



Mawlana Bhashani Science and Technology University Lab-Report

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Answer :

Networking linux command given below :

1.ifconfig : The command ifconfig stands for interface configuration. This command enables us to initialize an interface, assign IP address, enable or disable an interface. It display route and network interface.

You can view IP address ,MAC address and MUT(Maximum Transmission Unit) with ifconfig command.

```
File Edit View Search Terminal Help
iqbal@iqbal-Inspiron-15-3567:~$ ifconfig
enp2s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    ether 58:8a:5a:2c:8a:e0 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 0 bytes 0 (0.0 B)
    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 146 bytes 11424 (11.4 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 146 bytes 11424 (11.4 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

2. ip : Linux IP command is the newer version of the ifconfig command . It is a handy tool for configuring the network interfaces for Linux administrators. It can be used to assign and remove addresses , take the interfaces up or down, and much more useful tasks.

```
iqbal@iqbal-Inspiron-15-3567:~$ ip
Usage: ip [ OPTIONS ] OBJECT { COMMAND | help }
       ip [ -force ] -batch filename
where  OBJECT := { link | address | addrlabel | route | rule | neigh | ntable |
                  tunnel | tuntap | maddress | mroute | mrule | monitor | xfrm
                  |
                  netns | l2tp | fou | macsec | tcp_metrics | token | netconf |
                  ila |
                  vrf | sr }
       OPTIONS := { -V[ersion] | -s[tatistics] | -d[etails] | -r[esolve] |
                   -h[uman-readable] | -iec |
                   -f[amily] { inet | inet6 | ipx | dnet | mpls | bridge | link
                   |
                   -4 | -6 | -I | -D | -B | -O |
                   -l[oops] { maximum-addr-flush-attempts } | -br[ief] |
                   -o[neline] | -t[imestamp] | -ts[hort] | -b[atch] [filename]
                   |
                   -rc[vbuf] [size] | -n[etns] name | -a[ll] | -c[olor]}

iqbal@iqbal-Inspiron-15-3567:~$
```

3.traceroute : Linux traceroute command is a network troubleshooting utility that helps us determine the number of hops and packets traveling path required to reach destination. It is used to display how the data transmitted from a local machine to a remote machine. Loading a web page is one of the common example of the traceroute. A web page loading transfers data through a network and routes. The traceroute can display the routes, IP addresses, and hostname of routers over a network. It can be useful for diagnosing network issues.

```
iqbal@iqbal-Inspiron-15-3567:~$ traceroute
Usage:
  traceroute [ -46dFITnreAUDV ] [ -f first_ttl ] [ -g gate,... ] [ -i device ] [
  -m max_ttl ] [ -N squeries ] [ -p port ] [ -t tos ] [ -l flow_label ] [ -w MAX,
  HERE,NEAR ] [ -q nqueries ] [ -s src_addr ] [ -z sendwait ] [ --fwmark=num ] hos
  t [ packetlen ]
Options:
  -4                      Use IPv4
  -6                      Use IPv6
  -d --debug              Enable socket level debugging
  -F --dont-fragment      Do not fragment packets
  -f first_ttl --first=first_ttl
                          Start from the first_ttl hop (instead from 1)
  -g gate,... --gateway=gate,...
                          Route packets through the specified gateway
                          (maximum 8 for IPv4 and 127 for IPv6)
  -I --icmp               Use ICMP ECHO for tracerouting
  -T --tcp                Use TCP SYN for tracerouting (default port is 80)
  -i device --interface=device
                          Specify a network interface to operate with
  -m max_ttl --max-hops=max_ttl
                          Set the max number of hops (max TTL to be
                          reached). Default is 30
  -N squeries --sim-queries=squeries
                          Set the number of probes to be tried
                          simultaneously (default is 16)
  -n                      Do not resolve IP addresses to their domain names
  -p port --port=port     Set the destination port to use. It is either
                          initial udp port value for "default" method
                          (incremented by each probe, default is 33434), or
                          initial seq for "icmp" (incremented as well,
                          default from 1), or some constant destination
                          port for other methods (with default of 80 for
                          "tcp", 53 for "udp", etc.)
```

4.tracepath : It is similar to traceroute command, but it doesn't require root privileges, By default , it is installed in Ubuntu nut you may have to download traceroute on Ubuntu . It traces the network path of the specified destination and reports each hop along the path . If you have a slow network then tracepath will show you where your network is weak

