 time=134 ms
64 bytes from bom07s28-in-f4.1e100.net (142.250.182.196): icmp_seq=5 ttl=54 time=313 ms
64 bytes from bom07s28-in-f4.1e100.net (142.250.182.196): icmp_seq=6 ttl=54 time=365 ms
^C
--- www.google.com ping statistics ---
6 packets transmitted, 6 received, 0% packet loss, time 5005ms
rtt min/avg/max/mdev = 134.127/363.812/496.340/122.708 ms
akshay07@akshay07-VirtualBox:~$
```

```
akshay07@akshay07-VirtualBox:~$ ping -a google.com
PING google.com (216.58.203.14) 56(84) bytes of data.
64 bytes from hkg12s09-in-f14.1e100.net (216.58.203.14): icmp_seq=1 ttl=113 time=87.3 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=2 ttl=113 time=356 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=3 ttl=113 time=389 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=4 ttl=113 time=494 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=5 ttl=113 time=231 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=6 ttl=113 time=308 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=7 ttl=113 time=201 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=8 ttl=113 time=235 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=9 ttl=113 time=382 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=10 ttl=113 time=396 ms
^C
--- google.com ping statistics ---
10 packets transmitted, 10 received, 0% packet loss, time 9011ms
rtt min/avg/max/mdev = 87.318/307.912/493.743/113.210 ms
```

```
rtt min/avg/max/mdev = 87.318/307.912/493.743/113.210 ms
```

```
akshay07@akshay07-VirtualBox:~$ ping -V google.com
ping from iputils 20210202
akshay07@akshay07-VirtualBox:~$
```

```

akshay07@akshay07-VirtualBox:~$ ping -b google.com
PING google.com (216.58.203.14) 56(84) bytes of data.
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=1 ttl=113 time=159 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=2 ttl=113 time=165 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=3 ttl=113 time=410 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=4 ttl=113 time=302 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=5 ttl=113 time=336 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=6 ttl=113 time=285 ms
64 bytes from bom12s04-in-f14.1e100.net (216.58.203.14): icmp_seq=7 ttl=113 time=449 ms
^C
--- google.com ping statistics ---
7 packets transmitted, 7 received, 0% packet loss, time 6017ms
rtt min/avg/max/mdev = 158.509/300.780/448.692/102.737 ms

```

## Route

```

akshay07@akshay07-VirtualBox:~$ route
Kernel IP routing table

```

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
default	_gateway	0.0.0.0	UG	100	0	0	enp0s3
10.0.2.0	0.0.0.0	255.255.255.0	U	100	0	0	enp0s3
link-local	0.0.0.0	255.255.0.0	U	1000	0	0	enp0s3

```

akshay07@akshay07-VirtualBox:~$

```

```

akshay07@akshay07-VirtualBox:~$ route -n
Kernel IP routing table

```

Destination	Gateway	Genmask	Flags	Metric	Ref	Use	Iface
0.0.0.0	10.0.2.2	0.0.0.0	UG	100	0	0	enp0s3
10.0.2.0	0.0.0.0	255.255.255.0	U	100	0	0	enp0s3
169.254.0.0	0.0.0.0	255.255.0.0	U	1000	0	0	enp0s3

```

akshay07@akshay07-VirtualBox:~$

```

```

akshay07@akshay07-VirtualBox:~$ route -Cn
Kernel IP routing cache

```

Source	Destination	Gateway	Flags	Metric	Ref	Use	Iface
0.0.0.0	0.0.0.0	10.0.2.2	UG	100	0	0	enp0s3
10.0.2.0	10.0.2.0	0.0.0.0	U	100	0	0	enp0s3
169.254.0.0	169.254.0.0	0.0.0.0	U	1000	0	0	enp0s3

```

akshay07@akshay07-VirtualBox:~$

```

```

akshay07@akshay07-VirtualBox:~$ ip route
default via 10.0.2.2 dev enp0s3 proto dhcp metric 100
10.0.2.0/24 dev enp0s3 proto kernel scope link src 10.0.2.15 metric 100
169.254.0.0/16 dev enp0s3 scope link metric 1000

```

## Traceroute

```
akshay07@akshay07-VirtualBox:~$ traceroute google.com
traceroute to google.com (216.58.203.14), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  2.027 ms  1.965 ms  1.932 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
```

```
akshay07@akshay07-VirtualBox:~$ traceroute -4 google.com
traceroute to google.com (216.58.203.14), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  0.440 ms  0.396 ms  0.378 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * ^C
```

