

Ex:1b**Date:27.7.24**

LINUX COMMANDS

1.ifconfig: ifconfig is short for interface configurator. This command is utilized in network inspection, initializing the interface, enabling or disabling an IP address, and configuring an interface with an IP address. Also, it is used to show the network and route interface. The basic details shown with ifconfig are:

- MTU
- MAC address
- IP address

Syntax:

ifconfig

```
File Actions Edit View Help
(kali@kali)-[~]
$ sudo su
[sudo] password for kali:
(root@kali)-[/home/kali]
# ifconfig
eth0: 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::f510:77a5:bdfb:fc6d prefixlen 64 scopeid 0x20<link>
    inet6 fd00::a26b:5af3:4cda:29cb prefixlen 64 scopeid 0x0<global>
    ether 08:00:27:ad:25:87 txqueuelen 1000 (Ethernet)
    RX packets 7 bytes 2896 (2.8 KiB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 25 bytes 3963 (3.8 KiB)
    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 8 bytes 480 (480.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 8 bytes 480 (480.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

2. ip: It is the updated and latest edition of ifconfig command. The command provides the information of every network, such as ifconfig. Also, it can be used to get information about a particular interface. **Syntax:**

ip a

ip addr

```
File Actions Edit View Help
(root@kali)-[/home/kali]
# ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
   inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
   inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
   link/ether 08:00:27:ad:25:87 brd ff:ff:ff:ff:ff:ff
   inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute eth0
       valid_lft 86232sec preferred_lft 86232sec
   inet6 fd00::a26b:5af3:4cda:29cb/64 scope global dynamic noprefixroute
       valid_lft 86234sec preferred_lft 14234sec
   inet6 fe80::f510:77a5:bdfb:fc6d/64 scope link noprefixroute
       valid_lft forever preferred_lft forever

(root@kali)-[/home/kali]
# ip addr
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default qlen 1000
   link/loopback 00:00:00:00:00:00 brd 00:00:00:00:00:00
   inet 127.0.0.1/8 scope host lo
       valid_lft forever preferred_lft forever
   inet6 ::1/128 scope host noprefixroute
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc fq_codel state UP group default qlen 1000
   link/ether 08:00:27:ad:25:87 brd ff:ff:ff:ff:ff:ff
   inet 10.0.2.15/24 brd 10.0.2.255 scope global dynamic noprefixroute eth0
       valid_lft 86205sec preferred_lft 86205sec
   inet6 fd00::a26b:5af3:4cda:29cb/64 scope global dynamic noprefixroute
       valid_lft 86207sec preferred_lft 14207sec
   inet6 fe80::f510:77a5:bdfb:fc6d/64 scope link noprefixroute
       valid_lft forever preferred_lft forever
```

3.traceroute: The traceroute command is one of the most helpful commands in the networking field. It's used to balance the network. It identifies the delay and decides the pathway to our target. Basically, it aids in the below ways: It determines the location of the network latency and informs it.

- It follows the path to the destination.
- It gives the names and recognizes all devices on the path.

Syntax:`tracert < destination >`

```
(root@kali)-[/home/kali]
# traceroute www.facebook.com;
traceroute to www.facebook.com (157.240.192.35), 30 hops max, 60 byte packets
 1  10.0.2.2 (10.0.2.2)  0.687 ms  1.008 ms  1.151 ms
 2  * * *
 3  * * *
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  * * *
 9  * * *
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  * * *
17  * * *
18  * * *
19  * * *
20  * * *
21  * * *
22  * * *
23  * * *
24  * * *
25  * * *
26  * * *
27  * * *
28  * * *
29  * * *
30  * * *
```

4.tracepath: The tracepath command is the same as the traceroute command, and it is used to find network delays. Besides, it does not need root privileges. By default, it comes pre-installed in Ubuntu. It traces the path to the destination and recognizes all hops in it.

It identifies the point at which the network is weak if our network is not strong enough.

Syntax: tracepath

<destination>



```
File Actions Edit View Help
(root@kali)-[/home/kali]
# tracepath www.google.com
1?: [LOCALHOST] pmtu 1500
1: 10.0.2.2 0.780ms
1: 10.0.2.2 0.323ms
2: no reply
3: no reply
4: no reply
5: no reply
6: no reply
7: no reply
8: no reply
9: no reply
10: no reply
11: no reply
12: no reply
13: no reply
```

5.

ping: It is short for Packet Internet Groper. The ping command is one of the widely used commands for network troubleshooting. Basically, it inspects the network connectivity between two different nodes.

Syntax:

ping **<destination>**


