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Roll No:28

S2MCA_A

Networking & System Administration Lab Assignment

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:\WINDOWS\system32>ping www.google.com

Pinging www.google.com [142.250.77.164] with 32 bytes of data:
Reply from 142.250.77.164: bytes=32 time=18ms TTL=119
Reply from 142.250.77.164: bytes=32 time=18ms TTL=119
Reply from 142.250.77.164: bytes=32 time=18ms TTL=119
Reply from 142.250.77.164: bytes=32 time=18ms TTL=119

Ping statistics for 142.250.77.164:
    Packets: Sent = 4, Received = 4, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 18ms, Maximum = 18ms, Average = 18ms
```

```
C:\WINDOWS\system32>ping /t 8.8.8.8

Pinging 8.8.8.8 with 32 bytes of data:
Reply from 8.8.8.8: bytes=32 time=20ms TTL=119
Reply from 8.8.8.8: bytes=32 time=21ms TTL=119
Reply from 8.8.8.8: bytes=32 time=30ms TTL=119
Reply from 8.8.8.8: bytes=32 time=25ms TTL=119
Reply from 8.8.8.8: bytes=32 time=20ms TTL=119
Reply from 8.8.8.8: bytes=32 time=20ms TTL=119
Reply from 8.8.8.8: bytes=32 time=21ms TTL=119
Reply from 8.8.8.8: bytes=32 time=21ms TTL=119
Reply from 8.8.8.8: bytes=32 time=21ms TTL=119
Reply from 8.8.8.8: bytes=32 time=21ms TTL=119
Reply from 8.8.8.8: bytes=32 time=20ms TTL=119
Reply from 8.8.8.8: bytes=32 time=24ms TTL=119
Reply from 8.8.8.8: bytes=32 time=21ms TTL=119
Reply from 8.8.8.8: bytes=32 time=20ms TTL=119
Reply from 8.8.8.8: bytes=32 time=21ms TTL=119
Reply from 8.8.8.8: bytes=32 time=20ms TTL=119
Reply from 8.8.8.8: bytes=32 time=22ms TTL=119
Reply from 8.8.8.8: bytes=32 time=20ms TTL=119
Reply from 8.8.8.8: bytes=32 time=20ms TTL=119
Reply from 8.8.8.8: bytes=32 time=21ms TTL=119
Reply from 8.8.8.8: bytes=32 time=20ms TTL=119
Reply from 8.8.8.8: bytes=32 time=22ms TTL=119

Ping statistics for 8.8.8.8:
    Packets: Sent = 22, Received = 22, Lost = 0 (0% loss),
Approximate round trip times in milli-seconds:
    Minimum = 20ms, Maximum = 30ms, Average = 21ms
Control-C
^C
C:\WINDOWS\system32>
```

Route


```
C:\WINDOWS\system32>route -n

Manipulates network routing tables.

ROUTE [-f] [-p] [-4|-6] command [destination]
                  [MASK netmask]  [gateway] [METRIC metric]  [IF interface]

  -f           Clears the routing tables of all gateway entries.  If this is
               used in conjunction with one of the commands, the tables are
               cleared prior to running the command.

  -p           When used with the ADD command, makes a route persistent across
               boots of the system. By default, routes are not preserved
               when the system is restarted. Ignored for all other commands,
               which always affect the appropriate persistent routes.

  -4           Force using IPv4.

  -6           Force using IPv6.

  command      One of these:
                 PRINT     Prints  a route
                 ADD       Adds    a route
                 DELETE    Deletes a route
                 CHANGE    Modifies an existing route
  destination  Specifies the host.
  MASK         Specifies that the next parameter is the 'netmask' value.
  netmask      Specifies a subnet mask value for this route entry.
               If not specified, it defaults to 255.255.255.255.
  gateway      Specifies gateway.
  interface    the interface number for the specified route.
  METRIC       specifies the metric, ie. cost for the destination.

All symbolic names used for destination are looked up in the network database
file NETWORKS. The symbolic names for gateway are looked up in the host name
database file HOSTS.

If the command is PRINT or DELETE. Destination or gateway can be a wildcard,
(wildcard is specified as a star '*'), or the gateway argument may be omitted.