```
akshay07@akshay07-VirtualBox:~$ traceroute -6 google.com
traceroute to google.com (2404:6800:4009:804::200e), 30 hops max, 80 byte packets
connect: Network is unreachable
akshay07@akshay07-VirtualBox:~$
```

```
akshay07@akshay07-VirtualBox:~$ traceroute -d google.com
traceroute to google.com (216.58.203.14), 30 hops max, 60 byte packets
setsockopt SO_DEBUG: Permission denied
akshay07@akshay07-VirtualBox:~$
```



## Nslookup

```
akshay07@akshay07-VirtualBox:~$ nslookup google.com
Server:      127.0.0.53
Address:     127.0.0.53#53
```

```
Non-authoritative answer:
Name:   google.com
Address: 216.58.203.14
Name:   google.com
Address: 2404:6800:4009:804::200e
```

```
akshay07@akshay07-VirtualBox:~$ nslookup -q=MX google.com
Server:      127.0.0.53
Address:     127.0.0.53#53
```

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

Authoritative answers can be found from:

```
akshay07@akshay07-VirtualBox:~$ nslookup -type=soa redhat.com
Server:      127.0.0.53
Address:     127.0.0.53#53
```

```
Non-authoritative answer:
redhat.com
    origin = a1-68.akam.net
    mail addr = noc.redhat.com
    serial = 2021091002
    refresh = 300
    retry = 180
    expire = 604800
    minimum = 14400
```

Authoritative answers can be found from:

```
akshay07@akshay07-VirtualBox:~$ nslookup -type=a google.com
Server:      127.0.0.53
Address:     127.0.0.53#53
```

```
Non-authoritative answer:
Name:   google.com
Address: 216.58.203.14
```

## Ifconfig

```

TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

akshay07@akshay07-VirtualBox:~$ ifconfig -v
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::e039:15f3:471e:c364 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:f5:e7:35 txqueuelen 1000 (Ethernet)
    RX packets 159887 bytes 231254702 (231.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 45039 bytes 2770127 (2.7 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 448 bytes 43519 (43.5 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 448 bytes 43519 (43.5 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

```

0 upgraded, 0 newly installed, 0 to remove and 233 not upgraded.

akshay07@akshay07-VirtualBox:~$ ifconfig
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 10.0.2.15 netmask 255.255.255.0 broadcast 10.0.2.255
    inet6 fe80::e039:15f3:471e:c364 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:f5:e7:35 txqueuelen 1000 (Ethernet)
    RX packets 159887 bytes 231254702 (231.2 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 45039 bytes 2770127 (2.7 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING> mtu 65536
    inet 127.0.0.1 netmask 255.0.0.0
    inet6 ::1 prefixlen 128 scopeid 0x10<host>
    loop txqueuelen 1000 (Local Loopback)
    RX packets 448 bytes 43519 (43.5 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 448 bytes 43519 (43.5 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

```

```

akshay07@akshay07-VirtualBox:~$ ifconfig -s

```

Iface	MTU	RX-OK	RX-ERR	RX-DRP	RX-OVR	TX-OK	TX-ERR	TX-DRP	TX-OVR	Flg
enp0s3	1500	159887	0	0	0	45039	0	0	0	BMRU
lo	65536	448	0	0	0	448	0	0	0	LRU

```

akshay07@akshay07-VirtualBox:~$

```

```

lo        65536      448      0      0 0      448      0      0      0 LRU
akshay07@akshay07-VirtualBox:~$ ifconfig -a
enp0s3: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
    inet 10.0.2.15  netmask 255.255.255.0  broadcast 10.0.2.255
    inet6 fe80::e039:15f3:471e:c364  prefixlen 64  scopeid 0x20<link>
    ether 08:00:27:f5:e7:35  txqueuelen 1000  (Ethernet)
    RX packets 159887  bytes 231254702 (231.2 MB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 45039  bytes 2770127 (2.7 MB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

lo: flags=73<UP,LOOPBACK,RUNNING>  mtu 65536
    inet 127.0.0.1  netmask 255.0.0.0
    inet6 ::1  prefixlen 128  scopeid 0x10<host>
    loop txqueuelen 1000  (Local Loopback)
    RX packets 448  bytes 43519 (43.5 KB)
    RX errors 0  dropped 0  overruns 0  frame 0
    TX packets 448  bytes 43519 (43.5 KB)
    TX errors 0  dropped 0  overruns 0  carrier 0  collisions 0

