Basic Linux Commands

1) ifconfig

```
student@jai:~$ ifconfig
enp4s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 172.16.13.171  netmask 255.255.254.0  broadcast 172.16.13.255
        inet6 fe80::289a:d5ec:89c3:828a  prefixlen 64  scopeid 0x20<link>
        ether 94:57:a5:f2:ff:d9  txqueuelen 1000  (Ethernet)
        RX packets 115551  bytes 35060848 (35.0 MB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 3115  bytes 283779 (283.7 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 399  bytes 38679 (38.6 KB)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 399  bytes 38679 (38.6 KB)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

vmnet1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 172.16.120.1  netmask 255.255.255.0  broadcast 172.16.120.255
        inet6 fe80::250:56ff:fec0:1  prefixlen 64  scopeid 0x20<link>
        ether 00:50:56:c0:00:01  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 142  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0

vmnet8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST>  mtu 1500
        inet 192.168.89.1  netmask 255.255.255.0  broadcast 192.168.89.255
        inet6 fe80::250:56ff:fec0:8  prefixlen 64  scopeid 0x20<link>
        ether 00:50:56:c0:00:08  txqueuelen 1000  (Ethernet)
        RX packets 0  bytes 0 (0.0 B)
        RX errors 0  dropped 0  overruns 0  frame 0
        TX packets 142  bytes 0 (0.0 B)
        TX errors 0  dropped 0 overruns 0  carrier 0  collisions 0
```

2) netstat

3) netstat -i

```
student@jai:~$ netstat -i
Kernel Interface table
```

Iface	MTU	RX-OK	RX-ERR	RX-DRP	RX-OVR	TX-OK	TX-ERR	TX-DRP	TX-OVR	Flg
enp4s0	1500	127363	0	0	0	3357	0	0	0	BMRU
lo	65536	447	0	0	0	447	0	0	0	LRU
vmnet1	1500	0	0	0	0	164	0	0	0	BMRU
vmnet8	1500	0	0	0	0	164	0	0	0	BMRU

4) netstat -rn

```
student@jai:~$ netstat -rn
Kernel IP routing table
```

Destination	Gateway	Genmask	Flags	MSS	Window	irtt	Iface
0.0.0.0	172.16.12.1	0.0.0.0	UG	0	0	0	enp4s0
169.254.0.0	0.0.0.0	255.255.0.0	U	0	0	0	enp4s0
172.16.12.0	0.0.0.0	255.255.254.0	U	0	0	0	enp4s0
172.16.120.0	0.0.0.0	255.255.255.0	U	0	0	0	vmnet1
192.168.89.0	0.0.0.0	255.255.255.0	U	0	0	0	vmnet8

5) netstat -an

6) netstat -s

```
student@jai:~$ netstat -s
Ip:
```

```
student@jai:~$ netstat -an
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp        0      0 0.0.0.0:902             0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:3306          0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.53:53           0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:22              0.0.0.0:*               LISTEN
tcp        0      0 127.0.0.1:631           0.0.0.0:*               LISTEN
tcp6       0      0 :::902                  :::*                    LISTEN
tcp6       0      0 :::22                   :::*                    LISTEN
tcp6       0      0 ::1:631                 :::*                    LISTEN
udp    23040      0 127.0.0.53:53           0.0.0.0:*
udp        0      0 0.0.0.0:631             0.0.0.0:*
udp    44416      0 0.0.0.0:5353            0.0.0.0:*
udp        0      0 0.0.0.0:46534           0.0.0.0:*
udp6       0      0 :::40331                :::*
udp6   34688      0 :::5353                 :::*
raw        0      0 0.0.0.0:1               0.0.0.0:*               7
raw6       0      0 :::58                   :::*                    7
Active UNIX domain sockets (servers and established)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ACC ]     STREAM     LISTENING     30510    @/tmp/.ICE-unix/2059
unix  2      [ ]         DGRAM                    31762    /run/user/1001/systemd/notify
unix  2      [ ACC ]     SEQPACKET  LISTENING     15804    /run/udev/control
unix  2      [ ACC ]     STREAM     LISTENING     31765    /run/user/1001/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     31769    /run/user/1001/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]     STREAM     LISTENING     31770    /run/user/1001/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM     LISTENING     31771    /run/user/1001/gnupg/S.gpg-agent.browser
unix  2      [ ACC ]     STREAM     LISTENING     31772    /run/user/1001/bus
unix  2      [ ACC ]     STREAM     LISTENING     31773    /run/user/1001/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM     LISTENING     31774    /run/user/1001/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]     STREAM     LISTENING     28653    /run/user/1001/keyring/control
unix  2      [ ACC ]     STREAM     LISTENING     25555    /var/run/vmnat.1304
```