If Dest contains a * or ?, it is treated as a shell pattern, and only
matching destination routes are printed. The '*' matches any string,
and '?' matches any one char. Examples: 157.*.1, 157.*, 127.*, *224*.

Pattern match is only allowed in PRINT command.
Diagnostic Notes:
    Invalid MASK generates an error, that is when (DEST & MASK) != DEST.
    Example> route ADD 157.0.0.0 MASK 155.0.0.0 157.55.80.1 IF 1
             The route addition failed: The specified mask parameter is invalid.
 (Destination & Mask) != Destination.
```

```
C:\WINDOWS\system32>route -cn

Manipulates network routing tables.

ROUTE [-f] [-p] [-4|-6] command [destination]
                  [MASK netmask]  [gateway] [METRIC metric]  [IF interface]

  -f           Clears the routing tables of all gateway entries.  If this is
               used in conjunction with one of the commands, the tables are
               cleared prior to running the command.

  -p           When used with the ADD command, makes a route persistent across
               boots of the system. By default, routes are not preserved
               when the system is restarted. Ignored for all other commands,
               which always affect the appropriate persistent routes.

  -4           Force using IPv4.

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  command      One of these:
                 PRINT     Prints  a route
                 ADD       Adds    a route
                 DELETE    Deletes a route
                 CHANGE    Modifies an existing route
  destination  Specifies the host.
  MASK         Specifies that the next parameter is the 'netmask' value.
  netmask      Specifies a subnet mask value for this route entry.
               If not specified, it defaults to 255.255.255.255.
  gateway      Specifies gateway.
  interface    the interface number for the specified route.
  METRIC       specifies the metric, ie. cost for the destination.

All symbolic names used for destination are looked up in the network database
file NETWORKS. The symbolic names for gateway are looked up in the host name
database file HOSTS.

If the command is PRINT or DELETE. Destination or gateway can be a wildcard,
(wildcard is specified as a star '*'), or the gateway argument may be omitted.

If Dest contains a * or ?, it is treated as a shell pattern, and only
matching destination routes are printed. The '*' matches any string,
and '?' matches any one char. Examples: 157.*.1, 157.*, 127.*, *224*.

Pattern match is only allowed in PRINT command.
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    Invalid MASK generates an error, that is when (DEST & MASK) != DEST.
    Example> route ADD 157.0.0.0 MASK 155.0.0.0 157.55.80.1 IF 1
             The route addition failed: The specified mask parameter is invalid.
 (Destination & Mask) != Destination.

Examples:

    > route PRINT
    > route PRINT -4
```

traceroute

```
C:\WINDOWS\system32>tracert google.com

Tracing route to google.com [142.250.196.46]
over a maximum of 30 hops:

  1    <1 ms     1 ms     1 ms  192.168.18.1
  2     5 ms     5 ms     6 ms  100.78.192.1
  3    16 ms    15 ms    25 ms  10.1.3.14
  4    16 ms    15 ms    16 ms  72.14.212.92
  5    20 ms    20 ms    19 ms  216.239.47.9
  6    15 ms    16 ms    15 ms  142.251.55.31
  7    15 ms    15 ms    15 ms  maa03s45-in-f14.1e100.net [142.250.196.46]

Trace complete.
```

```
C:\WINDOWS\system32>tracert

Usage: tracert [-d] [-h maximum_hops] [-j host-list] [-w timeout]
               [-R] [-S srcaddr] [-4] [-6] target_name

Options:
    -d                  Do not resolve addresses to hostnames.
    -h maximum_hops     Maximum number of hops to search for target.
    -j host-list        Loose source route along host-list (IPv4-only).
    -w timeout          Wait timeout milliseconds for each reply.
    -R                  Trace round-trip path (IPv6-only).
    -S srcaddr          Source address to use (IPv6-only).
    -4                  Force using IPv4.
    -6                  Force using IPv6.
```

nslookup

```
C:\WINDOWS\system32>nslookup
Default Server:  UnKnown
Address:  192.168.18.1

>
> www.fb.com
Server:  UnKnown
Address:  192.168.18.1

Non-authoritative answer:
Name:    star-mini.c10r.facebook.com
Addresses:  2a03:2880:f137:182:face:b00c:0:25de
          157.240.192.35
Aliases:  www.fb.com
          www.facebook.com
```

