

Networking & System Administration Lab

ASSIGNMENT 6

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Q. 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\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
```

```
C:\Users\Dell>ping -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
```

Route:

```
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
```

```
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 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
19 311 fe80::1483:bdc4:a1d2:d8a8/128 On-link
4 281 fe80::550d:c0a0:6151:d3c8/128 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 -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
10...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
224.0.0.1                 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
=====
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
10...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
224.0.0.1                 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
10 331 :::/0 fe80::e0e9:35ff:febf:f3b1
1 331 ::1/128 On-link
10 71 2402:3a80:108c:b104::/64 On-link
10 311 2402:3a80:108c:b104:1483:b04::a1d2:d8a8/128 On-link
10 311 2402:3a80:108c:b104:859c:5139:1bea:9b8d/128 On-link
4 281 fe80::/64 On-link
10 311 fe80::/64 On-link
```

Traceroute:

```
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.pt1.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.
```

```
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 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::4fe1
 17  142 ms   93 ms  121 ms  bom07s28-in-x04.1e100.net [2404:6800:4009:81e::2004]

Trace complete.
```

```
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.
```


Nslookup:

```
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
```

```
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 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
Default Server: UnKnown
Address: 192.168.43.1
```

IP config:

```
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
```

```
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 /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:bd4:a1d2:d8a8
    Temporary IPv6 Address. . . . . : 2402:3a80:108c:b194:859c:5139:1bea:9b8d
    Link-local IPv6 Address . . . . . : fe80::1483:bd4: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

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:bd4:a1d2:d8a8
    Temporary IPv6 Address. . . . . : 2402:3a80:108c:b194:859c:5139:1bea:9b8d
    Link-local IPv6 Address . . . . . : fe80::1483:bd4: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  . :
```

Netstat:

```
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>
```

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

Active Connections

Proto	Local Address	Foreign Address	State
TCP	0.0.0.0:135	DESKTOP-PCFNB09:0	LISTENING
TCP	0.0.0.0:445	DESKTOP-PCFNB09:0	LISTENING
TCP	0.0.0.0:5940	DESKTOP-PCFNB09:0	LISTENING
TCP	0.0.0.0:7680	DESKTOP-PCFNB09:0	LISTENING
TCP	0.0.0.0:49664	DESKTOP-PCFNB09:0	LISTENING
TCP	0.0.0.0:49665	DESKTOP-PCFNB09:0	LISTENING
TCP	0.0.0.0:49666	DESKTOP-PCFNB09:0	LISTENING
TCP	0.0.0.0:49667	DESKTOP-PCFNB09:0	LISTENING
TCP	0.0.0.0:49668	DESKTOP-PCFNB09:0	LISTENING
TCP	0.0.0.0:49685	DESKTOP-PCFNB09:0	LISTENING
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	192.168.43.195:139	DESKTOP-PCFNB09:0	LISTENING
TCP	192.168.43.195:63262	*:8001:https	ESTABLISHED
TCP	192.168.56.1:139	DESKTOP-PCFNB09:0	LISTENING
TCP	:::135	DESKTOP-PCFNB09:0	LISTENING
TCP	:::445	DESKTOP-PCFNB09:0	LISTENING
TCP	:::7680	DESKTOP-PCFNB09:0	LISTENING
TCP	:::49664	DESKTOP-PCFNB09:0	LISTENING
TCP	:::49665	DESKTOP-PCFNB09:0	LISTENING
TCP	:::49666	DESKTOP-PCFNB09:0	LISTENING
TCP	:::49667	DESKTOP-PCFNB09:0	LISTENING
TCP	:::49668	DESKTOP-PCFNB09:0	LISTENING
TCP	:::49685	DESKTOP-PCFNB09:0	LISTENING
TCP	:::1:49669	DESKTOP-PCFNB09:0	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-ln-xbc:5228	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63260	bm12s11-in-xda: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:30c:1ba0:fc6:265a]:https	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63264	[64:ff9b:ddb:2afe]:https	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63265	[64:ff9b:cc4f:c5de]:https	ESTABLISHED
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63266	[2600:1901:1:c36:]:https	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\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
```

