

Ex.No.4

File Transfer between Virtual Machines

- I. Two VMs are created and Ubuntu 16.04 server has been installed with open-ssh server.
- II. Ping VM1 from VM2

```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali2@ubuntuserver2:~$ ping 192.168.1.7
PING 192.168.1.7 (192.168.1.7) 56(84) bytes of data.
64 bytes from 192.168.1.7: icmp_seq=1 ttl=64 time=1.40 ms
64 bytes from 192.168.1.7: icmp_seq=2 ttl=64 time=3.72 ms
64 bytes from 192.168.1.7: icmp_seq=3 ttl=64 time=4.44 ms
64 bytes from 192.168.1.7: icmp_seq=4 ttl=64 time=3.49 ms
64 bytes from 192.168.1.7: icmp_seq=5 ttl=64 time=3.94 ms
64 bytes from 192.168.1.7: icmp_seq=6 ttl=64 time=5.16 ms
64 bytes from 192.168.1.7: icmp_seq=7 ttl=64 time=2.85 ms
64 bytes from 192.168.1.7: icmp_seq=8 ttl=64 time=3.50 ms
64 bytes from 192.168.1.7: icmp_seq=9 ttl=64 time=4.72 ms
64 bytes from 192.168.1.7: icmp_seq=10 ttl=64 time=3.05 ms
64 bytes from 192.168.1.7: icmp_seq=11 ttl=64 time=2.71 ms
64 bytes from 192.168.1.7: icmp_seq=12 ttl=64 time=1.19 ms
64 bytes from 192.168.1.7: icmp_seq=13 ttl=64 time=2.38 ms
64 bytes from 192.168.1.7: icmp_seq=14 ttl=64 time=3.91 ms
^C
--- 192.168.1.7 ping statistics ---
14 packets transmitted, 14 received, 0% packet loss, time 13036ms
rtt min/avg/max/mdev = 1.197/3.323/5.165/1.113 ms
vaishali2@ubuntuserver2:~$
```