```
C:\WINDOWS\system32>nslookup
Default Server:  UnKnown
Address:  192.168.18.1
```

ipconfig

```
C:\WINDOWS\system32>ipconfig /release

Windows IP Configuration


Ethernet adapter Ethernet:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::28c6:c847:b32e:c68a%3
   Default Gateway . . . . . . . . . :

Ethernet adapter VirtualBox Host-Only Network:

   Connection-specific DNS Suffix  . :
   Link-local IPv6 Address . . . . . : fe80::938:51cb:286c:1963%6
   IPv4 Address. . . . . . . . . . . : 192.168.56.1
   Subnet Mask . . . . . . . . . . . : 255.255.255.0
   Default Gateway . . . . . . . . . :

Tunnel adapter isatap.{49C72057-ECC6-46C0-BA6E-5E63196C4534}:

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

Tunnel adapter isatap.{7BD826CA-8525-4E57-BD0D-3B8C79C941E5}:

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

NetStat

```
C:\WINDOWS\system32>netstat -r
===========================================================================
Interface List
  3...b8 97 5a c5 c3 6a ......Realtek PCIe FE Family Controller
  6...0a 00 27 00 00 06 ......VirtualBox Host-Only Ethernet Adapter
  1...........................Software Loopback Interface 1
  4...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter
  5...00 00 00 00 00 00 00 e0 Microsoft ISATAP Adapter #2
===========================================================================

IPv4 Route Table
===========================================================================
Active Routes:
Network Destination        Netmask          Gateway       Interface  Metric
        127.0.0.0        255.0.0.0         On-link         127.0.0.1    306
        127.0.0.1  255.255.255.255         On-link         127.0.0.1    306
  127.255.255.255  255.255.255.255         On-link         127.0.0.1    306
      169.254.0.0        255.255.0.0         On-link    169.254.198.138    276
  169.254.198.138  255.255.255.255         On-link    169.254.198.138    276
  169.254.255.255  255.255.255.255         On-link    169.254.198.138    276
    192.168.56.0    255.255.255.0         On-link      192.168.56.1    266
    192.168.56.1  255.255.255.255         On-link      192.168.56.1    266
  192.168.56.255  255.255.255.255         On-link      192.168.56.1    266
        224.0.0.0        240.0.0.0         On-link         127.0.0.1    306
        224.0.0.0        240.0.0.0         On-link      192.168.56.1    266
        224.0.0.0        240.0.0.0         On-link    169.254.198.138    276
  255.255.255.255  255.255.255.255         On-link         127.0.0.1    306
  255.255.255.255  255.255.255.255         On-link      192.168.56.1    266
  255.255.255.255  255.255.255.255         On-link    169.254.198.138    276
===========================================================================
Persistent Routes:
  None

IPv6 Route Table
===========================================================================
Active Routes:
 If Metric Network Destination      Gateway
  1    306 ::1/128                  On-link
  6    266 fe80::/64                On-link
  3    276 fe80::/64                On-link
  6    266 fe80::938:51cb:286c:1963/128
                                    On-link