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	1drv:https	TIME_WAIT
TCP	[2402:3a80:108c:b194:859c:5139:1bea:9b8d]:63260	bom12s11-in-x0a:https	ESTABLISHED

UBUNTU

Ping:

```
user@user-VirtualBox:~$ 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=115 t
ime=27.2 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=2 ttl=115 t
ime=22.6 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=3 ttl=115 t
ime=21.9 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=4 ttl=115 t
ime=23.6 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=5 ttl=115 t
ime=23.3 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=6 ttl=115 t
ime=27.0 ms
█
```

```
user@user-VirtualBox:~$ ping -a 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=115 t
ime=24.0 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=2 ttl=115 t
ime=25.2 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=3 ttl=115 t
ime=25.0 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=4 ttl=115 t
ime=22.1 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=5 ttl=115 t
ime=23.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=6 ttl=115 t
ime=22.8 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=7 ttl=115 t
ime=21.9 ms
█
```



```

user@user-VirtualBox:~$ ping -v 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=115 t
ime=22.2 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=2 ttl=115 t
ime=22.4 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=3 ttl=115 t
ime=21.4 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=4 ttl=115 t
ime=23.1 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=5 ttl=115 t
ime=22.3 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=6 ttl=115 t
ime=22.0 ms

```

```

user@user-VirtualBox:~$ ping -b 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=115 t
ime=22.2 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=2 ttl=115 t
ime=21.6 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=3 ttl=115 t
ime=22.3 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=4 ttl=115 t
ime=22.0 ms
64 bytes from maa03s39-in-f14.1e100.net (142.250.195.110): icmp_seq=5 ttl=115 t
ime=24.6 ms

```

Route:

```

user@user-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
user@user-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
user@user-VirtualBox:~$ route -Cn
Kernel IP routing cache
Source           Destination      Gateway         Flags Metric Ref    Use Iface
user@user-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
user@user-VirtualBox:~$

```

Traceroute:

```
user@user-VirtualBox:~$ traceroute google.com
traceroute to google.com (142.250.195.110), 64 hops max
 1  10.0.2.2  0.321ms  0.269ms  0.213ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * 
```

Nslookup:

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

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

```
user@user-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 = 20 alt1.aspmx.l.google.com.
google.com   mail exchanger = 50 alt4.aspmx.l.google.com.
google.com   mail exchanger = 30 alt2.aspmx.l.google.com.

Authoritative answers can be found from:
```

```
user@user-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:
```


If config:

```
user@user-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::ff04:8b9d:ceb:69c6 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:eb:25:92 txqueuelen 1000 (Ethernet)
    RX packets 1058 bytes 1060445 (1.0 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 699 bytes 72991 (72.9 KB)
    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 571 bytes 54064 (54.0 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 571 bytes 54064 (54.0 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

```
user@user-VirtualBox:~$ ifconfig -s
```

Iface	MTU	RX-OK	RX-ERR	RX-DRP	RX-OVR	TX-OK	TX-ERR	TX-DRP	TX-OVR	Flg
enp0s3	1500	1059	0	0 0		707	0	0	0	BMRU
lo	65536	572	0	0 0		572	0	0	0	LRU

```
user@user-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::ff04:8b9d:ceb:69c6 prefixlen 64 scopeid 0x20<link>
    ether 08:00:27:eb:25:92 txqueuelen 1000 (Ethernet)
    RX packets 1058 bytes 1060445 (1.0 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 701 bytes 73185 (73.1 KB)
    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 572 bytes 54137 (54.1 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 572 bytes 54137 (54.1 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

