Use basic networking commands in Linux (ping, tracert, nslookup, netstat, ARP, RARP, ip, ifconfig, dig, route)

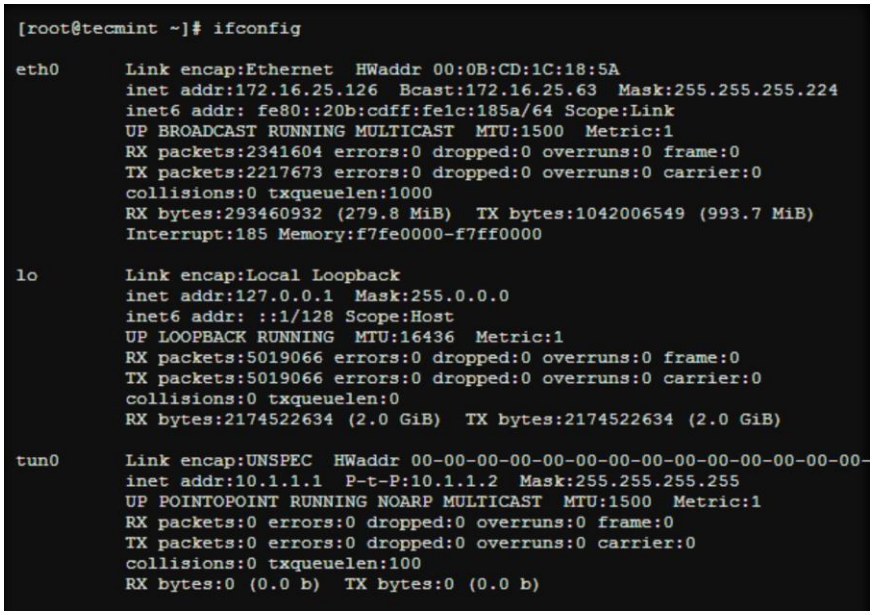
Explanation:

ping Command

- Confirm that a remote host is online and responding.
- Ping is intended for use in network testing, measurement, and management

ifconfig Command

- ifconfig is used to assign an address to a network interface and/or configure network interface parameters.
- To determine if an interface has been recognized and configured on a system
- To initially assign an IP address to an interface
- to bring an interface up or down



ifconfig command with-a argument will display information of all active or inactive network interfaces on server.

```
[root@tecmint ~]# ifconfig -a

eth0      Link encap:Ethernet  HWaddr 00:0B:CD:1C:18:5A
          inet addr:172.16.25.126  Bcast:172.16.25.63  Mask:255.255.255.224
          inet6 addr: fe80::20b:cdff:fe1c:185a/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2344927 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2220777 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:293839516 (280.2 MiB)  TX bytes:1043722206 (995.3 MiB)
          Interrupt:185 Memory:f7fe0000-f7ff0000

lo        Link encap:Local Loopback
          inet addr:127.0.0.1  Mask:255.0.0.0
          inet6 addr: ::1/128 Scope:Host
          UP LOOPBACK RUNNING  MTU:16436  Metric:1
          RX packets:5022927 errors:0 dropped:0 overruns:0 frame:0
          TX packets:5022927 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:2175739488 (2.0 GiB)  TX bytes:2175739488 (2.0 GiB)

sit0      Link encap:IPv6-in-IPv4
          NOARP  MTU:1480  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:0
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)

tun0      Link encap:UNSPEC  HWaddr 00-00-00-00-00-00-00-00-00-00-00-00-00-00-00-00
          inet addr:10.1.1.1  P-t-P:10.1.1.2  Mask:255.255.255.255
          UP POINTOPOINT RUNNING NOARP MULTICAST  MTU:1500  Metric:1
          RX packets:0 errors:0 dropped:0 overruns:0 frame:0
          TX packets:0 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:100
          RX bytes:0 (0.0 b)  TX bytes:0 (0.0 b)
```

View Network Settings of Specific Interface

```
[root@tecmint ~]# ifconfig eth0

eth0      Link encap:Ethernet  HWaddr 00:0B:CD:1C:18:5A
          inet addr:172.16.25.126  Bcast:172.16.25.63  Mask:255.255.255.224
          inet6 addr: fe80::20b:cdff:fe1c:185a/64 Scope:Link
          UP BROADCAST RUNNING MULTICAST  MTU:1500  Metric:1
          RX packets:2345583 errors:0 dropped:0 overruns:0 frame:0
          TX packets:2221421 errors:0 dropped:0 overruns:0 carrier:0
          collisions:0 txqueuelen:1000
          RX bytes:293912265 (280.2 MiB)  TX bytes:1044100408 (995.7 MiB)
          Interrupt:185 Memory:f7fe0000-f7ff0000
```

Enable an Network Interface

```
[root@tecmint ~]# ifconfig eth0 up
OR
[root@tecmint ~]# ifup eth0
```

```
[root@tecmint ~]# ifconfig eth0 down
OR
[root@tecmint ~]# ifdown eth0
```