  3    276 fe80::28c6:c847:b32e:c68a/128
                                    On-link
  1    306 ff00::/8                 On-link
  6    266 ff00::/8                 On-link
  3    276 ff00::/8                 On-link
===========================================================================
Persistent Routes:
  None
```

```
C:\WINDOWS\system32>netstat -n

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    192.168.18.82:3319     74.125.68.188:5228     ESTABLISHED
  TCP    192.168.18.82:10178    74.125.68.188:5228     ESTABLISHED
  TCP    192.168.18.82:10285    20.197.71.89:443       ESTABLISHED
  TCP    192.168.18.82:12460    23.207.154.12:80       ESTABLISHED
  TCP    192.168.18.82:12461    23.206.204.92:80       ESTABLISHED
  TCP    192.168.18.82:14031    157.240.192.52:443     ESTABLISHED
```

```
C:\WINDOWS\system32>netstat -n 5

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    192.168.18.82:3319     74.125.68.188:5228     ESTABLISHED
  TCP    192.168.18.82:10178    74.125.68.188:5228     ESTABLISHED
  TCP    192.168.18.82:10285    20.197.71.89:443       ESTABLISHED
  TCP    192.168.18.82:12460    23.207.154.12:80       ESTABLISHED
  TCP    192.168.18.82:12461    23.206.204.92:80       ESTABLISHED
  TCP    192.168.18.82:14031    157.240.192.52:443     ESTABLISHED

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    192.168.18.82:3319     74.125.68.188:5228     ESTABLISHED
  TCP    192.168.18.82:10178    74.125.68.188:5228     ESTABLISHED
  TCP    192.168.18.82:10285    20.197.71.89:443       ESTABLISHED
  TCP    192.168.18.82:12460    23.207.154.12:80       ESTABLISHED
  TCP    192.168.18.82:12461    23.206.204.92:80       ESTABLISHED
  TCP    192.168.18.82:14031    157.240.192.52:443     ESTABLISHED

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    192.168.18.82:3319     74.125.68.188:5228     ESTABLISHED
  TCP    192.168.18.82:10178    74.125.68.188:5228     ESTABLISHED
  TCP    192.168.18.82:10285    20.197.71.89:443       ESTABLISHED
  TCP    192.168.18.82:12460    23.207.154.12:80       ESTABLISHED
  TCP    192.168.18.82:12461    23.206.204.92:80       ESTABLISHED
  TCP    192.168.18.82:14031    157.240.192.52:443     ESTABLISHED

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    192.168.18.82:3319     74.125.68.188:5228     ESTABLISHED
  TCP    192.168.18.82:10178    74.125.68.188:5228     ESTABLISHED
  TCP    192.168.18.82:10285    20.197.71.89:443       ESTABLISHED
  TCP    192.168.18.82:12460    23.207.154.12:80       ESTABLISHED
  TCP    192.168.18.82:12461    23.206.204.92:80       ESTABLISHED
  TCP    192.168.18.82:14031    157.240.192.52:443     ESTABLISHED
```

```
C:\WINDOWS\system32>netstat

Active Connections

  Proto  Local Address          Foreign Address        State
  TCP    192.168.18.82:3319     sc-in-f188:5228        ESTABLISHED
  TCP    192.168.18.82:10178    sc-in-f188:5228        ESTABLISHED
  TCP    192.168.18.82:10285    20.197.71.89:https     ESTABLISHED
  TCP    192.168.18.82:12460    a23-207-154-12:http    ESTABLISHED
  TCP    192.168.18.82:12461    a23-206-204-92:http    ESTABLISHED
  TCP    192.168.18.82:14031    whatsapp-cdn-shv-02-maa2:https  ESTABLISHED
```

