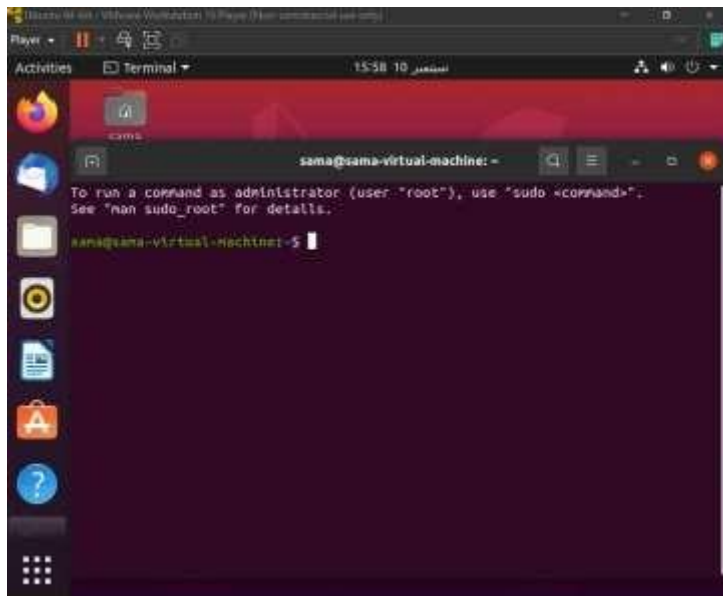


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I successfully downloaded Vmware and Ubuntu



## 6. Install the following packages:

### a. SSH Agent:

- i. `sudo apt install ssh`
- ii. `sudo systemctl enable --now ssh`

```
sama@sama-virtual-machine:~$ sudo apt install ssh
[sudo] password for sama:
Reading package lists... Done
Building dependency tree
Reading state information... Done
Processing triggers for dmcc (0.30-0) ...
sama@sama-virtual-machine:~$ sudo systemctl enable --now ssh
Synchronizing state of ssh.service with SysV service script with /lib
systemd-sysv-install.
Executing: /lib/systemd/systemd-sysv-install enable ssh
sama@sama-virtual-machine:~$
```

### b. NET Tools: i. `sudo apt install net-tools`

```
sama@sama-virtual-machine:~$ sudo apt install net-tools
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following packages were automatically installed and are no longer required:
  chromium-codecs-ffmpeg-extra gstreamer1.0-vaapi
  libgstreamer-plugins-bad1.0-0 libva-wayland2
Use 'sudo apt autoremove' to remove them
```

7. Explore its configuration. For Ubuntu OS, do the following commands and report the observations:

**a. lscpu**

```
sama@sama-virtual-machine:~$ lscpu
Architecture: x86_64
CPU op-mode(s): 32-bit, 64-bit
Byte Order: Little Endian
Address sizes: 45 bits physical, 48 bits virtual
CPU(s): 4
On-line CPU(s) list: 0-3
Thread(s) per core: 1
Core(s) per socket: 1
Socket(s): 4
NUMA node(s): 1
Vendor ID: GenuineIntel
CPU family: 6
Model: 158
Model name: Intel(R) Core(TM) i7-9750H CPU @ 2.60GHz
Stepping: 10
CPU MHz: 2591.998
BogoMIPS: 5183.99
Hypervisor vendor: VMware
Virtualization type: full
L1d cache: 128 KiB
L1i cache: 128 KiB
L2 cache: 1 MiB
L3 cache: 48 MiB
```

**b. Ifconfig**

```
sama@sama-virtual-machine:~$ ifconfig
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500
    inet 192.168.128.128 netmask 255.255.255.0 broadcast 192.168.128.255
    inet6 fe80::9493:e88d:864e:59c6 prefixlen 64 scopeid 0x20<link>
    ether 00:0c:29:f5:f7:54 txqueuelen 1000 (Ethernet)
    RX packets 1972 bytes 2116551 (2.1 MB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 709 bytes 84399 (84.3 KB)
    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 346 bytes 30234 (30.2 KB)
    RX errors 0 dropped 0 overruns 0 frame 0
    TX packets 346 bytes 30234 (30.2 KB)
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0
```