```
iqbal@iqbal-Inspiron-15-3567:~$ tracepath javatpoint.com
1?: [LOCALHOST] pmtu 1500
1: _gateway 3.300ms
1: _gateway 4.548ms
2: no reply
3: 10.174.162.49 77.524ms
4: no reply
5: 10.243.24.22 51.377ms
6: no reply
7: ??? 81.055ms
8: 103.15.245.13 101.625ms asymm 13
9: ??? 680.366ms asymm 10
10: ix-xe-11-0-2-0.tcore1.cxr-chennai.as6453.net 433.905ms asymm 12
11: if-ae-3-3.tcore2.cxr-chennai.as6453.net 557.678ms asymm 18
12: if-ae-9-2.tcore2.mlv-mumbai.as6453.net 563.604ms asymm 17
13: if-ae-21-2.tcore1.pye-paris.as6453.net 545.630ms asymm 14
14: if-ae-11-2.tcore1.pvu-paris.as6453.net 613.778ms asymm 12
15: if-ae-21-2.tcore1.pye-paris.as6453.net 613.619ms asymm 14
16: if-ae-11-2.tcore1.pvu-paris.as6453.net 613.245ms asymm 12
17: 80.231.153.202 818.165ms asymm 14
18: ae21.cr10-lon1.ip4.gtt.net 404.835ms asymm 14
19: ae15-to-GTT.mx0thw.as42831.net 431.887ms asymm 11
20: xe0-0-0-to-HEX-virgin.mx0cov.as42831.net 431.573ms asymm 12
21: no reply
22: no reply
```

5.netstate : Linux netstat command stands for network statistics. It display information about different interface statistics, including open sockets, routing tables, and connection information. Further, it can be used to displays all the socket connections (including TCP , UDP). Apart from connection sockets, it also displays the sockets , that are pending for connections . It is a handy tool for network and System administrator.

```
iqbal@iqbal-Inspiron-15-3567:~$ netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags               Type                   State                  I-Node  Path
unix  2      [ ]                  DGRAM                  34423                  /run/user/1000/systemd/notify
unix  2      [ ]                  DGRAM                  31938                  /run/user/121/systemd/notify
unix  3      [ ]                  DGRAM                  15644                  /run/systemd/notify
unix 23      [ ]                  DGRAM                  15652                  /run/systemd/journal/dev-log
unix  8      [ ]                  DGRAM                  15658                  /run/systemd/journal/socket
unix  2      [ ]                  DGRAM                  16428                  /run/systemd/journal/syslog
unix  3      [ ]                  STREAM                 CONNECTED              34475                  /run/systemd/journal/stdout
unix  3      [ ]                  STREAM                 CONNECTED              33949                  /run/systemd/journal/stdout
unix  3      [ ]                  STREAM                 CONNECTED              20173
unix  3      [ ]                  STREAM                 CONNECTED              38252
unix  3      [ ]                  STREAM                 CONNECTED              38209
unix  3      [ ]                  STREAM                 CONNECTED              36469                  /run/systemd/journal/stdout
unix  3      [ ]                  STREAM                 CONNECTED              35394                  /var/run/dbus/system_bus_socket
unix  2      [ ]                  DGRAM                  36077
unix  3      [ ]                  STREAM                 CONNECTED              36075                  /var/run/dbus/system_bus_socket
unix  3      [ ]                  STREAM                 CONNECTED              37241
unix  3      [ ]                  STREAM                 CONNECTED              36282
unix  3      [ ]                  STREAM                 CONNECTED              30453
unix  3      [ ]                  STREAM                 CONNECTED              32262                  /run/user/121/bus
unix  3      [ ]                  STREAM                 CONNECTED              31655
unix  3      [ ]                  STREAM                 CONNECTED              35994
unix  3      [ ]                  STREAM                 CONNECTED              33923                  /run/systemd/journal/stdout
unix  3      [ ]                  STREAM                 CONNECTED              24773                  /run/systemd/journal/stdout
unix  3      [ ]                  STREAM                 CONNECTED              38493
unix  3      [ ]                  STREAM                 CONNECTED              38214
unix  2      [ ]                  DGRAM                  35616
unix  2      [ ]                  DGRAM                  35395
unix  3      [ ]                  STREAM                 CONNECTED              36127                  /run/systemd/journal/stdout
unix  3      [ ]                  STREAM                 CONNECTED              36034
unix  3      [ ]                  STREAM                 CONNECTED              37326                  /run/systemd/journal/stdout
```

6.ss : The ss command is a replacement for netstate command. this command gives more information in comparison to the netstate. It is also faster then netstat as it gets all information from kernel userspace.