Forwarding: 2

59956 total packets received

311 with invalid addresses

0 forwarded

0 incoming packets discarded

43023 incoming packets delivered

3758 requests sent out

2 outgoing packets dropped

Icmp:

34 ICMP messages received

0 input ICMP message failed

ICMP input histogram:

destination unreachable: 34

103 ICMP messages sent

0 ICMP messages failed

ICMP output histogram:

destination unreachable: 101

echo requests: 2

IcmpMsg:

InType3: 34

OutType3: 101

OutType8: 2

Tcp:

50 active connection openings

1 passive connection openings

2 failed connection attempts

    1 connection resets received
    0 connections established
    3132 segments received
    2839 segments sent out
    36 segments retransmitted
    0 bad segments received
    109 resets sent
Udp:
    9914 packets received
    156 packets to unknown port received
    0 packet receive errors
    774 packets sent
    0 receive buffer errors
    0 send buffer errors
    IgnoredMulti: 29527
UdpLite:
TcpExt:
    5 TCP sockets finished time wait in fast timer
    15 delayed acks sent
    2063 packet headers predicted
    173 acknowledgments not containing data payload received
    247 predicted acknowledgments
    TCPTimeouts: 4
    TCPLossProbes: 4
    6 connections reset due to unexpected data
    4 connections aborted due to timeout
    TCPRcvCoalesce: 1018
    TCPOFOQueue: 141
    TCPOrigDataSent: 486
IpExt:
    InMcastPkts: 9511
    OutMcastPkts: 278
    InBcastPkts: 29527
    OutBcastPkts: 33
    InOctets: 30614798
    OutOctets: 313063
    InMcastOctets: 1592165
    OutMcastOctets: 45868
    InBcastOctets: 5439651
    OutBcastOctets: 2083
    InNoECTPkts: 73135

7) ping

```
student@jai:~$ ping 192.168.0.1
PING 192.168.0.1 (192.168.0.1) 56(84) bytes of data.
```

8) netstat -p

```
student@jai:~$ netstat -p
(Not all processes could be identified, non-owned process info
 will not be shown, you would have to be root to see it all.)
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         State       PID/Program name
tcp        0      0 jai:36072              a23-192-159-32.de:https ESTABLISHED 4174/chrome --type=
^C
```

9) netstat -v

```
student@jai:~$ netstat -v
Active Internet connections (w/o servers)    14) netstat -udp
Proto Recv-Q Send-Q Local Address              Foreign Address        State
tcp        0      0 jai:45826                  104.16.0.19:https       ESTABLISHED
tcp        0      0 jai:38456                  maa05s05-in-f4.1e:https ESTABLISHED
tcp        0      0 jai:33562                  maa05s02-in-f10.1:https ESTABLISHED
tcp        0      0 jai:49826                  maa05s01-in-f2.1e:https ESTABLISHED
tcp        0      0 jai:56758                  maa03s31-in-f2.1e:https ESTABLISHED
^C
```

10)netstat -r

```
student@jai:~$ netstat -r                    13) netstat -tcp
Kernel IP routing table
Destination     Gateway         Genmask         Flags MSS Window  irtt Iface
default         _gateway        0.0.0.0         UG      0 0          0 enp4s0
link-local      0.0.0.0         255.255.0.0     U       0 0          0 enp4s0
172.16.12.0     0.0.0.0         255.255.254.0   U       0 0          0 enp4s0
172.16.120.0    0.0.0.0         255.255.255.0   U       0 0          0 vmnet1
192.168.89.0    0.0.0.0         255.255.255.0   U       0 0          0 vmnet8
```

11) netstat -all

```
student@jai:~$ netstat -all
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address          Foreign Address         State
tcp        0      0 0.0.0.0:902            0.0.0.0:*               LISTEN
tcp        0      0 localhost:mysql        0.0.0.0:*               LISTEN
tcp        0      0 localhost:domain       0.0.0.0:*               LISTEN
tcp        0      0 0.0.0.0:ssh            0.0.0.0:*               LISTEN
tcp        0      0 localhost:ipp          0.0.0.0:*               LISTEN
^C
```