```

File Actions Edit View Help
ping www.google.com
PING www.google.com (142.250.182.4) 50(84) bytes of data:
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=1 ttl=255 time=0.94 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=2 ttl=255 time=9.37 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=3 ttl=255 time=9.73 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=4 ttl=255 time=9.21 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=5 ttl=255 time=9.76 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=6 ttl=255 time=10.8 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=7 ttl=255 time=9.76 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=8 ttl=255 time=9.75 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=9 ttl=255 time=11.3 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=10 ttl=255 time=9.62 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=11 ttl=255 time=11.4 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=12 ttl=255 time=9.48 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=13 ttl=255 time=7.15 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=14 ttl=255 time=10.5 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=15 ttl=255 time=10.6 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=16 ttl=255 time=9.48 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=17 ttl=255 time=8.62 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=18 ttl=255 time=9.36 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=19 ttl=255 time=12.7 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=20 ttl=255 time=9.26 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=21 ttl=255 time=9.84 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=22 ttl=255 time=10.6 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=23 ttl=255 time=9.45 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=24 ttl=255 time=8.90 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=25 ttl=255 time=8.40 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=26 ttl=255 time=8.94 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=27 ttl=255 time=9.33 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=28 ttl=255 time=8.64 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=29 ttl=255 time=9.15 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=30 ttl=255 time=9.30 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=31 ttl=255 time=8.01 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=32 ttl=255 time=9.68 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=33 ttl=255 time=8.89 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=34 ttl=255 time=9.16 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=35 ttl=255 time=8.90 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=36 ttl=255 time=8.66 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=37 ttl=255 time=8.16 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=38 ttl=255 time=9.48 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=39 ttl=255 time=9.11 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=40 ttl=255 time=9.74 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=41 ttl=255 time=8.10 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=42 ttl=255 time=8.55 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=43 ttl=255 time=7.55 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=44 ttl=255 time=11.4 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=45 ttl=255 time=8.04 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=46 ttl=255 time=9.11 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=47 ttl=255 time=8.81 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=48 ttl=255 time=8.73 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=49 ttl=255 time=8.82 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=50 ttl=255 time=8.55 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=51 ttl=255 time=8.62 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=52 ttl=255 time=8.01 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=53 ttl=255 time=7.78 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=54 ttl=255 time=8.46 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=55 ttl=255 time=8.45 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=56 ttl=255 time=7.36 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=57 ttl=255 time=8.93 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=58 ttl=255 time=7.80 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=59 ttl=255 time=7.73 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=60 ttl=255 time=8.42 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=61 ttl=255 time=7.77 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=62 ttl=255 time=7.86 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=63 ttl=255 time=8.09 ms
64 bytes from naa05s18-in-f4.1e100.net (142.250.182.4): icmp_seq=64 ttl=255 time=9.05 ms
^C
— www.google.com ping statistics —
64 packets transmitted, 64 received, 0% packet loss, time 63648ms
rtt min/avg/max/mdev = 0.944/9.131/16.564/1.485 ms

```

6.netstat :It is short for network statistics. It gives statistical figures of many interfaces, which contain open sockets, connection information, and routing tables

```

(root@kali)-[/home/kali]
# netstat
Active Internet connections (w/o servers)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
udp        0      0 10.0.2.15:bootpc       10.0.2.2:bootps        ESTABLISHED