Assign a IP Address to Network Interface

- [root@tecmint ~]# ifconfig eth0 172.16.25.125

Assign a netmask to Network Interface

- [root@tecmint ~]# ifconfig eth0 netmask 255.255.255.224

Assign a Broadcast to Network Interface

- [root@tecmint ~]# ifconfig eth0 broadcast 172.16.25.63

Assign all in one command

- [root@tecmint ~]# ifconfig eth0 172.16.25.125 netmask 255.255.255.224 broadcast 172.16.25.63

ip Command

ip shows all the interfaces whether enabled or disabled

```
tecmint@tecmint ~ $ ip a
1: lo: <LOOPBACK,UP,LOWER_UP> mtu 65536 qdisc noqueue state UNKNOWN group default
    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
       valid_lft forever preferred_lft forever
2: eth0: <BROADCAST,MULTICAST,UP,LOWER_UP> mtu 1500 qdisc pfifo_fast state UP group default qlen 1000
    link/ether 28:d2:44:eb:bd:98 brd ff:ff:ff:ff:ff:ff
    inet 192.168.0.104/24 brd 192.168.0.255 scope global eth0
       valid_lft forever preferred_lft forever
    inet6 fe80::2ad2:44ff:feeb:bd98/64 scope link
       valid_lft forever preferred_lft forever
3: wlan0: <NO-CARRIER,BROADCAST,MULTICAST,UP> mtu 1500 qdisc mq state DOWN group default qlen 1000
    link/ether 38:b1:db:7c:78:c7 brd ff:ff:ff:ff:ff:ff
```

ip –Add/Del IP Address

ip a add 192.168.80.174 dev eth0
ip a del 192.168.80.174 dev eth0

dig Command

Dig stands for (Domain Information Groper) is a network administration command-line tool for querying Domain Name System (DNS) name servers.

```
root@localhost:~# dig linuxfordevices.com

; <<>> DiG 9.16.1-Ubuntu <<>> linuxfordevices.com
;; global options: +cmd
;; Got answer:
;; ->>HEADER<<- opcode: QUERY, status: NOERROR, id: 31836
;; flags: qr rd ra; QUERY: 1, ANSWER: 1, AUTHORITY: 0, ADDITIONAL: 1

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

;; ANSWER SECTION:
linuxfordevices.com.    300     IN      A       45.79.77.230

;; Query time: 8 msec
;; SERVER: 127.0.0.53#53(127.0.0.53)
;; WHEN: Fri Jun 05 17:54:24 UTC 2020
;; MSG SIZE  rcvd: 64
```

route command

The route command allows you to make manual entries into the network routing tables.

traceroute command

Traceroute is a command which can show you the path a packet of information takes from your computer to one you specify. It will list all the routers it passes through until it reaches its destination, or fails to and is discarded.

```
C:\Users\Chris>tracert baidu.com

Tracing route to baidu.com [123.125.114.144]
over a maximum of 30 hops:

  1     2 ms     1 ms     1 ms  192.168.1.254
  2    12 ms    13 ms     9 ms  10.246.112.1
  3     9 ms     8 ms    12 ms  96.1.253.134
  4    11 ms     8 ms    10 ms  173.182.214.134
  5     *        *        *     Request timed out.
  6    42 ms    35 ms    46 ms  154.11.10.165
  7    36 ms    36 ms    36 ms  219.158.33.249
  8   186 ms   182 ms   178 ms  219.158.30.253
  9   180 ms   180 ms   177 ms  219.158.19.193
 10   190 ms   192 ms   196 ms  219.158.23.17
 11   216 ms   215 ms   216 ms  219.158.101.121
 12   227 ms   232 ms   229 ms  123.126.0.70
 13   212 ms   209 ms   213 ms  bt-227-018.bta.net.cn [202.106.227.18]
 14   232 ms   231 ms   227 ms  202.106.43.66
 15     *        *        *     Request timed out.
 16     *        *        *     Request timed out.
 17   229 ms   230 ms   229 ms  123.125.114.144

Trace complete.
```

nslookup command

nslookup is a network administration command-line tool available in many computer operating systems for querying the Domain Name System (DNS) to obtain domain name or IP address mapping, or other DNS records. The name "nslookup" means "name server lookup".

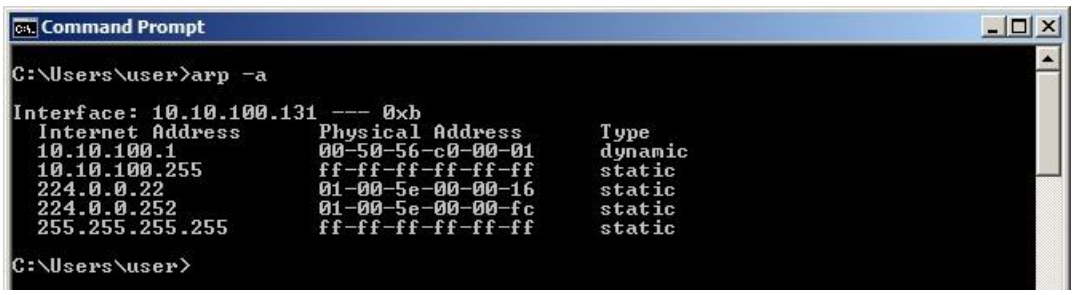
```
root@kali:~# nslookup wikipedia.com
Server:         192.168.29.1
Address:        192.168.29.1#53

Non-authoritative answer:
Name:   wikipedia.com
Address: 103.102.166.226
Name:   wikipedia.com
Address: 2001:df2:e500:ed1a::3

root@kali:~# nslookup www.vit.edu.in
Server:         192.168.29.1
Address:        192.168.29.1#53

Non-authoritative answer:
www.vit.edu.in  canonical name = vit.edu.in.
Name:   vit.edu.in
Address: 148.66.158.109
```

netstat command

netstat(network statistics) is a command line tool for monitoring network connections both incoming and outgoing as well as viewing routing tables, interface statistics etc.

arp command

arp command manipulates or displays the kernel's IPv4 network neighbour cache. It can add entries to the table, delete one, or display the current content. ARP stands for Address Resolution Protocol, which is used to find the address of a network neighbor for a given IPv4 address.



rarp command

RARP is used by some machines at boot time to discover their IP address. They provide their Ethernet address and rarpd responds with their IP address if it finds it in the ethers database