12) netstat – program

```
student@jai:~$ netstat --program
(Not all processes could be identified, non-owned process info
 will not be shown, you would have to be root to see it all.)
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         State       PID/Program name
tcp        0      0 jai:43676              13.107.21.200:https     ESTABLISHED 4174/chrome --type=
tcp        0      0 jai:59082              63.db.0cd8.ip4.st:https ESTABLISHED 4174/chrome --type=
tcp        0      0 jai:58058              172.217.194.156:https   ESTABLISHED 4174/chrome --type=
tcp        0      0 jai:58998              maa03s29-in-f14.1:https ESTABLISHED 4174/chrome --type=
tcp        0      0 jai:49276              maa05s09-in-f3.1e:https ESTABLISHED 4174/chrome --type=
tcp        0      0 jai:55730              239.75.201.35.bc.:https ESTABLISHED 4174/chrome --type=
tcp        0      0 jai:33562              maa05s02-in-f10.1:https ESTABLISHED 4174/chrome --type=
^C
```

13) netstat -tcp

```
student@jai:~$ netstat -tcp
(Not all processes could be identified, non-owned process info
 will not be shown, you would have to be root to see it all.)
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         State       PID/Program name
tcp        0      0 jai:59426              maa05s06-in-f14.1:https ESTABLISHED 4174/chrome --type=
tcp        0      0 jai:34038              maa03s28-in-f2.1e:https ESTABLISHED 4174/chrome --type=
^C
```

14) netstat -udp

```
student@jai:~$ netstat -udp
(Not all processes could be identified, non-owned process info
 will not be shown, you would have to be root to see it all.)
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address          Foreign Address         State       PID/Program name
```

15) netstat -lx

```
student@jai:~$ netstat -lx
Active UNIX domain sockets (only servers)
Proto RefCnt Flags       Type       State         I-Node   Path
unix  2      [ ACC ]     STREAM     LISTENING     30510    @/tmp/.ICE-unix/2059
unix  2      [ ACC ]     SEQPACKET  LISTENING     15804    /run/udev/control
unix  2      [ ACC ]     STREAM     LISTENING     31765    /run/user/1001/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     31769    /run/user/1001/gnupg/S.gpg-agent.extra
unix  2      [ ACC ]     STREAM     LISTENING     31770    /run/user/1001/gnupg/S.dirmngr
unix  2      [ ACC ]     STREAM     LISTENING     31771    /run/user/1001/gnupg/S.gpg-agent.browser
unix  2      [ ACC ]     STREAM     LISTENING     31772    /run/user/1001/bus
unix  2      [ ACC ]     STREAM     LISTENING     31773    /run/user/1001/gnupg/S.gpg-agent
unix  2      [ ACC ]     STREAM     LISTENING     31774    /run/user/1001/gnupg/S.gpg-agent.ssh
unix  2      [ ACC ]     STREAM     LISTENING     28653    /run/user/1001/keyring/control
unix  2      [ ACC ]     STREAM     LISTENING     25555    /var/run/vmnat.1304
unix  2      [ ACC ]     STREAM     LISTENING     30535    /run/user/1001/keyring/pkcs11
unix  2      [ ACC ]     STREAM     LISTENING     30536    /run/user/1001/keyring/ssh
unix  2      [ ACC ]     STREAM     LISTENING     25713    /tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     31953    /run/user/1001/pulse/native
unix  2      [ ACC ]     STREAM     LISTENING     31803    /tmp/ssh-CxOikLERenX5/agent.2059
unix  2      [ ACC ]     STREAM     LISTENING     30511    /tmp/.ICE-unix/2059
unix  2      [ ACC ]     STREAM     LISTENING     25712    @/tmp/.X11-unix/X0
unix  2      [ ACC ]     STREAM     LISTENING     38102    /tmp/OSL_PIPE_1001_SingleOfficeIPC_58fec46657ac4e85f1f27603334a6f6
unix  2      [ ACC ]     STREAM     LISTENING     37576    /tmp/.com.google.Chrome.Gclnra/SingletonSocket
unix  2      [ ACC ]     STREAM     LISTENING     15796    /run/systemd/private
unix  2      [ ACC ]     STREAM     LISTENING     15813    /run/lvm/lvmetad.socket
unix  2      [ ACC ]     STREAM     LISTENING     15815    /run/systemd/fsck.progress
unix  2      [ ACC ]     STREAM     LISTENING     15824    /run/systemd/journal/stdout
unix  2      [ ACC ]     STREAM     LISTENING     1904     @irqbalance780.sock
unix  2      [ ACC ]     STREAM     LISTENING     1290     /run/lvm/lvmpolld.socket
unix  2      [ ACC ]     STREAM     LISTENING     32905    @/tmp/dbus-DnlpxKiLqp
unix  2      [ ACC ]     STREAM     LISTENING     1854     /run/cups/cups.sock
unix  2      [ ACC ]     STREAM     LISTENING     1856     /var/run/dbus/system_bus_socket
unix  2      [ ACC ]     STREAM     LISTENING     1858     /run/acpid.socket
unix  2      [ ACC ]     STREAM     LISTENING     1860     /run/avahi-daemon/socket
unix  2      [ ACC ]     STREAM     LISTENING     1862     /run/uuidd/request
unix  2      [ ACC ]     STREAM     LISTENING     22163    /var/run/mysqld/mysqld.sock
unix  2      [ ACC ]     STREAM     LISTENING     20448    /var/run/vmware/usbarbitrator-socket
```