Ping VM2 from VM1

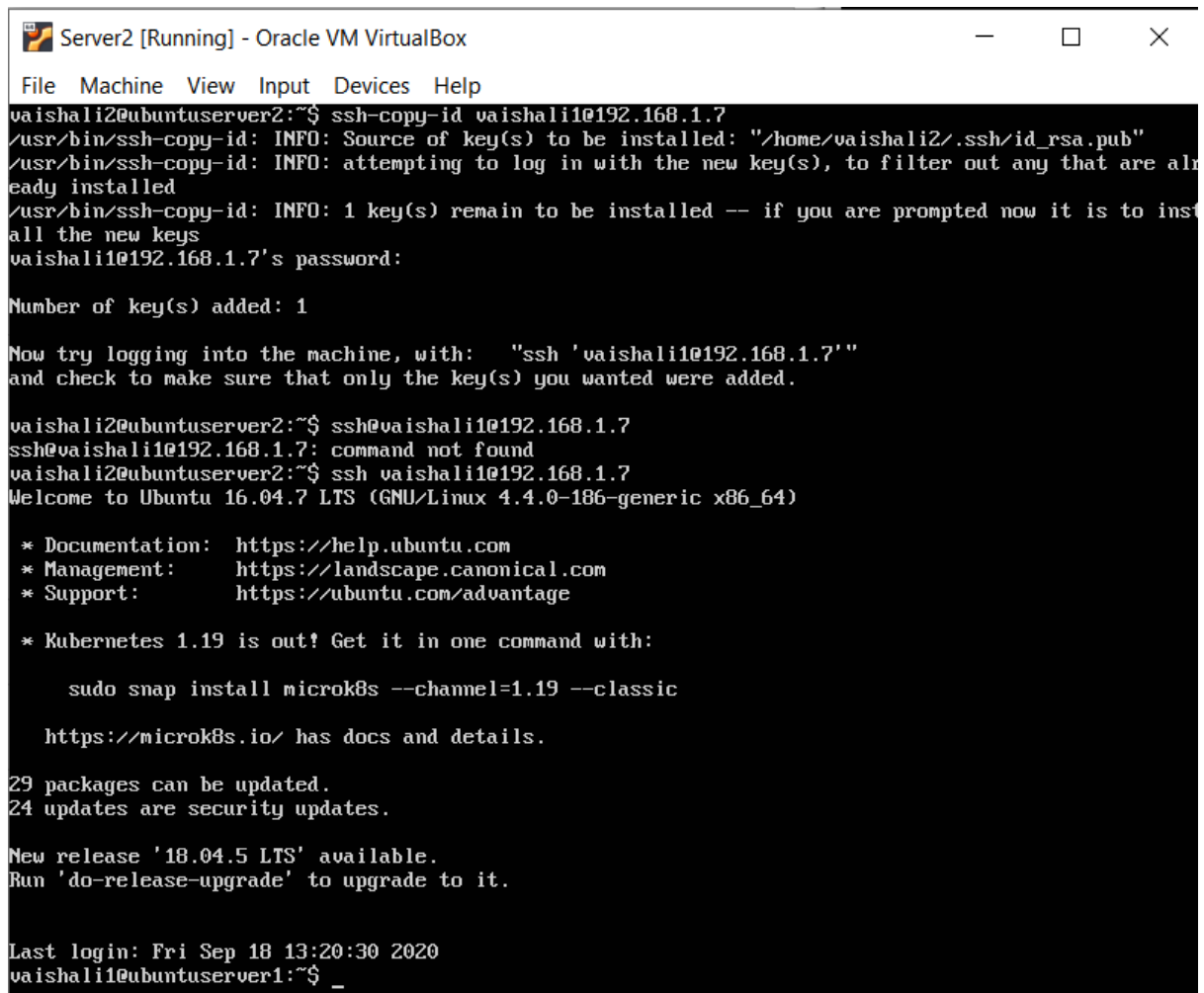
```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali1@ubuntuserver1:~$ ping 192.168.1.8
PING 192.168.1.8 (192.168.1.8) 56(84) bytes of data.
64 bytes from 192.168.1.8: icmp_seq=1 ttl=64 time=1.91 ms
64 bytes from 192.168.1.8: icmp_seq=2 ttl=64 time=5.76 ms
64 bytes from 192.168.1.8: icmp_seq=3 ttl=64 time=4.48 ms
64 bytes from 192.168.1.8: icmp_seq=4 ttl=64 time=3.61 ms
64 bytes from 192.168.1.8: icmp_seq=5 ttl=64 time=3.95 ms
64 bytes from 192.168.1.8: icmp_seq=6 ttl=64 time=4.28 ms
64 bytes from 192.168.1.8: icmp_seq=7 ttl=64 time=2.14 ms
64 bytes from 192.168.1.8: icmp_seq=8 ttl=64 time=3.77 ms
64 bytes from 192.168.1.8: icmp_seq=9 ttl=64 time=3.94 ms
64 bytes from 192.168.1.8: icmp_seq=10 ttl=64 time=3.59 ms
64 bytes from 192.168.1.8: icmp_seq=11 ttl=64 time=4.02 ms
64 bytes from 192.168.1.8: icmp_seq=12 ttl=64 time=0.897 ms
64 bytes from 192.168.1.8: icmp_seq=13 ttl=64 time=4.18 ms
64 bytes from 192.168.1.8: icmp_seq=14 ttl=64 time=2.79 ms
64 bytes from 192.168.1.8: icmp_seq=15 ttl=64 time=3.49 ms
64 bytes from 192.168.1.8: icmp_seq=16 ttl=64 time=4.00 ms
64 bytes from 192.168.1.8: icmp_seq=17 ttl=64 time=5.59 ms
^C
--- 192.168.1.8 ping statistics ---
17 packets transmitted, 17 received, 0% packet loss, time 16050ms
rtt min/avg/max/mdev = 0.897/3.674/5.763/1.182 ms
vaishali1@ubuntuserver1:~$ _
```

