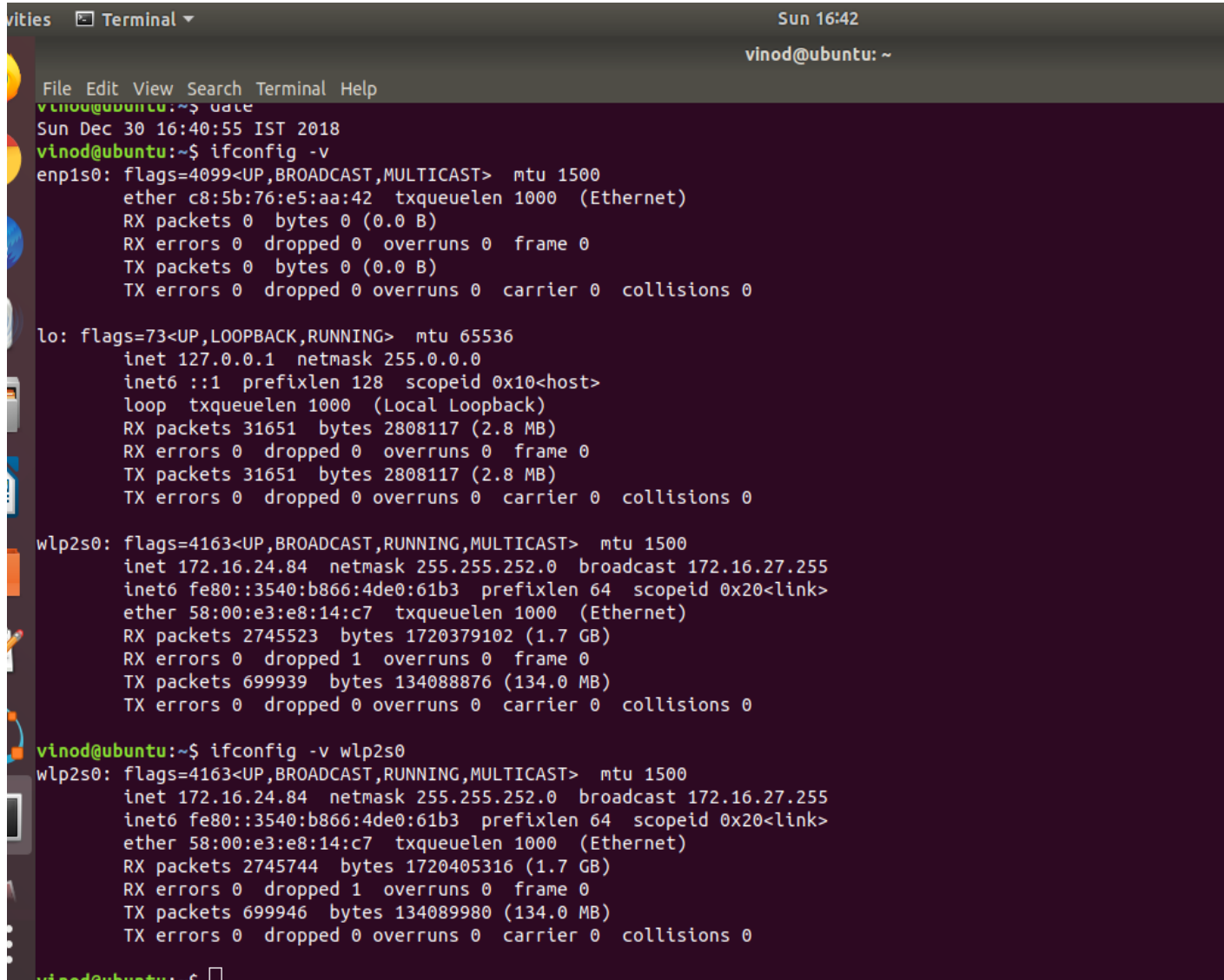


Command_1:Ifconfig

Ifconfig(interface configuration) is used to view and change the configuration of the network interfaces on our system.



```
File Edit View Search Terminal Help
vinod@ubuntu:~$ date
Sun Dec 30 16:40:55 IST 2018
vinod@ubuntu:~$ ifconfig -v
enp1s0: flags=4099<UP,BROADCAST,MULTICAST> mtu 1500
    ether c8:5b:76:e5:aa:42 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 31651 bytes 2808117 (2.8 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 31651 bytes 2808117 (2.8 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

wlp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.16.24.84 netmask 255.255.252.0 broadcast 172.16.27.255
    inet6 fe80::3540:b866:4de0:61b3 prefixlen 64 scopeid 0x20<link>
    ether 58:00:e3:e8:14:c7 txqueuelen 1000 (Ethernet)
    RX packets 2745523 bytes 1720379102 (1.7 GB)
    RX errors 0 dropped 1 overruns 0 frame 0
    TX packets 699939 bytes 134088876 (134.0 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