LINUX

Ping

```
ashish@ashish-VirtualBox:~/Desktop$ ping google.com
PING google.com (142.250.182.110) 56(84) bytes of data.
64 bytes from maa05s21-in-f14.1e100.net (142.250.182.110): icmp_seq=1 ttl=118 t
ime=19.7 ms
64 bytes from maa05s21-in-f14.1e100.net (142.250.182.110): icmp_seq=2 ttl=118 t
ime=19.7 ms
64 bytes from maa05s21-in-f14.1e100.net (142.250.182.110): icmp_seq=3 ttl=118 t
ime=19.8 ms
64 bytes from maa05s21-in-f14.1e100.net (142.250.182.110): icmp_seq=4 ttl=118 t
ime=19.9 ms
64 bytes from maa05s21-in-f14.1e100.net (142.250.182.110): icmp_seq=5 ttl=118 t
ime=20.0 ms
64 bytes from maa05s21-in-f14.1e100.net (142.250.182.110): icmp_seq=6 ttl=118 t
ime=19.5 ms
64 bytes from maa05s21-in-f14.1e100.net (142.250.182.110): icmp_seq=7 ttl=118 t
ime=20.2 ms
```

```
ashish@ashish-VirtualBox:~/Desktop$ ping 0
PING 0 (127.0.0.1) 56(84) bytes of data.
64 bytes from 127.0.0.1: icmp_seq=1 ttl=64 time=0.027 ms
64 bytes from 127.0.0.1: icmp_seq=2 ttl=64 time=0.035 ms
64 bytes from 127.0.0.1: icmp_seq=3 ttl=64 time=0.048 ms
64 bytes from 127.0.0.1: icmp_seq=4 ttl=64 time=0.051 ms
64 bytes from 127.0.0.1: icmp_seq=5 ttl=64 time=0.047 ms
64 bytes from 127.0.0.1: icmp_seq=6 ttl=64 time=0.053 ms
^X64 bytes from 127.0.0.1: icmp_seq=7 ttl=64 time=0.053 ms

64 bytes from 127.0.0.1: icmp_seq=8 ttl=64 time=0.037 ms
64 bytes from 127.0.0.1: icmp_seq=9 ttl=64 time=0.053 ms
```

```
ashish@ashish-VirtualBox:~/Desktop$ ping fb.com
PING fb.com (31.13.79.35) 56(84) bytes of data.
64 bytes from edge-star-mini-shv-02-bom1.facebook.com (31.13.79.35): icmp_seq=1
 ttl=57 time=34.6 ms
64 bytes from edge-star-mini-shv-02-bom1.facebook.com (31.13.79.35): icmp_seq=2
 ttl=57 time=35.4 ms
64 bytes from edge-star-mini-shv-02-bom1.facebook.com (31.13.79.35): icmp_seq=3
 ttl=57 time=34.8 ms
^Z
[2]+  Stopped                 ping fb.com
```

```
ashish@ashish-VirtualBox:~/Desktop$ ping -c
ping: option requires an argument -- 'c'

Usage
  ping [options] <destination>

Options:
  <destination>      dns name or ip address
  -a                 use audible ping
  -A                 use adaptive ping
  -B                 sticky source address
  -c <count>         stop after <count> replies
  -D                 print timestamps
  -d                 use SO_DEBUG socket option
  -f                 flood ping
  -h                 print help and exit
  -I <interface>     either interface name or address
  -i <interval>      seconds between sending each packet
  -L                 suppress loopback of multicast packets
  -l <preload>       send <preload> number of packages while waiting replies
  -m <mark>          tag the packets going out
  -M <pmtud opt>     define mtu discovery, can be one of <do|dont|want>
  -n                 no dns name resolution
  -O                 report outstanding replies
  -p <pattern>       contents of padding byte
  -q                 quiet output
```

Route

```
    X25 (CCITT X.25)
ashish@ashish-VirtualBox:~/Desktop$ 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
```

```
ashish@ashish-VirtualBox:~/Desktop$ route -cn
route: invalid option -- 'c'
U Rhythmbox e [-nNvee] [-FC] [<AF>]           List kernel routing tables
       route [-v] [-FC] {add|del|flush} ...  Modify routing table for AF.

       route {-h|--help} [<AF>]              Detailed usage syntax for specifie
d AF.
       route {-V|--version}                  Display version/author and exit.

        -v, --verbose            be verbose
        -n, --numeric            don't resolve names
        -e, --extend             display other/more information
        -F, --fib                display Forwarding Information Base (default)
        -C, --cache              display routing cache instead of FIB

  <AF>=Use -4, -6, '-A <af>' or '--<af>'; default: inet
  List of possible address families (which support routing):
    inet (DARPA Internet) inet6 (IPv6) ax25 (AMPR AX.25)
    netrom (AMPR NET/ROM) ipx (Novell IPX) ddp (Appletalk DDP)
    x25 (CCITT X.25)
```

Traceroute

```
ashish@ashish-VirtualBox:~/Desktop$ traceroute www.fb.com
traceroute to www.fb.com (157.240.192.35), 30 hops max, 60 byte packets
 1  _gateway (10.0.2.2)  0.766 ms  0.713 ms  0.684 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
```