- III. SSH public key and private keys are generated using the command:
ssh-keygen -t rsa

```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali2@ubuntu2server2:~$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/vaishali2/.ssh/id_rsa):
/home/vaishali2/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/vaishali2/.ssh/id_rsa.
Your public key has been saved in /home/vaishali2/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:vNYqTHiknpiMmy0YB+YfcVE49nYdNaAVPrpqZjg0rAk vaishali2@ubuntu2server2
The key's randomart image is:
+----[RSA 2048]-----+
|      o.  ++o      |
|      =   +.  .    |
|      . +  ..o.    |
|... ..+ +...      |
|o.  ++. S.         |
|.E..o+o o.         |
|.o+==o o..         |
|+o++ooo=.         |
|oo.  =o.          |
+----[SHA256]-----+
vaishali2@ubuntu2server2:~$ _
```

```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali2@ubuntu2server2:~$ ssh-keygen -t rsa
Generating public/private rsa key pair.
Enter file in which to save the key (/home/vaishali2/.ssh/id_rsa):
/home/vaishali2/.ssh/id_rsa already exists.
Overwrite (y/n)? y
Enter passphrase (empty for no passphrase):
Enter same passphrase again:
Your identification has been saved in /home/vaishali2/.ssh/id_rsa.
Your public key has been saved in /home/vaishali2/.ssh/id_rsa.pub.
The key fingerprint is:
SHA256:vNYqTHiknpiMmy0YB+YfcVE49nYdNaAVPrpqZjg0rAk vaishali2@ubuntu2server2
The key's randomart image is:
+----[RSA 2048]-----+
|      o.  ++o      |
|      =   +.  .    |
|      . +  ..o.    |
|... ..+ +...      |
|o.  ++. S.         |
|.E..o+o o.         |
|.o+==o o..         |
|+o++ooo=.         |
|oo.  =o.          |
+----[SHA256]-----+
vaishali2@ubuntu2server2:~$ cd .ssh
vaishali2@ubuntu2server2:~/.ssh$ chmod 700 id_rsa.pub
vaishali2@ubuntu2server2:~/.ssh$
```

IV. Exchange of keys using ssh-copy-id



```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali2@ubuntuserver2:~$ ssh-copy-id vaishali1@192.168.1.7
/usr/bin/ssh-copy-id: INFO: Source of key(s) to be installed: "/home/vaishali2/.ssh/id_rsa.pub"
/usr/bin/ssh-copy-id: INFO: attempting to log in with the new key(s), to filter out any that are already installed
/usr/bin/ssh-copy-id: INFO: 1 key(s) remain to be installed -- if you are prompted now it is to install all the new keys
vaishali1@192.168.1.7's password:
Number of key(s) added: 1

Now try logging into the machine, with: "ssh 'vaishali1@192.168.1.7'"
and check to make sure that only the key(s) you wanted were added.

vaishali2@ubuntuserver2:~$ ssh vaishali1@192.168.1.7
ssh@vaishali1@192.168.1.7: command not found
vaishali2@ubuntuserver2:~$ ssh vaishali1@192.168.1.7
Welcome to Ubuntu 16.04.7 LTS (GNU/Linux 4.4.0-186-generic x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

 * Kubernetes 1.19 is out! Get it in one command with:

   sudo snap install microk8s --channel=1.19 --classic

   https://microk8s.io/ has docs and details.

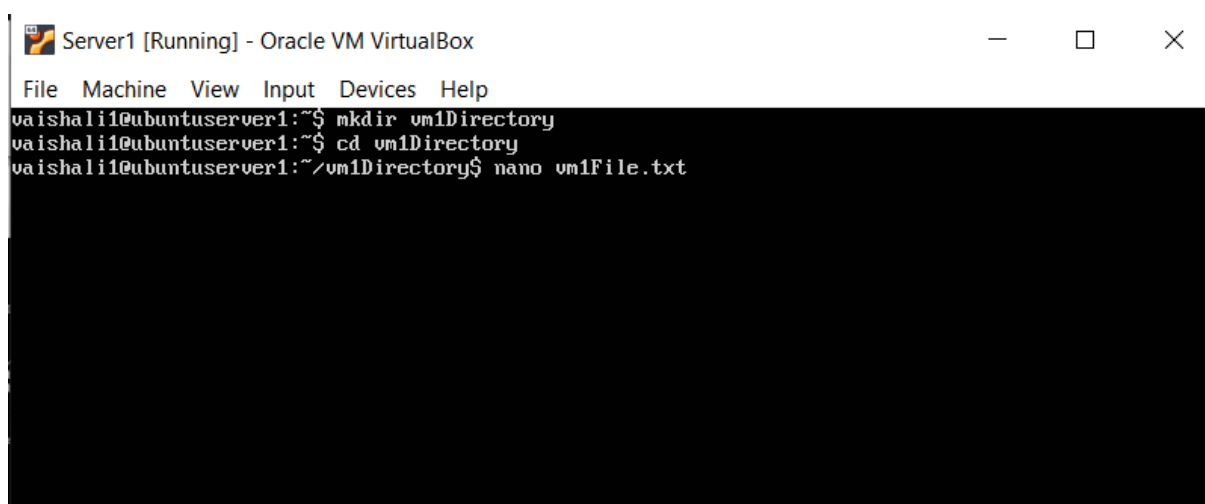
29 packages can be updated.
24 updates are security updates.

New release '18.04.5 LTS' available.
Run 'do-release-upgrade' to upgrade to it.

Last login: Fri Sep 18 13:20:30 2020
vaishali1@ubuntuserver1:~$ _
```