Netstat:

```
user@user-VirtualBox:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 user-VirtualBox:36056   32.121.122.34.bc.g:http ESTABLISHED
tcp        0      1 user-VirtualBox:36058   32.121.122.34.bc.g:http SYN_SENT
tcp        0      1 user-VirtualBox:36060   32.121.122.34.bc.g:http SYN_SENT
udp        0      0 user-VirtualBox:bootpc  _gateway:bootps        ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags               Type               State         I-Node  Path
unix  2      [ ]                  DGRAM              19356          /run/user/1000/systemd/notify
unix  3      [ ]                  DGRAM              15466          /run/systemd/notify
unix  2      [ ]                  DGRAM              15480          /run/systemd/journal
unix  17     [ ]                  DGRAM              15489          /run/systemd/journal
unix  8      [ ]                  DGRAM              15491          /run/systemd/journal
unix  3      [ ]                  STREAM             CONNECTED       17374          /run/systemd/journal
unix  3      [ ]                  STREAM             CONNECTED       22397          /tmp/dbus-5vaFeHxKbD
unix  3      [ ]                  STREAM             CONNECTED       21356
unix  3      [ ]                  STREAM             CONNECTED       19824
unix  3      [ ]                  STREAM             CONNECTED       22330          /run/user/1000/bus
unix  3      [ ]                  STREAM             CONNECTED       20931
unix  3      [ ]                  STREAM             CONNECTED       19662
unix  3      [ ]                  STREAM             CONNECTED       16658
unix  3      [ ]                  STREAM             CONNECTED       17799
unix  3      [ ]                  STREAM             CONNECTED       22395          /run/user/1000/bus
```



```

user@user-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                  -                  19356     /run/user/1000/systemd/notify
unix    3      [ ]                 DGRAM                  -                  15466     /run/systemd/notify
unix    2      [ ]                 DGRAM                  -                  15480     /run/systemd/journal/syslog
unix   17      [ ]                 DGRAM                  -                  15489     /run/systemd/journal/dev-log
unix    8      [ ]                 DGRAM                  -                  15491     /run/systemd/journal/socket
unix    3      [ ]                 STREAM                 CONNECTED             17374     /run/systemd/journal/stdout
unix    3      [ ]                 STREAM                 CONNECTED             22397     /tmp/dbus-5vaFeHxKbD
unix    3      [ ]                 STREAM                 CONNECTED             21356
unix    3      [ ]                 STREAM                 CONNECTED             19824
unix    3      [ ]                 STREAM                 CONNECTED             22330     /run/user/1000/bus
unix    3      [ ]                 STREAM                 CONNECTED             20931
unix    3      [ ]                 STREAM                 CONNECTED             19662
unix    3      [ ]                 STREAM                 CONNECTED             16658
unix    3      [ ]                 STREAM                 CONNECTED             17799
unix    3      [ ]                 STREAM                 CONNECTED             22395     /run/user/1000/bus
unix    3      [ ]                 STREAM                 CONNECTED             21156

```

```

user@user-VirtualBox:~$ netstat -n
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      1 10.0.2.15:36074        34.122.121.32:80       SYN_SENT
tcp        0      1 10.0.2.15:36072        34.122.121.32:80       SYN_SENT
tcp        0      0 10.0.2.15:36070        34.122.121.32:80       ESTABLISHED
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                  -                  19356     /run/user/1000/systemd/notify
unix    3      [ ]                 DGRAM                  -                  15466     /run/systemd/notify
unix    2      [ ]                 DGRAM                  -                  15480     /run/systemd/journal/syslog
unix   17      [ ]                 DGRAM                  -                  15489     /run/systemd/journal/dev-log
unix    8      [ ]                 DGRAM                  -                  15491     /run/systemd/journal/socket
unix    3      [ ]                 STREAM                 CONNECTED             17374     /run/systemd/journal/stdout
unix    3      [ ]                 STREAM                 CONNECTED             22397     /tmp/dbus-5vaFeHxKbD
unix    3      [ ]                 STREAM                 CONNECTED             21356
unix    3      [ ]                 STREAM                 CONNECTED             19824
unix    3      [ ]                 STREAM                 CONNECTED             22330     /run/user/1000/bus
unix    3      [ ]                 STREAM                 CONNECTED             20931
unix    3      [ ]                 STREAM                 CONNECTED             19662
unix    3      [ ]                 STREAM                 CONNECTED             16658
unix    3      [ ]                 STREAM                 CONNECTED             17799
unix    3      [ ]                 STREAM                 CONNECTED             22395     /run/user/1000/bus

```

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

Nbstat:

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>
```

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>S_
```

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...
Hop  RTT      Source to Here  This Node/Link  Address
  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.
```

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>
```

Getmac:

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}
```