Active UNIX domain sockets (w/o servers)
Proto RefCnt Flags       Type       State      I-Node  Path
unix   3      [ ]         STREAM     CONNECTED  9567    /run/systemd/journal/stdout
unix   3      [ ]         STREAM     CONNECTED  8014
unix   3      [ ]         STREAM     CONNECTED  8939    @/tmp/.X11-unix/X0
unix   3      [ ]         STREAM     CONNECTED  7965
unix   3      [ ]         STREAM     CONNECTED  9503    /run/dbus/system_bus_socket
unix   3      [ ]         STREAM     CONNECTED  9234
unix   3      [ ]         STREAM     CONNECTED  9015
unix   3      [ ]         STREAM     CONNECTED  10280
unix   3      [ ]         STREAM     CONNECTED  8847    /run/user/1000/at-spi/bus_0
unix   3      [ ]         STREAM     CONNECTED  7976
unix   3      [ ]         STREAM     CONNECTED  9184    /run/user/1000/bus
unix   3      [ ]         STREAM     CONNECTED  8241    /run/systemd/journal/stdout
unix   3      [ ]         STREAM     CONNECTED  9328    /run/systemd/journal/stdout
unix   3      [ ]         STREAM     CONNECTED  9571    /run/user/1000/bus
unix   3      [ ]         STREAM     CONNECTED  8038    /run/user/1000/bus
unix   3      [ ]         STREAM     CONNECTED  8020
unix   3      [ ]         STREAM     CONNECTED  8845    @/tmp/.ICE-unix/863
unix   3      [ ]         STREAM     CONNECTED  8642    /run/user/1000/bus
unix   3      [ ]         STREAM     CONNECTED  9593
unix   3      [ ]         STREAM     CONNECTED  9175
unix   3      [ ]         STREAM     CONNECTED  8030    @/tmp/.X11-unix/X0
unix   3      [ ]         STREAM     CONNECTED  8004    @/tmp/.X11-unix/X0
unix   3      [ ]         STREAM     CONNECTED  7970
unix   3      [ ]         STREAM     CONNECTED  10298
unix   3      [ ]         STREAM     CONNECTED  9479    /run/systemd/journal/stdout
unix   3      [ ]         STREAM     CONNECTED  9271
unix   3      [ ]         STREAM     CONNECTED  9385    /run/user/1000/bus
unix   3      [ ]         STREAM     CONNECTED  8015
unix   3      [ ]         STREAM     CONNECTED  8865    /run/user/1000/at-spi/bus_0
unix   3      [ ]         STREAM     CONNECTED  7974
unix   3      [ ]         STREAM     CONNECTED  9604
unix   3      [ ]         STREAM     CONNECTED  9231    @/tmp/.X11-unix/X0
unix   3      [ ]         STREAM     CONNECTED  7660
unix   3      [ ]         STREAM     CONNECTED  10281    /run/user/1000/at-spi/bus_0
unix   3      [ ]         STREAM     CONNECTED  8810    @/tmp/.ICE-unix/863
unix   3      [ ]         STREAM     CONNECTED  11408
unix   3      [ ]         STREAM     CONNECTED  8043    /run/user/1000/bus
unix   3      [ ]         STREAM     CONNECTED  8011    /run/user/1000/bus
unix   3      [ ]         DGRAM      CONNECTED  4199    /run/systemd/notify
unix   3      [ ]         STREAM     CONNECTED  9627
unix   3      [ ]         STREAM     CONNECTED  9605

```

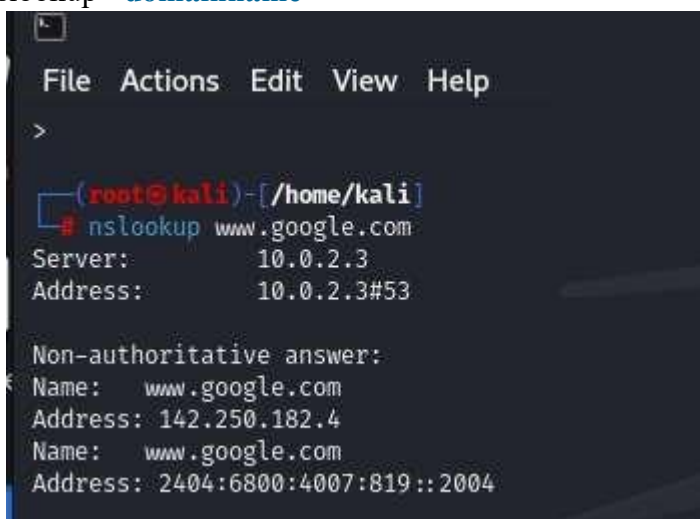
Syntax:

[illegible]

8.nslookup: The nslookup command is an older edition of the dig command. Also, it is utilized for DNS related problems.

Syntax:

nslookup <domainname>



```
File Actions Edit View Help
>
(root@kali)-[/home/kali]
# nslookup www.google.com
Server:      10.0.2.3
Address:     10.0.2.3#53