V. File Transfer between VMs on same Host and different Hosts

1. a) Transfer File from VM1 to VM2 using Secure copy command (scp)



```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali1@ubuntuserver1:~$ mkdir vm1Directory
vaishali1@ubuntuserver1:~$ cd vm1Directory
vaishali1@ubuntuserver1:~/vm1Directory$ nano vm1File.txt
```

```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
GNU nano 2.5.3 File: vm1File.txt Modified
Hello from file in vm1directory in_server1

G Get Help ^O Write Out ^W Where Is ^K Cut Text ^J Justify ^C Cur Pos ^Y Prev Page
X Exit ^R Read File ^_ Replace ^U Uncut Text ^T To Spell _ Go To Line ^U Next Page
```

```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali1@ubuntuserver1:~/vm1Directory$ scp vm1File.txt vaishali2@192.168.1.8:fileFromVM1.txt
vm1File.txt 100% 43 0.0KB/s 00:00
vaishali1@ubuntuserver1:~/vm1Directory$ _
```

```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali2@ubuntuserver2:~$ ls
fileFromVM1.txt hello.class hello.java
vaishali2@ubuntuserver2:~$ cat fileFromVM1.txt
hello from file in vm1directory in server1
vaishali2@ubuntuserver2:~$
```

1. b) Transfer Directory from VM1 to VM2 using Secure copy command (scp)

```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali1@ubuntu1server1:~$ cd vm1Directory
vaishali1@ubuntu1server1:~/vm1Directory$ ls
vm1File2.txt  vm1File.txt
vaishali1@ubuntu1server1:~/vm1Directory$ cat vm1File2.txt
Hello, this file2 in vm1 directory in server1
vaishali1@ubuntu1server1:~/vm1Directory$ cd..
cd..: command not found
vaishali1@ubuntu1server1:~/vm1Directory$ cd ..
vaishali1@ubuntu1server1:~$ scp -r vm1Directory vaishali2@192.168.1.8:/home/vaishali2
vm1File2.txt          100% 46 0.0KB/s 00:00
vm1File.txt           100% 43 0.0KB/s 00:00
vaishali1@ubuntu1server1:~$
```

```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali2@ubuntu2server2:~$ ls
fileFromVM1.txt  hello.class  hello.java  vm1Directory
vaishali2@ubuntu2server2:~$ cd vm1Directory
vaishali2@ubuntu2server2:~/vm1Directory$ ls
vm1File2.txt  vm1File.txt
vaishali2@ubuntu2server2:~/vm1Directory$ _
```