**c. df -H**

```
sama@sama-virtual-machine:~$ df -H
Filesystem      Size  Used Avail Use% Mounted on
udev            3.9G     0   3.9G   0% /dev
tmpfs           774M    2.0M  772M   1% /run
/dev/sda5       105G   9.3G   90G  10% /
tmpfs           3.9G     0   3.9G   0% /dev/shm
tmpfs           5.3M   4.1k  5.3M   1% /run/lock
tmpfs           3.9G     0   3.9G   0% /sys/fs/cgroup
/dev/loop2      34M    34M     0 100% /snap/snapd/12704
/dev/loop3      69M    69M     0 100% /snap/gtk-common-themes/1515
/dev/loop4      54M    54M     0 100% /snap/snap-store/547
/dev/loop1      230M   230M     0 100% /snap/gnome-3-34-1804/72
/dev/loop0      59M    59M     0 100% /snap/core18/2128
/dev/sda1       536M   4.1k  536M   1% /boot/efi
tmpfs           774M    78k  774M   1% /run/user/1000
```

2. On the same VM, answer the following questions with screenshot of the output command:

a. What is VM IP address?

b. What is VM MAC address?

```
sama@sama-virtual-machine: ~  
RX errors 0 dropped 0 overruns 0 frame 0  
TX packets 351 bytes 30675 (30.6 KB)  
TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
sama@sama-virtual-machine:~$ ifconfig  
ens33: flags=4163<UP,BROADCAST,RUNNING,MULTICAST> mtu 1500  
    inet 192.168.128.128 netmask 255.255.255.0 broadcast 192.168.128.255  
    inet6 fe80::9493:e88d:864e:59c6 prefixlen 64 scopeid 0x20<link>  
    ether 00:0c:29:f5:f7:54 txqueuelen 1000 (Ethernet)  
    RX packets 2003 bytes 2118913 (2.1 MB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 719 bytes 85276 (85.2 KB)  
    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 351 bytes 30675 (30.6 KB)  
    RX errors 0 dropped 0 overruns 0 frame 0  
    TX packets 351 bytes 30675 (30.6 KB)  
    TX errors 0 dropped 0 overruns 0 carrier 0 collisions 0  
  
sama@sama-virtual-machine:~$
```

c. What is VM Network Gateway?

```
sama@sama-virtual-machine:~$ route -n  
Kernel IP routing table  
Destination      Gateway         Genmask         Flags Metric Ref    Use Iface  
0.0.0.0          192.168.128.2  0.0.0.0         UG    100    0      0 ens33  
169.254.0.0      0.0.0.0        255.255.0.0     U     1000    0      0 ens33  
192.168.128.0    0.0.0.0        255.255.255.0   U     100    0      0 ens33
```

d. the internet (ping 8.8.8.8 or any website on the internet)

```
sama@sama-virtual-machine:~$ 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=128 time=57.9 ms  
64 bytes from 8.8.8.8: icmp_seq=2 ttl=128 time=57.1 ms  
64 bytes from 8.8.8.8: icmp_seq=3 ttl=128 time=57.0 ms  
64 bytes from 8.8.8.8: icmp_seq=4 ttl=128 time=59.4 ms  
64 bytes from 8.8.8.8: icmp_seq=5 ttl=128 time=58.8 ms  
64 bytes from 8.8.8.8: icmp_seq=6 ttl=128 time=658 ms  
64 bytes from 8.8.8.8: icmp_seq=7 ttl=128 time=970 ms  
64 bytes from 8.8.8.8: icmp_seq=8 ttl=128 time=223 ms  
64 bytes from 8.8.8.8: icmp_seq=9 ttl=128 time=202 ms  
64 bytes from 8.8.8.8: icmp_seq=10 ttl=128 time=61.9 ms  
64 bytes from 8.8.8.8: icmp_seq=11 ttl=128 time=58.1 ms  
64 bytes from 8.8.8.8: icmp_seq=12 ttl=128 time=69.6 ms  
64 bytes from 8.8.8.8: icmp_seq=13 ttl=128 time=57.1 ms
```