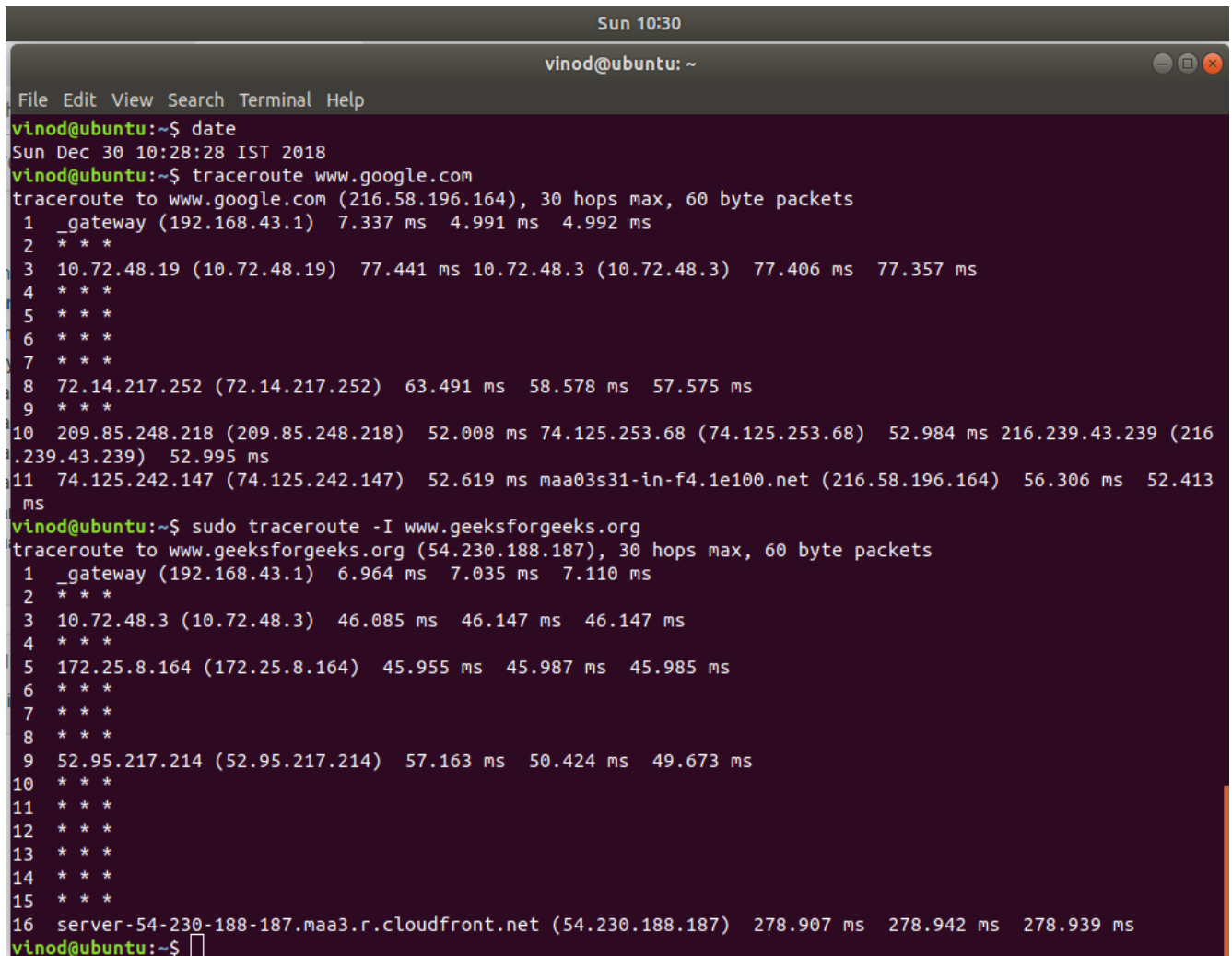
vinod@ubuntu:~$ ifconfig -v wlp2s0
wlp2s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.16.24.84 netmask 255.255.252.0 broadcast 172.16.27.255
    inet6 fe80::3540:b866:4de0:61b3 prefixlen 64 scopeid 0x20<link>
    ether 58:00:e3:e8:14:c7 txqueuelen 1000 (Ethernet)
    RX packets 2745744 bytes 1720405316 (1.7 GB)
    RX errors 0 dropped 1 overruns 0 frame 0
    TX packets 699946 bytes 134089980 (134.0 MB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vinod@ubuntu:~$
```

1. **ifconfig**:-it displays information about all network interfaces currently in operation.
(In above Screenshot-enp1s0: ethernet interface,lo:loopback interface,wlp2s0:wireless network interface).
 2. **ifconfig wlp2s0**:-displays information about (argument) interface(here wlp2s0).
 3. **Sudo ifconfig wlp2s0 up**:-To enable an inactive network interface(eg:here wlp2s0).
 4. **Sudo ifconfig wlp2s0 down**:-To disable an active network interface(eg: here wlp2s0)
- And many other options are there.....