nslookup

```
ashish@ashish-VirtualBox:~/Desktop$ nslookup
> www.google.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
Name:   www.google.com
Address: 142.250.183.228
Name:   www.google.com
Address: 2404:6800:4007:81e::2004
```

```
ashish@ashish-VirtualBox:~/Desktop$ nslookup -type=mx google.com

Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
google.com      mail exchanger = 40 alt3.aspmx.l.google.com.
google.com      mail exchanger = 30 alt2.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 = 10 aspmx.l.google.com.

Authoritative answers can be found from:
```

```
ashish@ashish-VirtualBox:~/Desktop$ nslookup -type=txt google.com
;; Truncated, retrying in TCP mode.
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
google.com      text = "v=spf1 include:_spf.google.com ~all"
google.com      text = "globalsign-smime-dv=CDYX+XFHUw2wml6/Gb8+59BsH31KzUr6c1l
2BPvqKX8="
google.com      text = "MS=E4A68B9AB2BB9670BCE15412F62916164C0B20BB"
google.com      text = "google-site-verification=TV9-DBe4R80X4v0M4U_bd_J9cpOJM0
nikft0jAgjmsQ"
google.com      text = "facebook-domain-verification=22rm551cu4k0ab0bxsw536tlds
4h95"
google.com      text = "docusign=1b0a6754-49b1-4db5-8540-d2c12664b289"
google.com      text = "apple-domain-verification=30afIBcvSuDV2PLX"
google.com      text = "docusign=05958488-4752-4ef2-95eb-aa7ba8a3bd0e"
google.com      text = "google-site-verification=wD8N7i1JTNTkezJ49swvWW48f8_9xv
eREV4oB-0Hf5o"

Authoritative answers can be found from:
```

```
ashish@ashish-VirtualBox:~/Desktop$ nslookup -type=ns google.com
Server:         127.0.0.53
Address:        127.0.0.53#53

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

Authoritative answers can be found from:
```

Ifconfig

```
ashish@ashish-VirtualBox:~/Desktop$ 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::30a8:2c95:65b6:ce0e  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:05:f2:7f  txqueuelen 1000  (Ethernet)
        RX packets 4710  bytes 6486439 (6.4 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 1800  bytes 123806 (123.8 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 216  bytes 18754 (18.7 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 216  bytes 18754 (18.7 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

```
ashish@ashish-VirtualBox:~/Desktop$ 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::30a8:2c95:65b6:ce0e  prefixlen 64  scopeid 0x20<link>
        ether 08:00:27:05:f2:7f  txqueuelen 1000  (Ethernet)
        RX packets 772  bytes 919996 (919.9 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 402  bytes 37925 (37.9 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 226  bytes 19728 (19.7 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 226  bytes 19728 (19.7 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

```
ashish@ashish-VirtualBox:~/Desktop$ ifconfig -s
Iface      MTU    RX-OK RX-ERR RX-DRP RX-OVR    TX-OK TX-ERR TX-DRP TX-OVR Flg
enp0s3    1500      772      0      0 0           402      0      0      0 BMRU
lo       65536      226      0      0 0           226      0      0      0 LRU
```

```
ashish@ashish-VirtualBox:~/Desktop$ ifconfig -help
Usage:
  ifconfig [-a] [-v] [-s] <interface> [[<AF>] <address>]
  [add <address>[/<prefixlen>]]
  [del <address>[/<prefixlen>]]
  [[-]broadcast [<address>]]  [[-]pointopoint [<address>]]
  [netmask <address>]  [dstaddr <address>]  [tunnel <address>]
  [outfill <NN>] [keepalive <NN>]
  [hw <HW> <address>]  [mtu <NN>]
  [[-]trailers]  [[-]arp]  [[-]allmulti]
  [multicast]  [[-]promisc]
  [mem_start <NN>]  [io_addr <NN>]  [irq <NN>]  [media <type>]
  [txqueuelen <NN>]
  [[-]dynamic]
  [up|down] ...
```

netstat

```
ashish@ashish-VirtualBox:~/Desktop$ netstat -r
Kernel IP routing table
Destination     Gateway         Genmask         Flags   MSS Window  irtt Iface
default         _gateway        0.0.0.0         UG        0 0          0 enp0s3
10.0.2.0        0.0.0.0         255.255.255.0   U         0 0          0 enp0s3
link-local      0.0.0.0         255.255.0.0     U         0 0          0 enp0s3
```

```
ashish@ashish-VirtualBox:~/Desktop$ netstat -t
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
```