2. a) Transfer File from VM2 to VM1 using Secure copy command (scp)

```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali2@ubuntu2server2:~$ ls
fileFromVM1.txt  hello.class  hello.java  vm1Directory  vm2File.txt
vaishali2@ubuntu2server2:~$ cat vm2File.txt
Helo, this is a file in server2
vaishali2@ubuntu2server2:~$ scp vm2File.txt vaishali1@192.168.1.7:fileFromVM2.txt
vm2File.txt          100% 32 0.0KB/s 00:00
vaishali2@ubuntu2server2:~$
```

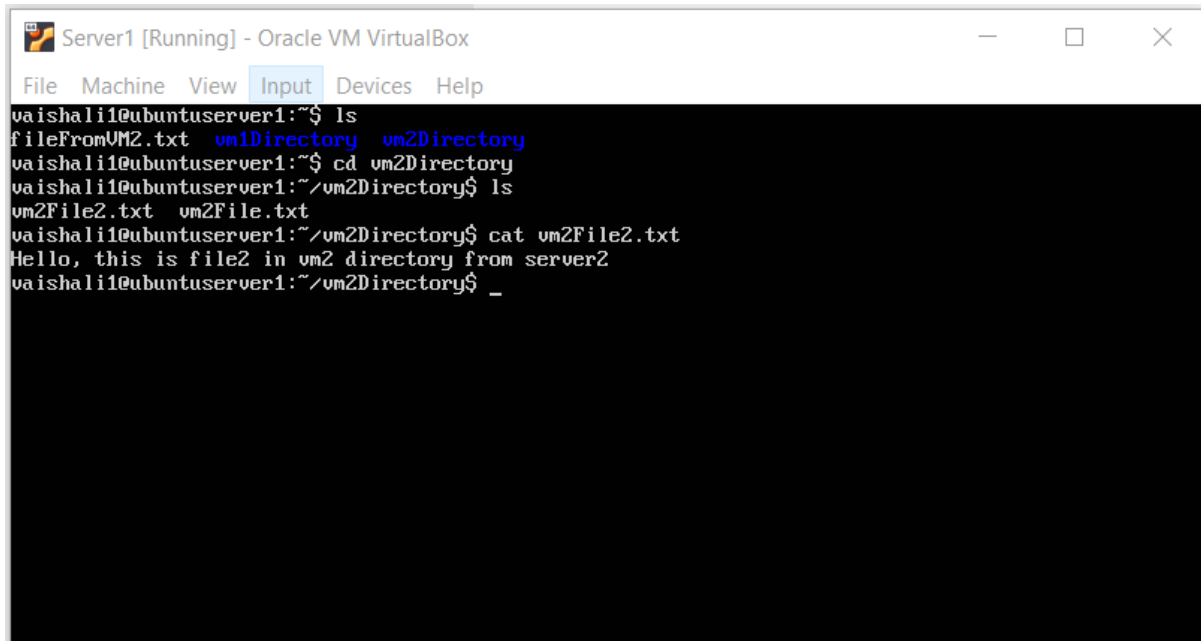
```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali1@ubuntu1server1:~$ ls
fileFromVM2.txt  vm1Directory
vaishali1@ubuntu1server1:~$ cat fileFromVM2.txt
Helo, this is a file in server2
vaishali1@ubuntu1server1:~$
```

2. b) Transfer Directory from VM2 to VM1 using Secure copy command (scp)

```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali2@ubuntu2server2:~$ mkdir vm2Directory
vaishali2@ubuntu2server2:~$ ls
fileFromVM1.txt  hello.class  hello.java  vm1Directory  vm2Directory  vm2File.txt
vaishali2@ubuntu2server2:~$ cp vm2File.txt vm2Directory/
vaishali2@ubuntu2server2:~$ cd vm2Directory
vaishali2@ubuntu2server2:~/vm2Directory$ ls
vm2File.txt
vaishali2@ubuntu2server2:~/vm2Directory$ nano vm2File2.txt_
```