Command_2:traceroute

Traceroute prints the route that packets take to a Network Host.



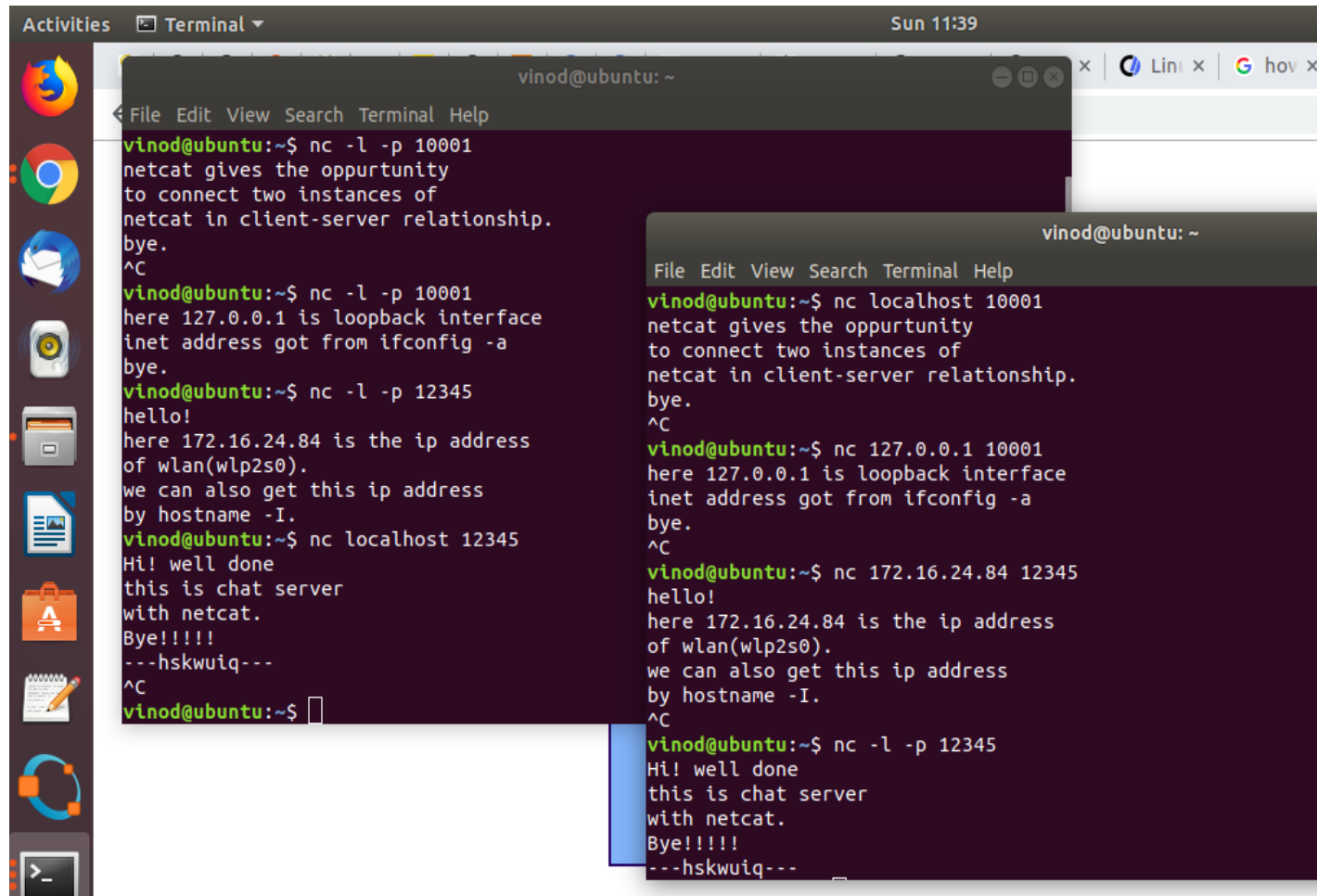
```
Sun 10:30
vinod@ubuntu: ~
File Edit View Search Terminal Help
vinod@ubuntu:~$ date
Sun Dec 30 10:28:28 IST 2018
vinod@ubuntu:~$ traceroute www.google.com
traceroute to www.google.com (216.58.196.164), 30 hops max, 60 byte packets
 1  _gateway (192.168.43.1)  7.337 ms  4.991 ms  4.992 ms
 2  * * *
 3  10.72.48.19 (10.72.48.19)  77.441 ms  10.72.48.3 (10.72.48.3)  77.406 ms  77.357 ms
 4  * * *
 5  * * *
 6  * * *
 7  * * *
 8  72.14.217.252 (72.14.217.252)  63.491 ms  58.578 ms  57.575 ms
 9  * * *
10  209.85.248.218 (209.85.248.218)  52.008 ms  74.125.253.68 (74.125.253.68)  52.984 ms  216.239.43.239 (216
.239.43.239)  52.995 ms
11  74.125.242.147 (74.125.242.147)  52.619 ms  maa03s31-in-f4.1e100.net (216.58.196.164)  56.306 ms  52.413
ms
vinod@ubuntu:~$ sudo traceroute -I www.geeksforgeeks.org
traceroute to www.geeksforgeeks.org (54.230.188.187), 30 hops max, 60 byte packets
 1  _gateway (192.168.43.1)  6.964 ms  7.035 ms  7.110 ms
 2  * * *
 3  10.72.48.3 (10.72.48.3)  46.085 ms  46.147 ms  46.147 ms
 4  * * *
 5  172.25.8.164 (172.25.8.164)  45.955 ms  45.987 ms  45.985 ms
 6  * * *
 7  * * *
 8  * * *
 9  52.95.217.214 (52.95.217.214)  57.163 ms  50.424 ms  49.673 ms
10  * * *
11  * * *
12  * * *
13  * * *
14  * * *
15  * * *
16  server-54-230-188-187.maa3.r.cloudfront.net (54.230.188.187)  278.907 ms  278.942 ms  278.939 ms
vinod@ubuntu:~$
```