Non-authoritative answer:
Name:   www.google.com
Address: 142.250.182.4
Name:   www.google.com
Address: 2404:6800:4007:819::2004
```

9.

dig: dig is short for Domain Information Groper. The dig command is an improvised edition of the nslookup command. It is utilized in DNS lookup to reserve the DNS name server.

Also, it is used to balance DNS related problems. Mainly, it is used to authorize DNS mappings, host addresses, MX records, and every other DNS record for the best DNS topography understanding. **Syntax:** dig <domainname>


```
File Actions Edit View Help
(root@kali)-[/home/kali]
# dig

; <<>> DiG 9.20.0-Debian <<>>
;; global options: +cmd
;; Got answer:
;; ->HEADER<- opcode: QUERY, status: NOERROR, id: 29334
;; flags: qr rd ra ad; QUERY: 1, ANSWER: 13, AUTHORITY: 0, ADDITIONAL: 1

;; OPT PSEUDOSECTION:
; EDNS: version: 0, flags:; udp: 1472
;; QUESTION SECTION:
; .                               IN      NS

;; ANSWER SECTION:
.           5098      IN      NS      h.root-servers.net.
.           5098      IN      NS      g.root-servers.net.
.           5098      IN      NS      m.root-servers.net.
.           5098      IN      NS      j.root-servers.net.
.           5098      IN      NS      b.root-servers.net.
.           5098      IN      NS      c.root-servers.net.
.           5098      IN      NS      d.root-servers.net.
.           5098      IN      NS      k.root-servers.net.
.           5098      IN      NS      f.root-servers.net.
.           5098      IN      NS      a.root-servers.net.
.           5098      IN      NS      l.root-servers.net.
.           5098      IN      NS      i.root-servers.net.
.           5098      IN      NS      e.root-servers.net.

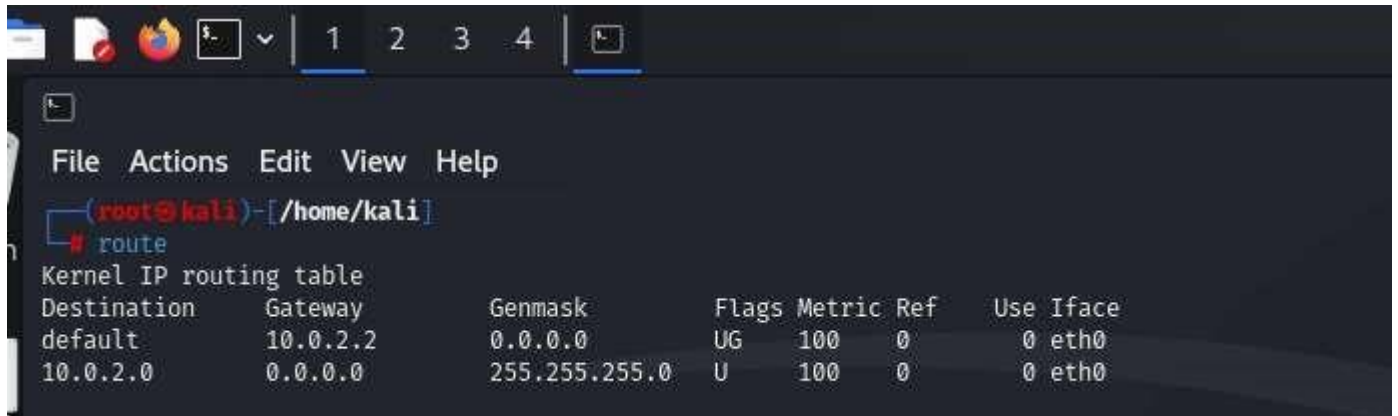
;; Query time: 28 msec
;; SERVER: 10.0.2.3#53(10.0.2.3) (UDP)
;; WHEN: Sat Nov 23 06:17:27 EST 2024
;; MSG SIZE rcvd: 239
```

10.

route: The route command shows and employs the routing table available for our system. Basically, a router is used to detect a better way to transfer the packets around a destination.

Syntax:

route



```
File Actions Edit View Help
(root@kali)-[/home/kali]
# route
Kernel IP routing table
Destination      Gateway         Genmask         Flags Metric Ref    Use Iface
default          10.0.2.2       0.0.0.0         UG      100    0      0 eth0
10.0.2.0         0.0.0.0        255.255.255.0   U       100    0      0 eth0
```

RESULT :

Basic networking linux commands are executed successfully.