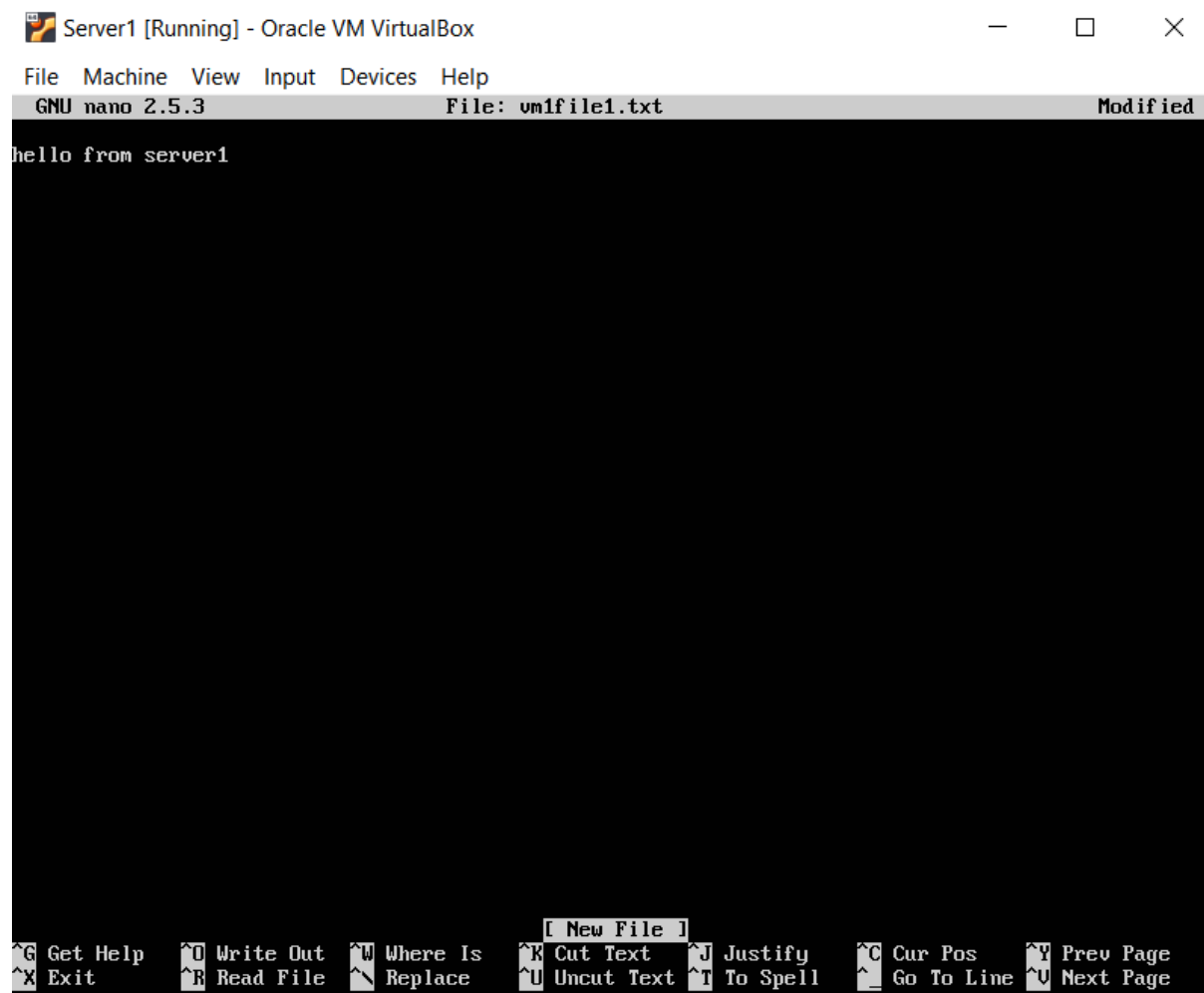
```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
GNU nano 2.5.3 File: vm2File2.txt Modified
Helo, this is file2 in vm2 directory from server2
```

```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali2@ubuntu2server2:~$ cd vm2Directory
vaishali2@ubuntu2server2:~/vm2Directory$ ls
vm2File2.txt  vm2File.txt
vaishali2@ubuntu2server2:~/vm2Directory$ cd ..
vaishali2@ubuntu2server2:~$ scp -r vm2Directory vaishali1@192.168.1.7:/home/vaishali1
vm2File2.txt      100% 51 0.1KB/s 00:00
vm2File.txt       100% 32 0.0KB/s 00:00
vaishali2@ubuntu2server2:~$
```



```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali1@ubuntuserver1:~$ ls
fileFromVM2.txt  vm1Directory  vm2Directory
vaishali1@ubuntuserver1:~$ cd vm2Directory
vaishali1@ubuntuserver1:~/vm2Directory$ ls
vm2File2.txt  vm2File.txt
vaishali1@ubuntuserver1:~/vm2Directory$ cat vm2File2.txt
Hello, this is file2 in vm2 directory from server2
vaishali1@ubuntuserver1:~/vm2Directory$ _
```