Traceroute command utilizes the IP protocol "time to live(ttl)" field and attempts to elicit an ICMP **TIME_EXCEEDED** response from each gateway along the path to some host specified in argument(say google.com,geeksforgeeks.org).

There are many options that are used with traceroute command.

Command_3:netcat

netcat is used for lot of things like chatting(client-server),port scanning,file transferring etc ..



The image shows two terminal windows from the Ubuntu desktop environment. The top window is titled 'vinod@ubuntu: ~' and shows a netcat server running in listening mode on port 10001. It receives a connection from localhost 10001, and the user enters a message. Then, the user starts another netcat server on port 12345, which receives a connection from 172.16.24.84. The bottom window is also titled 'vinod@ubuntu: ~' and shows a netcat client connecting to localhost 10001, then to 127.0.0.1 10001, and finally to 172.16.24.84 12345, sending the same message as the server in the top window. The message is: 'netcat gives the opportunity to connect two instances of netcat in client-server relationship. bye.' followed by a carriage return (^C) and then 'hello! here 172.16.24.84 is the ip address of wlan(wlp2s0). we can also get this ip address by hostname -I. Hi! well done this is chat server with netcat. Bye!!!! ---hskwuiq---

```
vinod@ubuntu:~$ nc -l -p 10001
netcat gives the opportunity
to connect two instances of
netcat in client-server relationship.
bye.
^C
vinod@ubuntu:~$ nc -l -p 10001
here 127.0.0.1 is loopback interface
inet address got from ifconfig -a
bye.
vinod@ubuntu:~$ nc -l -p 12345
hello!
here 172.16.24.84 is the ip address
of wlan(wlp2s0).
we can also get this ip address
by hostname -I.
vinod@ubuntu:~$ nc localhost 12345
Hi! well done
this is chat server
with netcat.
Bye!!!!
---hskwuiq---
^C
vinod@ubuntu:~$
```

```
vinod@ubuntu:~$ nc localhost 10001
netcat gives the opportunity
to connect two instances of
netcat in client-server relationship.
bye.
^C
vinod@ubuntu:~$ nc 127.0.0.1 10001
here 127.0.0.1 is loopback interface
inet address got from ifconfig -a
bye.
^C
vinod@ubuntu:~$ nc 172.16.24.84 12345
hello!
here 172.16.24.84 is the ip address
of wlan(wlp2s0).
we can also get this ip address
by hostname -I.
^C
vinod@ubuntu:~$ nc -l -p 12345
Hi! well done
this is chat server
with netcat.
Bye!!!!
---hskwuiq---
```

if '-l' is used with nc then netcat will operate in listening mode. The -p option allows the user to specify the port on which the server should listen(say 10001,12345..).

The text we enter in client side is sent to the server when we hit enter and conversely.