16) netstat -h

```
student@jai:~$ netstat -h
usage: netstat [-vWeenNcCF] [<Af>] -r         netstat {-V|--version|-h|--help}
       netstat [-vWnNcaeol] [<Socket> ...]
       netstat { [-vWeenNac] -i | [-cnNe] -M | -s [-6tuw] }

        -r, --route              display routing table
        -i, --interfaces         display interface table
        -g, --groups             display multicast group memberships
        -s, --statistics         display networking statistics (like SNMP)
        -M, --masquerade         display masqueraded connections

        -v, --verbose            be verbose
        -W, --wide               don't truncate IP addresses
        -n, --numeric            don't resolve names
        --numeric-hosts          don't resolve host names
        --numeric-ports          don't resolve port names
        --numeric-users          don't resolve user names
        -N, --symbolic           resolve hardware names
        -e, --extend             display other/more information
        -p, --programs           display PID/Program name for sockets
        -o, --timers             display timers
        -c, --continuous         continuous listing

        -l, --listening          display listening server sockets
        -a, --all                display all sockets (default: connected)
        -F, --fib                display Forwarding Information Base (default)
        -C, --cache              display routing cache instead of FIB
        -Z, --context            display SELinux security context for sockets

  <Socket>={-t|--tcp} {-u|--udp} {-U|--udplite} {-S|--sctp} {-w|--raw}
           {-x|--unix} --ax25 --ipx --netrom
  <AF>=Use '-6|-4' or '-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)
```

17) traceroute 192.168.0.1

18) dig 192.168.0.1

19)telnet 192.168.0.1

```
student@jai:~ student@jai:~$ telnet www.google.com 443
              Trying 172.217.163.164...
; <<>> DiG 9. Connected to www.google.com.
;; global opt Escape character is '^]'.
;; Got answer ^CConnection closed by foreign host.
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 7069
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

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

;; ANSWER SECTION:
www.google.com.            177      IN      A       172.217.163.164

;; Query time: 0 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Wed Jul 10 16:40:45 IST 2019
;; MSG SIZE  rcvd: 59                        Find All   Match Case
```

20)nslookup www.google.com

```
student@jai:~$ nslookup www.google.com
Server:         127.0.0.53
Address:        127.0.0.53#53

Non-authoritative answer:
Name:   www.google.com
Address: 172.217.163.164
Name:   www.google.com
Address: 2404:6800:4007:80f::2004
```

21) w 192.168.0.1

```
student@jai:~$ w google.com
 16:47:32 up  3:19,  1 user,  load average: 0.75, 0.48, 0.47
USER     TTY      FROM             LOGIN@   IDLE   JCPU   PCPU WHAT
```

22)   host

172.217.26.174

```
student@jai:~$ host 172.217.26.174
174.26.217.172.in-addr.arpa domain name pointer maa03s22-in-f14.1e100.net.
174.26.217.172.in-addr.arpa domain name pointer maa03s22-in-f174.1e100.net.
```