3. Receive a file from VM1 to VM2 using Secure copy command (scp)



```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
GNU nano 2.5.3      File: vm1file1.txt      Modified
hello from server1

[ New File ]
^G Get Help      ^O Write Out    ^W Where Is     ^K Cut Text     ^J Justify      ^C Cur Pos      ^Y Prev Page
^X Exit          ^R Read File    ^_ Replace      ^U Uncut Text   ^T To Spell     _ Go To Line    ^V Next Page
```

```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali1@ubuntuuserver1:~$ ls
fileFromUM2.txt  vm1Directory  vm1file1.txt  vm2Directory
vaishali1@ubuntuuserver1:~$ cat vm1file1.txt
hello from server1
vaishali1@ubuntuuserver1:~$
```

```
Server2 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali2@ubuntuuserver2:~$ scp vaishali1@192.168.1.7:vm1file1.txt /home/vaishali2/fileFromUM1.txt
vm1file1.txt
100% 19 0.0KB/s 00:00
vaishali2@ubuntuuserver2:~$ ls
fileFromUM1.txt  hello.class  hello.java  vm1Directory  vm2Directory  vm2File.txt
vaishali2@ubuntuuserver2:~$ cat fileFromUM1.txt
hello from server1
vaishali2@ubuntuuserver2:~$
```