```

## Netstat

```

akshay07@akshay07-VirtualBox:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 akshay07-Virtual:bootpc _gateway:bootps        ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags     Type       State       I-Node      Path
unix    2      [ ]       DGRAM      -
md/notify
unix    3      [ ]       DGRAM      -
15462       /run/systemd/notify
unix    2      [ ]       DGRAM      -
15476       /run/systemd/journal
/syslog
unix   17      [ ]       DGRAM      -
15485       /run/systemd/journal
/dev-log
unix    8      [ ]       DGRAM      -
15487       /run/systemd/journal
/socket
unix    2      [ ]       DGRAM      -
24167
unix    3      [ ]       STREAM     CONNECTED   23773
unix    3      [ ]       STREAM     CONNECTED   24320   /run/user/1000/bus
unix    3      [ ]       STREAM     CONNECTED   22123
unix    3      [ ]       STREAM     CONNECTED   24525   /run/user/1000/bus
unix    3      [ ]       STREAM     CONNECTED   23723   /run/systemd/journal
/stdout
unix    3      [ ]       STREAM     CONNECTED   37139
unix    3      [ ]       STREAM     CONNECTED   24165   /run/dbus/system_bus
_socket
unix    3      [ ]       STREAM     CONNECTED   24262   /run/user/1000/wayla
nd-0
unix    3      [ ]       STREAM     CONNECTED   24319

```



```

akshay07@akshay07-VirtualBox:~$ netstat -n
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 10.0.2.15:68           10.0.2.2:67            ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags               Type               State         I-Node  Path
unix   2      [ ]                 DGRAM              21873         /run/user/1000/systemd/notify
unix   3      [ ]                 DGRAM              15462         /run/systemd/notify
unix   2      [ ]                 DGRAM              15476         /run/systemd/journal
unix  17      [ ]                 DGRAM              15485         /run/systemd/journal
unix   8      [ ]                 DGRAM              15487         /run/systemd/journal
unix   2      [ ]                 DGRAM              24167
unix   3      [ ]                 STREAM             CONNECTED      23773
unix   3      [ ]                 STREAM             CONNECTED      24320         /run/user/1000/bus
unix   3      [ ]                 STREAM             CONNECTED      22123
unix   3      [ ]                 STREAM             CONNECTED      24525         /run/user/1000/bus
unix   3      [ ]                 STREAM             CONNECTED      23723         /run/systemd/journal
unix   3      [ ]                 STREAM             CONNECTED      37139
unix   3      [ ]                 STREAM             CONNECTED      24165         /run/dbus/system_bus
unix   3      [ ]                 STREAM             CONNECTED      24262         /run/user/1000/wayland-0
unix   3      [ ]                 STREAM             CONNECTED      24319

```

```

akshay07@akshay07-VirtualBox:~$ netstat -a
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp      0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp      0      0 localhost:ipp           0.0.0.0:*               LISTEN
tcp6     0      0 [::]:http              [::]:*                 LISTEN
tcp6     0      0 ip6-localhost:ipp      [::]:*                 LISTEN
udp      0      0 akshay07-VirtualB:54727 192.168.43.1:domain    ESTABLISHED
udp      0      0 0.0.0.0:37492          0.0.0.0:*               LISTEN
udp      0      0 0.0.0.0:631            0.0.0.0:*               LISTEN
udp      0      0 localhost:domain        0.0.0.0:*               LISTEN
udp      0      0 akshay07-Virtual:bootpc _gateway:bootps        ESTABLISHED
udp      0      0 0.0.0.0:mdns            0.0.0.0:*               LISTEN
udp6     0      0 [::]:36318             [::]:*                 LISTEN
udp6     0      0 [::]:mdns               [::]:*                 LISTEN
raw6     0      0 [::]:ipv6-icmp          [::]:*                 LISTEN
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State      I-Node   Path
unix  2      [ ACC ]     STREAM    LISTENING   22647    @/tmp/.ICE-unix/1457
unix  2      [ ACC ]     STREAM    LISTENING   23181    @/tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM    LISTENING   23183    @/tmp/.X11-unix/X1
unix  2      [ ACC ]     STREAM    LISTENING   22144    @/tmp/dbus-bcW5J0en
unix  2      [  ]      DGRAM     21873       /run/user/1000/systemd/notify
unix  2      [ ACC ]     STREAM    LISTENING   21876    /run/user/1000/systemd/private
unix  2      [ ACC ]     STREAM    LISTENING   21944    /run/user/1000/bus
unix  2      [ ACC ]     STREAM    LISTENING   18460    @/tmp/dbus-e02CLTHI
unix  2      [ ACC ]     STREAM    LISTENING   21946    /run/user/1000/gnupg

