

Computer Networks Lab 1

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Ifconfig Network Commands

Ifconfig [interface]

```
ex1@AB1210SCOPE70:~$ ifconfig vmnet8
vmnet8: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.33.1 netmask 255.255.255.0 broadcast 192.168.33.255
    inet6 fe80::250:56ff:fec0:8 prefixlen 64 scopeid 0x20<link>
    ether 00:50:56:c0:00:08 txqueuelen 1000 (Ethernet)
    RX packets 0 bytes 0 (0.0 B)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 291 bytes 0 (0.0 B)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

ex1@AB1210SCOPE70:~$
```

Ifconfig -a

```
ex1@AB1210SCOPE70:~$ ifconfig -a
enp4s0: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.16.97.14 netmask 255.255.254.0 broadcast 172.16.97.255
    inet6 fe80::9b0d:709c:d459:2bb prefixlen 64 scopeid 0x20<link>
    ether dc:4a:3e:68:90:29 txqueuelen 1000 (Ethernet)
    RX packets 169880 bytes 174888492 (174.8 MB)
    RX errors 0 dropped 1 overruns 0 frame 0
    TX packets 77152 bytes 16250668 (16.2 MB)
    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 927 bytes 115929 (115.9 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 927 bytes 115929 (115.9 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0

vmnet1: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 172.16.125.1 netmask 255.255.255.0 broadcast 172.16.125.255
    inet6 fe80::250:56ff:fec0:1 prefixlen 64 scopeid 0x20<link>
    ether 00:50:56:c0:00:01 txqueuelen 1000 (Ethernet)
```

Ifconfig -s

```
ex1@AB1210SCOPE70:~$ ifconfig -s
Iface    MTU     RX-OK RX-ERR RX-DRP RX-OVR    TX-OK TX-ERR TX-DRP TX-OVR Flg
enp4s0   1500    172197      0      1 0      78612      0      0      0 BMRU
lo       65536     940      0      0 0       940      0      0      0 LRU
vmnet1   1500      0      0      0 0       327      0      0      0 BMRU
vmnet8   1500      0      0      0 0       324      0      0      0 BMRU

ex1@AB1210SCOPE70:~$
```

Ifconfig -help

```

ex1@AB1210SCOPE70:~$ ifconfig --help
Usage:
ifconfig [-a] [-v] [-s] <interface> [[<AF>] <address>]
[add <address>[/<prefixlen>]]
[del <address>[/<prefixlen>]]
[[-]broadcast [<address>]] [[-]pointopoint [<address>]]
[netmask <address>] [dstaddr <address>] [tunnel <address>]
[outfill <NN>] [keepalive <NN>]
[hw <HW> <address>] [mtu <NN>]
[[-]trailers] [[-]arp] [[-]allmulti]
[multicast] [[-]promisc]
[mem_start <NN>] [io_addr <NN>] [irq <NN>] [media <type>]
[txqueuelen <NN>]
[[-]dynamic]
[up|down] ...

<HW>=Hardware Type.
List of possible hardware types:
loop (Local Loopback) slip (Serial Line IP) cslip (VJ Serial Line IP)
slip6 (6-bit Serial Line IP) cslip6 (VJ 6-bit Serial Line IP) adaptive (Adaptive Serial Line IP)
ash (Ash) ether (Ethernet) ax25 (AMPR AX.25)
netrom (AMPR NET/ROM) rose (AMPR ROSE) tunnel (IPIP Tunnel)
ppp (Point-to-Point Protocol) hdlc ((Cisco)-HDLC) lapb (LAPB)
arcnet (ARCnet) dlc1 (Frame Relay DLCI) frad (Frame Relay Access Device)
sit (IPv6-in-IPv4) fddi (Fiber Distributed Data Interface) hippi (HIPPI)
irda (IrLAP) ec (Econet) x25 (generic X.25)
eui64 (Generic EUI-64)
<AF>=Address family. Default: inet