3. Following the mentioned procedure, create another Virtual Machine and name it “VM\_2”.



4. Do the following: a. Can you ping “VM\_1” from the newly created VM “VM\_2”?

```
sama2@sama2-virtual-machine: ~  
sama2@sama2-virtual-machine:~$ ping 192.168.128.128  
PING 192.168.128.128 (192.168.128.128) 56(84) bytes of data:  
64 bytes from 192.168.128.128: icmp_seq=1 ttl=64 time=0.935 ms  
64 bytes from 192.168.128.128: icmp_seq=2 ttl=64 time=0.603 ms  
64 bytes from 192.168.128.128: icmp_seq=3 ttl=64 time=0.483 ms  
64 bytes from 192.168.128.128: icmp_seq=4 ttl=64 time=0.707 ms  
64 bytes from 192.168.128.128: icmp_seq=5 ttl=64 time=0.440 ms  
64 bytes from 192.168.128.128: icmp_seq=6 ttl=64 time=0.753 ms  
64 bytes from 192.168.128.128: icmp_seq=7 ttl=64 time=0.311 ms  
64 bytes from 192.168.128.128: icmp_seq=8 ttl=64 time=0.471 ms  
64 bytes from 192.168.128.128: icmp_seq=9 ttl=64 time=0.389 ms  
64 bytes from 192.168.128.128: icmp_seq=10 ttl=64 time=0.422 ms  
64 bytes from 192.168.128.128: icmp_seq=11 ttl=64 time=1.13 ms  
64 bytes from 192.168.128.128: icmp_seq=12 ttl=64 time=1.07 ms  
64 bytes from 192.168.128.128: icmp_seq=13 ttl=64 time=0.323 ms  
64 bytes from 192.168.128.128: icmp_seq=14 ttl=64 time=0.570 ms  
64 bytes from 192.168.128.128: icmp_seq=15 ttl=64 time=0.414 ms  
64 bytes from 192.168.128.128: icmp_seq=16 ttl=64 time=0.925 ms  
64 bytes from 192.168.128.128: icmp_seq=17 ttl=64 time=0.394 ms  
64 bytes from 192.168.128.128: icmp_seq=18 ttl=64 time=0.496 ms  
64 bytes from 192.168.128.128: icmp_seq=19 ttl=64 time=0.487 ms  
64 bytes from 192.168.128.128: icmp_seq=20 ttl=64 time=0.583 ms  
64 bytes from 192.168.128.128: icmp_seq=21 ttl=64 time=0.389 ms  
64 bytes from 192.168.128.128: icmp_seq=22 ttl=64 time=0.536 ms  
^C  
--- 192.168.128.128 ping statistics ---  
22 packets transmitted, 22 received, 0% packet loss, time 2135ms  
rtt min/avg/max/mdev = 0.311/0.583/1.134/0.233 ms  
sama2@sama2-virtual-machine:~$
```

Print the output of PING command b. Can you telnet to “VM\_1” from “VM\_2”? Use the command “ssh vm\_1\_ip\_address”, For example: ssh 192.168.74.130

```
rtt min/avg/max/mdev = 0.311/0.383/1.134/0.233 ms
sama2@sama2-virtual-machine:~$ ssh 192.168.128.128
The authenticity of host '192.168.128.128 (192.168.128.128)' can't be establish
ed.
ECDSA key fingerprint is SHA256:8RFQ0XkDqT99nmKBQcfr6b0si3AI48H0wg00VaJMSwU.
Are you sure you want to continue connecting (yes/no/[fingerprint])? y
Please type 'yes', 'no' or the fingerprint: yes
Warning: Permanently added '192.168.128.128' (ECDSA) to the list of known hosts
.
sama2@192.168.128.128's password:
Permission denied, please try again.
sama2@192.168.128.128's password:
Permission denied, please try again.
sama2@192.168.128.128's password: █
```