```

```

akshay07@akshay07-VirtualBox:~$ netstat -n 5
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp      0      0 10.0.2.15:68           10.0.2.2:67            ESTABLISHED
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State      I-Node   Path
unix  2      [  ]      DGRAM     21873       /run/user/1000/systemd/notify
unix  3      [  ]      DGRAM     15462       /run/systemd/notify
unix  2      [  ]      DGRAM     15476       /run/systemd/journal
unix 17      [  ]      DGRAM     15485       /run/systemd/journal
unix  8      [  ]      DGRAM     15487       /run/systemd/journal
unix  2      [  ]      DGRAM     24167       /run/user/1000/wayland-0
unix  3      [  ]      STREAM    CONNECTED   23773
unix  3      [  ]      STREAM    CONNECTED   24320    /run/user/1000/bus
unix  3      [  ]      STREAM    CONNECTED   22123
unix  3      [  ]      STREAM    CONNECTED   24525    /run/user/1000/bus
unix  3      [  ]      STREAM    CONNECTED   23723    /run/systemd/journal
unix  3      [  ]      STREAM    CONNECTED   37139    /run/user/1000/wayland-0
unix  3      [  ]      STREAM    CONNECTED   24165    /run/dbus/system_bus_socket
unix  3      [  ]      STREAM    CONNECTED   24262    /run/user/1000/wayland-0

```

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

### i. 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\Dell>arp -a

Interface: 192.168.56.1 --- 0x4
Internet Address      Physical Address      Type
192.168.56.255        ff-ff-ff-ff-ff-ff     static
224.0.0.22            01-00-5e-00-00-16     static
224.0.0.251           01-00-5e-00-00-fb     static
224.0.0.252           01-00-5e-00-00-fc     static
239.255.255.250       01-00-5e-7f-ff-fa     static

Interface: 192.168.43.195 --- 0x13
Internet Address      Physical Address      Type
192.168.43.1          e2-e9-35-bf-f3-b1     dynamic
192.168.43.255        ff-ff-ff-ff-ff-ff     static
224.0.0.22            01-00-5e-00-00-16     static
224.0.0.251           01-00-5e-00-00-fb     static
224.0.0.252           01-00-5e-00-00-fc     static
239.255.255.250       01-00-5e-7f-ff-fa     static
255.255.255.255       ff-ff-ff-ff-ff-ff     static

C:\Users\Dell>
```

### ii. 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:\Users\Dell>nbtstat -r

NetBIOS Names Resolution and Registration Statistics
-----

Resolved By Broadcast      = 0
Resolved By Name Server    = 0

Registered By Broadcast    = 210
Registered By Name Server  = 0

C:\Users\Dell>
```

### iii. 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.

```
C:\Users\Dell>hostname
DESKTOP-PCFNB09

C:\Users\Dell>
```

### iv. 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\Dell>pathping www.google.com

Tracing route to www.google.com [2404:6800:4009:81e::2004]
over a maximum of 30 hops:
 0  DESKTOP-PCFNB09 [2402:3a80:108c:b194:859c:5139:1bea:9b8d]
 1  2402:3a80:108c:b194::be
 2  * * *
Computing statistics for 25 seconds...
Source to Here   This Node/Link
Hop  RTT  Lost/Sent = Pct  Lost/Sent = Pct  Address
 0      0/ 0 = 0%      0/ 0 = 0%      DESKTOP-PCFNB09 [2402:3a80:108c:b194:859c:5139:1bea:9b8d]
 1  24ms   1/ 100 = 1%      0/ 100 = 0%      2402:3a80:108c:b194::be
Trace complete.
```



## v. getmac Command

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

```
C:\Users\Dell>getmac

Physical Address    Transport Name
=====
C0-3E-BA-28-D5-FB  Media disconnected
AC-12-03-50-5A-50  \Device\NPF{F7D6C595-508A-4AF3-86FD-8A50CF8A9974}
AC-12-03-50-5A-54  Media disconnected
0A-00-27-00-00-04  \Device\NPF{3CB6DBD7-45C8-4C86-B2B8-AB058476FBE7}
```