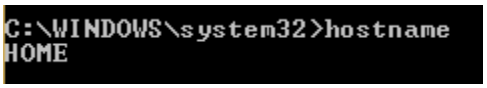
```
ashish@ashish-VirtualBox:~/Desktop$ netstat -s
Ip:
    Forwarding: 2
    583 total packets received
    1 with invalid addresses
    0 forwarded
    0 incoming packets discarded
    580 incoming packets delivered
    576 requests sent out
    20 outgoing packets dropped
Icmp:
    62 ICMP messages received
    0 input ICMP message failed
    ICMP input histogram:
        destination unreachable: 40
        echo requests: 9
        echo replies: 13
    75 ICMP messages sent
    0 ICMP messages failed
    ICMP output histogram:
        destination unreachable: 40
        echo requests: 26
        echo replies: 9
IcmpMsg:
        InType0: 13
        InType3: 40
        InType8: 9
        OutType0: 9
        OutType3: 40
```

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

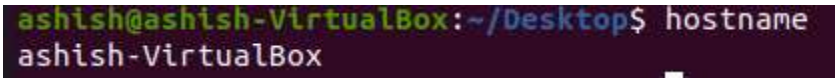
1. Hostname Command

A very simple command that displays the host name of your machine.

Windows

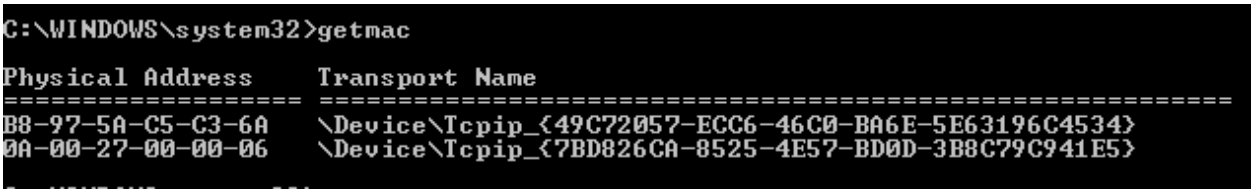


Linux



2.getmac Command

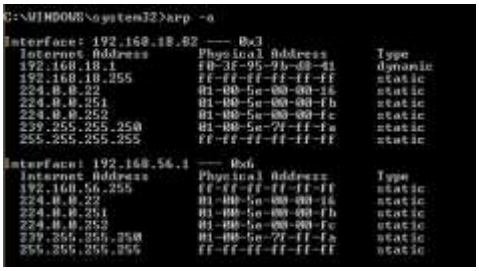
Another very simple command that shows the MAC address of your network interfaces



3.arp Command

This is used for showing the **address resolution cache**. This command must be used with a command line switch **arp -a** is the most common.

Windows



Linux

```
ashish@ashish-VirtualBox:~/Desktop$ arp -a
_gateway (10.0.2.2) at 52:54:00:12:35:02 [ether] on enp0s3
```