```

Ping Network Commands

Ping [domain]

```

ex1@AB1210SCOPE70:~$ ping www.vit.ac.in
PING www.vit.ac.in (136.233.9.13) 56(84) bytes of data.
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=1 ttl=245 time=52.5 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=2 ttl=245 time=52.8 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=3 ttl=245 time=54.6 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=4 ttl=245 time=58.4 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=5 ttl=245 time=49.4 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=6 ttl=245 time=52.3 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=7 ttl=245 time=50.6 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=8 ttl=245 time=49.0 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=9 ttl=245 time=51.7 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=10 ttl=245 time=48.8 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=11 ttl=245 time=52.4 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=12 ttl=245 time=51.6 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=13 ttl=245 time=56.4 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=14 ttl=245 time=55.5 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=15 ttl=245 time=53.9 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=16 ttl=245 time=48.4 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=17 ttl=245 time=54.5 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=18 ttl=245 time=53.5 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=19 ttl=245 time=54.5 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=20 ttl=245 time=54.4 ms
64 bytes from vit.ac.in (136.233.9.13): icmp_seq=21 ttl=245 time=51.1 ms

```

Ping ipaddress

```
ex1@AB1210SCOPE70:~$ ping 172.16.97.13
PING 172.16.97.13 (172.16.97.13) 56(84) bytes of data.
64 bytes from 172.16.97.13: icmp_seq=1 ttl=64 time=0.567 ms
64 bytes from 172.16.97.13: icmp_seq=2 ttl=64 time=0.501 ms
64 bytes from 172.16.97.13: icmp_seq=3 ttl=64 time=0.441 ms
64 bytes from 172.16.97.13: icmp_seq=4 ttl=64 time=0.684 ms
64 bytes from 172.16.97.13: icmp_seq=5 ttl=64 time=0.654 ms
64 bytes from 172.16.97.13: icmp_seq=6 ttl=64 time=0.553 ms
64 bytes from 172.16.97.13: icmp_seq=7 ttl=64 time=0.493 ms
64 bytes from 172.16.97.13: icmp_seq=8 ttl=64 time=0.628 ms
64 bytes from 172.16.97.13: icmp_seq=9 ttl=64 time=0.520 ms
64 bytes from 172.16.97.13: icmp_seq=10 ttl=64 time=0.381 ms
64 bytes from 172.16.97.13: icmp_seq=11 ttl=64 time=0.645 ms
64 bytes from 172.16.97.13: icmp_seq=12 ttl=64 time=0.723 ms
64 bytes from 172.16.97.13: icmp_seq=13 ttl=64 time=0.639 ms
64 bytes from 172.16.97.13: icmp_seq=14 ttl=64 time=0.569 ms
64 bytes from 172.16.97.13: icmp_seq=15 ttl=64 time=0.635 ms
64 bytes from 172.16.97.13: icmp_seq=16 ttl=64 time=0.589 ms
64 bytes from 172.16.97.13: icmp_seq=17 ttl=64 time=0.677 ms
64 bytes from 172.16.97.13: icmp_seq=18 ttl=64 time=0.497 ms
64 bytes from 172.16.97.13: icmp_seq=19 ttl=64 time=0.674 ms
64 bytes from 172.16.97.13: icmp_seq=20 ttl=64 time=0.600 ms
64 bytes from 172.16.97.13: icmp_seq=21 ttl=64 time=0.516 ms
64 bytes from 172.16.97.13: icmp_seq=22 ttl=64 time=0.456 ms
```

Ping with deadline

```
ex1@AB1210SCOPE70:~$ ping -w 2 www.vit.ac.in
PING www.vit.ac.in (136.233.9.13) 56(84) bytes of data.
64 bytes from www.vit.ac.in (136.233.9.13): icmp_seq=1 ttl=245 time=53.2 ms
64 bytes from www.vit.ac.in (136.233.9.13): icmp_seq=2 ttl=245 time=52.7 ms

--- www.vit.ac.in ping statistics ---
2 packets transmitted, 2 received, 0% packet loss, time 1001ms
rtt min/avg/max/mdev = 52.722/52.983/53.244/0.261 ms
ex1@AB1210SCOPE70:~$
```

Host Command

```
ex1@AB1210SCOPE70:~$ host vit.ac.in
vit.ac.in has address 136.233.9.13
ex1@AB1210SCOPE70:~$
```

Hostname command

```
ex1@AB1210SCOPE70:~$ hostname
AB1210SCOPE70
ex1@AB1210SCOPE70:~$
```

