Networking

Networking is an essential aspect of LInux system administration. Here are some basic networking commands that is useful for administrator:-

❖ ifconfig

ifconfig is used to view network interfaces.

1. Eth0 => Ethernet (wired connection)
2. lo   => Loopback (local)
3. wlan0 => wireless Lan

❖ ping

ping command is a tool for diagnosing connectivity issues, monitoring network performance, and checking server availability.

```
┌──(suman💀suman)-[~]
└─$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=113 time=2592 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=113 time=1716 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=113 time=701 ms
64 bytes from 8.8.8.8: icmp_seq=4 ttl=113 time=1645 ms
64 bytes from 8.8.8.8: icmp_seq=5 ttl=113 time=1637 ms
64 bytes from 8.8.8.8: icmp_seq=6 ttl=113 time=1356 ms
^C
── 8.8.8.8 ping statistics ──
8 packets transmitted, 6 received, 25% packet loss, time 7060ms
rtt min/avg/max/mdev = 701.178/1607.864/2592.243/558.001 ms, pipe 3
```

❖Interface up/down

Here the process to do a network interface up or down in linux:-

To bring an interface down:-

sudo ifconfig <ethernet interface> down

```
┌──(suman💀suman)-[~]
└─$ sudo ifconfig wlan0 down

┌──(suman💀suman)-[~]
└─$ ping 8.8.8.8
ping: connect: Network is unreachable
```

To bring interface up:-

sudo ifconfig <ethernet interface> up
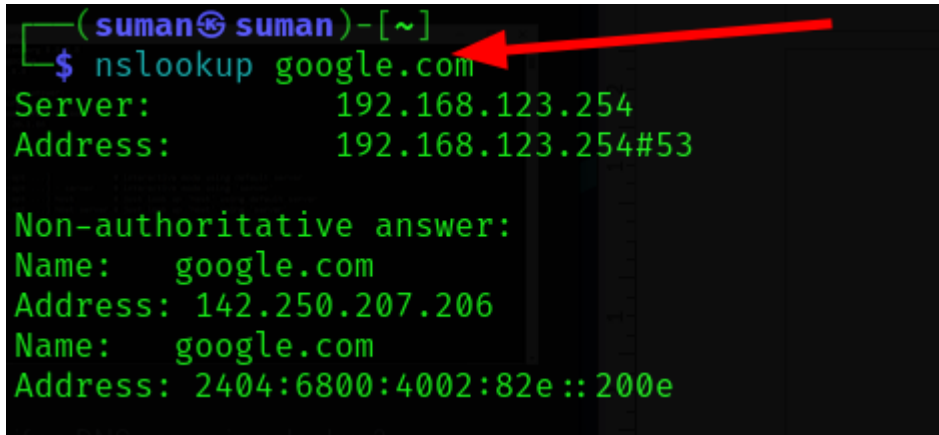
```
┌──(suman💀suman)-[~]
└─$ sudo ifconfig wlan0 up
[sudo] password for suman:

┌──(suman💀suman)-[~]
└─$ ping 8.8.8.8
PING 8.8.8.8 (8.8.8.8) 56(84) bytes of data.
64 bytes from 8.8.8.8: icmp_seq=1 ttl=113 time=36.3 ms
64 bytes from 8.8.8.8: icmp_seq=2 ttl=113 time=32.0 ms
64 bytes from 8.8.8.8: icmp_seq=3 ttl=113 time=32.8 ms
^C
── 8.8.8.8 ping statistics ──
3 packets transmitted, 3 received, 0% packet loss, time 2003ms
rtt min/avg/max/mdev = 31.961/33.704/36.341/1.896 ms
```

❖ nslookup

The nslookup command is used for querying the Domain Name system (DNS) to obtain name or ip address information. It's a helpful tool for troubleshooting and diagnosing DNS-related issues.

Here the basic syntax of nslookup:-
sudo nslookup <domain or ip address>

❖ traceroute

The 'traceroute' command is used to trace the route that packets take from our computer to a destination ip address . It provides information about the network hops between the source and destination.

Here the basic syntax :-
Sudo traceroute <domain or ip address>

```
  ┌──(suman㊀suman)-[~]
  └─$  traceroute google.com
traceroute to google.com (142.250.207.206), 30 hops max, 60 b
yte packets
 1   192.168.123.254 (192.168.123.254)  2.725 ms   2.661 ms *
 2   172.16.8.1 (172.16.8.1)   110.165 ms  110.091 ms   110.082
ms
 3   103.38.198.221 (103.38.198.221)   118.001 ms  117.977 ms
117.933 ms
 4   10.3.157.158 (10.3.157.158)   129.740 ms   137.835 ms *
 5   10.3.62.35 (10.3.62.35)  121.712 ms 10.3.62.48 (10.3.62.4
8)  121.593 ms   121.531 ms
 6   103.38.199.242 (103.38.199.242)  121.572 ms   116.694 ms
116.664 ms
 7   * * *
 8   36.253.0.249 (36.253.0.249)  6.860 ms * *
 9   116.68.210.99 (116.68.210.99)   10.668 ms   10.345 ms   10.3
30 ms
10   116.68.210.244 (116.68.210.244)   10.618 ms 116.68.210.236
 (116.68.210.236)   10.296 ms   10.281 ms
11   125.17.145.237 (125.17.145.237)   59.191 ms dsl-ncr-dynami
c-069.111.16.125.airtelbroadband.in (125.16.111.69)  9.999 ms
  9.958 ms
12   116.119.94.45 (116.119.94.45)  61.759 ms 182.79.198.22 (1
82.79.198.22)   101.539 ms 116.119.94.45 (116.119.94.45)   61.7
30 ms
13   142.250.169.206 (142.250.169.206)   55.182 ms   52.248 ms
56.878 ms
14   * * *
15   142.251.55.224 (142.251.55.224)  62.286 ms 74.125.242.129
 (74.125.242.129)   162.901 ms 142.250.228.186 (142.250.228.18
6)  61.864 ms
16   74.125.242.155 (74.125.242.155)   56.813 ms 108.170.253.12
2 (108.170.253.122)  48.072 ms 108.170.253.119 (108.170.253.1
19)  73.115 ms
17   142.251.248.248 (142.251.248.248)   93.160 ms   93.496 ms 1
72.253.73.230 (172.253.73.230)   52.490 ms
18   72.14.233.107 (72.14.233.107)   137.133 ms 209.85.250.57 (
209.85.250.57)   139.206 ms 216.239.50.23 (216.239.50.23)   92.
832 ms
19   72.14.239.58 (72.14.239.58)   106.024 ms 216.239.50.23 (21
6.239.50.23)   93.202 ms 142.251.76.169 (142.251.76.169)   139.
096 ms
20   216.239.50.23 (216.239.50.23)   97.403 ms   93.029 ms 192.1
78.83.227 (192.178.83.227)   137.601 ms
21   del12s10-in-f14.1e100.net (142.250.207.206)   202.668 ms
202.623 ms   202.605 ms
```

Here the basic information of the output :-

- Hop number
  The leftmost column indicates the hop number(30) in the route .
- Hostname or ip address:-
  The route start from my local machine (192.168.123.254) to the final
  destination (142.250.207.206) which belongs to Google.
- latency
  The round-trip times vary at each hop, reflecting the network latency.