```
iqbal@iqbal-Inspiron-15-3567:~$ ss
Netid State  Recv-Q  Send-Q               Peer Address:Port              Local Address:Port
u_str  ESTAB   0        0               /run/systemd/journal/stdout 34475
* 35295
u_str  ESTAB   0        0               /run/systemd/journal/stdout 33949
* 33948
u_str  ESTAB   0        0                               * 20173
* 24773
u_str  ESTAB   0        0                               * 38252
* 38253
u_str  ESTAB   0        0                               * 38209
* 36738
u_str  ESTAB   0        0               /run/systemd/journal/stdout 36469
* 35653
u_str  ESTAB   0        0               /var/run/dbus/system_bus_socket 35394
* 34639
u_str  ESTAB   0        0               /var/run/dbus/system_bus_socket 36075
* 35310
```

7.route : The route command displays and manipulate IP routing table for your system.

A route is a device which is basically used to determine the best way to route packets to a destination.

```
iqbal@iqbal-Inspiron-15-3567:~$ route
Kernel IP routing table
Destination Gateway Genmask Flags Metric Ref Use Iface
default _gateway 0.0.0.0 UG 600 0 0 wlp1s0
link-local 0.0.0.0 255.255.0.0 U 1000 0 0 wlp1s0
192.168.43.0 0.0.0.0 255.255.255.0 U 600 0 0 wlp1s0
iqbal@iqbal-Inspiron-15-3567:~$
```

8.dig : Linux dig commands stands for Domain information Groper. The command is used for tasks related to DNS lookup to query DNS name servers. It mainly deals with Troubleshooting DNS related problems. It is flexible utility for examining the DNS (Domain Name System) . It is used to perform the DNS lookups and returns the queried answer from the name server. Usually, it is used by most DNS administrators to troubleshoot the DNS problems . It is a straightforward tool and provides a clear output. It is more functional then other lookups tools.

```
iqbal@iqbal-Inspiron-15-3567:~$ dig

; <<>> DiG 9.11.3-1ubuntu1.12-Ubuntu <<>>
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 6455
;; flags: qr rd ra; QUERY: 1, ANSWER: 13, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 65494
;; QUESTION SECTION:
;.                               IN      NS

;; ANSWER SECTION:
.           364230 IN      NS      c.root-servers.net.
.           364230 IN      NS      m.root-servers.net.
.           364230 IN      NS      b.root-servers.net.
.           364230 IN      NS      l.root-servers.net.
.           364230 IN      NS      h.root-servers.net.
.           364230 IN      NS      e.root-servers.net.
.           364230 IN      NS      f.root-servers.net.
.           364230 IN      NS      i.root-servers.net.
.           364230 IN      NS      a.root-servers.net.
.           364230 IN      NS      d.root-servers.net.
.           364230 IN      NS      k.root-servers.net.
.           364230 IN      NS      g.root-servers.net.
.           364230 IN      NS      j.root-servers.net.

;; Query time: 29 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Fri Jan 08 16:48:07 EST 2021
;; MSG SIZE rcvd: 239
```


9.host : Linux host command displays domain name for given IP address or vice-versa . It also performs DNS lookups related to the DNS query. The host commands default behavior displays a summary of its command – line arguments and supported options.

```
iqbal@iqbal-Inspiron-15-3567:~$ host
Usage: host [-aCdilrTvVw] [-c class] [-N ndots] [-t type] [-W time]
          [-R number] [-m flag] hostname [server]
  -a is equivalent to -v -t ANY
  -c specifies query class for non-IN data
  -C compares SOA records on authoritative nameservers
  -d is equivalent to -v
  -i IP6.INT reverse lookups
  -l lists all hosts in a domain, using AXFR
  -m set memory debugging flag (trace|record|usage)
  -N changes the number of dots allowed before root lookup is done
  -r disables recursive processing
  -R specifies number of retries for UDP packets
  -s a SERVFAIL response should stop query
  -t specifies the query type
  -T enables TCP/IP mode
  -v enables verbose output
  -V print version number and exit
  -w specifies to wait forever for a reply
  -W specifies how long to wait for a reply
  -4 use IPv4 query transport only
  -6 use IPv6 query transport only
```

10.arp : The command arp stands for address resolution protocol. It allows us to view or add content into kernels ARP tables.

```
iqbal@iqbal-Inspiron-15-3567:~$ arp
Address          HWtype  HWaddress      Flags Mask    Iface
_gateway         ether    1a:02:19:e8:93:53  C             wlp1s
0
```

11.hostname : Linux hostname command allows us to set and view the hostname of the system. A hostname of the system. A hostname is the name of any computer that is connected to a network that is uniquely identified over a network. It can be accessed without using a particular IP address.

```
File Edit View Search Terminal Help
iqbal@iqbal-Inspiron-15-3567:~$ hostname
iqbal-Inspiron-15-3567
iqbal@iqbal-Inspiron-15-3567:~$
```