Nslookup command

```
ex1@AB1210SCOPE70:~$ nslookup vit.ac.in
Server:          127.0.0.53
Address:         127.0.0.53#53

Non-authoritative answer:
Name:   vit.ac.in
Address: 136.233.9.13

ex1@AB1210SCOPE70:~$
```

Netstat command

```
ex1@AB1210SCOPE70:~$ netstat -r
Kernel IP routing table
Destination      Gateway         Genmask         Flags   MSS Window  irtt Iface
default          _gateway       0.0.0.0         UG      0 0      0 enp4s0
link-local       0.0.0.0        255.255.0.0     U        0 0      0 enp4s0
172.16.96.0      0.0.0.0        255.255.254.0   U        0 0      0 enp4s0
172.16.125.0     0.0.0.0        255.255.255.0   U        0 0      0 vmnet1
192.168.33.0     0.0.0.0        255.255.255.0   U        0 0      0 vmnet8
ex1@AB1210SCOPE70:~$
```

```
ex1@AB1210SCOPE70:~$ netstat -i
Kernel Interface table
Iface    MTU     RX-OK   RX-ERR   RX-DRP   RX-OVR     TX-OK   TX-ERR   TX-DRP   TX-OVR   Flg
enp4s0   1500    189464  0        1 0        89838   0        0        0 BMRU
lo       65536   1031    0        0 0        1031    0        0        0 LRU
vmnet1   1500    0        0        0 0        375     0        0        0 BMRU
vmnet8   1500    0        0        0 0        372     0        0        0 BMRU
ex1@AB1210SCOPE70:~$
```

```
ex1@AB1210SCOPE70:~$ netstat -at
Active Internet connections (servers and established)
Proto Recv-Q Send-Q Local Address           Foreign Address         State
tcp      0      0 0.0.0.0:902             0.0.0.0:*               LISTEN
tcp      0      0 localhost:27017          0.0.0.0:*               LISTEN
tcp      0      0 0.0.0.0:netbios-ssn     0.0.0.0:*               LISTEN
tcp      0      0 localhost:domain        0.0.0.0:*               LISTEN
tcp      0      0 localhost:ipp            0.0.0.0:*               LISTEN
tcp      0      0 0.0.0.0:microsoft-ds    0.0.0.0:*               LISTEN
tcp      0      0 AB1210SCOPE70:59212     52.111.246.13:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:58916     52.114.44.78:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:50612     maa05s21-in-f10.1:https ESTABLISHED
tcp      0      0 AB1210SCOPE70:57010     13.107.6.171:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:51130     52.109.56.8:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:56418     13.107.6.171:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:41120     maa03s36-in-f3.1e:https ESTABLISHED
tcp      0      0 AB1210SCOPE70:49926     52.111.252.7:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:56334     13.107.6.171:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:60934     52.108.44.14:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:58356     a23-36-4-159.depl:https ESTABLISHED
tcp      0      0 AB1210SCOPE70:59280     52.111.246.13:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:58286     52.114.44.78:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:49928     52.111.252.7:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:49878     52.111.252.7:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:47242     maa03s38-in-f10.1:https ESTABLISHED
tcp      0      0 AB1210SCOPE70:55892     52.112.95.97:https     ESTABLISHED
tcp      0      0 AB1210SCOPE70:59596     a104-104-138-8.de:https ESTABLISHED
tcp      0      0 AB1210SCOPE70:59596     a104-104-138-8.de:https ESTABLISHED
tcp6     0      0 [::]:902                [::]:*                 LISTEN
tcp6     0      0 [::]:netbios-ssn        [::]:*                 LISTEN
```

arp command

```
ex1@AB1210SCOPE70:~$ arp -e
Address      HWtype  HWaddress  Flags Mask  Iface
172.16.97.13 ether    dc:4a:3e:68:90:64 C           enp4s0
172.16.96.80 ether    98:90:96:9e:38:dc C           enp4s0
172.16.96.69 ether    98:90:96:9e:3d:e8 C           enp4s0
gateway      ether    80:e8:6f:9e:83:e9 C           enp4s0
172.16.97.15 ether    dc:4a:3e:68:90:65 C           enp4s0
ex1@AB1210SCOPE70:~$
```