4.TaskKill Command

View a list of running tasks using the **tasklist** command and kill them by name or processor ID using the **taskKill** command.

```
C:\WINDOWS\system32>tasklist

Image Name                     PID Session Name        Session#    Mem Usage
========================= ======== ================ =========== ============
System Idle Process              0 Services                   0          4 K
System                           4 Services                   0      2,004 K
smss.exe                       304 Services                   0        724 K
csrss.exe                      456 Services                   0      3,180 K
wininit.exe                    520 Services                   0      2,640 K
services.exe                   612 Services                   0      4,260 K
lsass.exe                      620 Services                   0      7,952 K
svchost.exe                    684 Services                   0      7,692 K
svchost.exe                    716 Services                   0      6,796 K
svchost.exe                    816 Services                   0     11,336 K
svchost.exe                    872 Services                   0     57,788 K
svchost.exe                    888 Services                   0     21,704 K
svchost.exe                    912 Services                   0      9,676 K
svchost.exe                    512 Services                   0     15,888 K
spoolsv.exe                   1040 Services                   0      6,496 K
svchost.exe                   1108 Services                   0     13,700 K
armsvc.exe                    1220 Services                   0      3,296 K
svchost.exe                   1248 Services                   0      7,928 K
TeamViewer_Service.exe        1720 Services                   0      8,884 K
SearchIndexer.exe             2528 Services                   0     15,620 K
svchost.exe                   2760 Services                   0      7,572 K
svchost.exe                   2048 Services                   0      3,712 K
GoogleCrashHandler.exe        2560 Services                   0          0 K
GoogleCrashHandler64.exe      2584 Services                   0          4 K
csrss.exe                     5172 Console                    4     34,092 K
winlogon.exe                  4792 Console                    4      4,700 K
dwm.exe                       2292 Console                    4     22,980 K
taskhostex.exe                3696 Console                    4      9,144 K
explorer.exe                  3304 Console                    4     74,848 K
igfxtray.exe                  2900 Console                    4      4,916 K
hkcmd.exe                     3352 Console                    4      4,700 K
igfxpers.exe                  1884 Console                    4      6,484 K
RAUCpl64.exe                  4900 Console                    4      6,992 K
iVCam.exe                     2256 Console                    4     13,576 K
jusched.exe                   5168 Console                    4      7,592 K
chrome.exe                    1464 Console                    4    244,248 K
chrome.exe                    3000 Console                    4      5,004 K
```

5. pathping Command

The pathping command which provides a combination of the best aspects of Tracert and Ping.

```
C:\WINDOWS\system32>pathping

Usage: pathping [-g host-list] [-h maximum_hops] [-i address] [-n]
                [-p period] [-q num_queries] [-w timeout]
                [-4] [-6] target_name

Options:
    -g host-list     Loose source route along host-list.
    -h maximum_hops  Maximum number of hops to search for target.
    -i address       Use the specified source address.
    -n               Do not resolve addresses to hostnames.
    -p period        Wait period milliseconds between pings.
    -q num_queries   Number of queries per hop.
    -w timeout       Wait timeout milliseconds for each reply.
    -4               Force using IPv4.
    -6               Force using IPv6.
```

Systeminfo

```
C:\WINDOWS\system32>Systeminfo

Host Name:                 HOME
OS Name:                   Microsoft Windows 8.1 Pro
OS Version:                6.3.9600 N/A Build 9600
OS Manufacturer:           Microsoft Corporation
OS Configuration:          Standalone Workstation
OS Build Type:             Multiprocessor Free
Registered Owner:          HOMEPC
Registered Organization:
Product ID:                00261-50000-00000-AA989
Original Install Date:     2/27/2021, 11:28:37 AM
System Boot Time:          9/4/2021, 9:18:40 AM
System Manufacturer:       BIOSTAR Group
System Model:              H61MLV3
System Type:               x64-based PC
Processor(s):              1 Processor(s) Installed.
                           [01]: Intel64 Family 6 Model 42 Stepping 7 GenuineInt
el ~1600 Mhz
BIOS Version:              American Megatrends Inc. 4.6.5, 3/20/2014
Windows Directory:         C:\WINDOWS
System Directory:          C:\WINDOWS\system32
Boot Device:               \Device\HarddiskVolume6
System Locale:             en-us;English (United States)
Input Locale:              en-us;English (United States)
Time Zone:                 (UTC+05:30) Chennai, Kolkata, Mumbai, New Delhi
Total Physical Memory:     3,989 MB
Available Physical Memory: 917 MB
Virtual Memory: Max Size:  5,591 MB
Virtual Memory: Available: 1,191 MB
Virtual Memory: In Use:    4,400 MB
Page File Location(s):     C:\pagefile.sys
Domain:                    WORKGROUP
Logon Server:              \\HOME
Hotfix(s):                 145 Hotfix(s) Installed.
                           [01]: KB2899189_Microsoft-Windows-CameraCodec-Package
```

Linux commands

Dig

```
ashish@ashish-VirtualBox:~/Desktop$ dig google.com

; <<>> DiG 9.16.1-Ubuntu <<>> google.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 41405
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;google.com.                    IN      A

;; ANSWER SECTION:
google.com.             250     IN      A       142.250.196.78

;; Query time: 11 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Sun Sep 12 21:20:08 IST 2021
;; MSG SIZE  rcvd: 55
```