4. Transfer a file from physical machine (Windows as host OS) to VM1.

```
C:\Users\WELCOME\Desktop>scp -r CC vaishali1@192.168.1.7:/home/vaishali1
The authenticity of host '192.168.1.7 (192.168.1.7)' can't be established.
ECDSA key fingerprint is SHA256:DZwUH6hJ8cVzw8ryaKqMEZms/dCOEg8ulAs4n6qUHvU.
Are you sure you want to continue connecting (yes/no)?
Warning: Permanently added '192.168.1.7' (ECDSA) to the list of known hosts.
vaishali1@192.168.1.7's password:
distributed-and-cloud-computing-from-parallel-processing-to-the-internet-of-things.pdf      100% 24MB 20.2MB/s 00:01
Mastering Cloud Computing - Rajkumar Buyya.pdf      100% 35MB 28.3MB/s 00:01
Rittinghouse John, Ransome James Cloud Computing_ Implementation, Management, and Security (2009 100% 7798KB 17.9MB/s 00:00
Tech Pub.pdf      100% 62MB 18.5MB/s 00:03
Cloud Computing Applications.pdf      100% 761KB 5.6MB/s 00:00
Introduction to Cloud.pdf      100% 1061KB 13.0MB/s 00:00
Lecture2_Definition of Cloud.pdf      100% 37KB 1.3MB/s 00:00
Lecture3_EvolutionOfCloudComputing.pdf      100% 761KB 13.1MB/s 00:00
Lecture3_HistoryofCloud.pdf      100% 923KB 13.4MB/s 00:00
Lecture5_PrinciplesOfParallelDistributedComputing.pdf      100% 1039KB 7.1MB/s 00:00
Lecture7_Characteristics of Cloud by NIST.pdf      100% 282KB 5.3MB/s 00:00
Lecture8_Elasticity in Cloud.pdf      100% 67KB 3.5MB/s 00:00
Lecture9_OnDemandProvisioning.pdf      100% 512KB 14.3MB/s 00:00
Lecture1_SOA.pdf      100% 544KB 8.0MB/s 00:00
Lecture2_WebServices.pdf      100% 1272KB 11.8MB/s 00:00
Lecture3_REST.pdf      100% 622KB 9.4MB/s 00:00
Lecture4_Publish_Subscribe_Systems.pdf      100% 275KB 5.2MB/s 00:00
Lecture5_Hypervisor_Xen.pdf      100% 168KB 4.1MB/s 00:00
Lecture5_Implementation_Levels_Virtualization.pdf      100% 831KB 6.1MB/s 00:00
Lecture5_Virtualization-Introuction.pdf      100% 444KB 4.4MB/s 00:00
Lecture6_Virtualization_Types_of_Virtualization_2016_UG.pdf      100% 1665KB 11.2MB/s 00:00
Lecture7_Virtualization_Support_and_Disaster_Recovery.pdf      100% 249KB 4.5MB/s 00:00
312217104181-Set 2.pdf      100% 3338KB 18.9MB/s 00:00
CS8791_Cloud_UT1_QP_2020 -Descriptive.pdf      100% 10KB 436.4KB/s 00:00
VMware_paravirtualization.pdf      100% 1431KB 10.7MB/s 00:00

C:\Users\WELCOME\Desktop>
```



```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali1@ubuntuserver1:~$ ls
fileFromVM2.txt  vm1Directory  vm1file1.txt  vm2Directory
vaishali1@ubuntuserver1:~$ cd CC
vaishali1@ubuntuserver1:~/CC$ ls
distributed-and-cloud-computing-from-parallel-processing-to-the-internet-of-things.pdf
Mastering Cloud Computing - Rajkumar Buyya.pdf
Rittinghouse John, Ransome James Cloud Computing_ Implementation, Management, and Security (2009).pdf
Tech Pub.pdf
Unit 1
Unit 2
UT
VMware_paravirtualization.pdf
vaishali1@ubuntuserver1:~/CC$
```

5. Try to transfer a file from VM1 to physical machine (Windows as host OS).

```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali1@ubuntuserver1:~$ scp vm1file1.txt WELCOME@192.168.1.4:C:\Users\WELCOME\Desktop\FilefromVM1.txt
WELCOME@192.168.1.4's password:
vm1file1.txt                                100%  19    0.0KB/s   00:00
vaishali1@ubuntuserver1:~$ _
```

```
Server1 [Running] - Oracle VM VirtualBox
File Machine View Input Devices Help
vaishali1@ubuntuserver1:~$ cat vm1file1.txt
hello from server1
vaishali1@ubuntuserver1:~$ _
```

```
C:\Users\WELCOME\Desktop>dir
Volume in drive C has no label.
Volume Serial Number is 28EA-A1FE

Directory of C:\Users\WELCOME\Desktop

19-09-2020  22:37    <DIR>          .
19-09-2020  22:37    <DIR>          ..
13-09-2020  23:43    <DIR>          BDA
09-09-2020  23:53    <DIR>          Blockchain
13-09-2020  23:49    <DIR>          CC
19-09-2020  22:35    <DIR>          CC lab
13-09-2020  23:44    <DIR>          CNS
17-09-2020  14:12    <DIR>          CNS lab
03-07-2019  21:07           3,402,746 CSE SYLLABUS.pdf'
10-12-2008  16:11           307,234 DSC00016.JPG
19-09-2020  22:37              19 FilefromVM1.txt
26-08-2020  17:41    <DIR>          FYP
13-09-2020  23:40    <DIR>          HCI
13-09-2020  23:51    <DIR>          Mgmt
08-10-2019  19:53          26,757,632 ngrok.exe
19-09-2020  13:00    <DIR>          SnS
18-09-2020  11:47           1,937 Zoom.lnk
               5 File(s)          30,469,568 bytes
               12 Dir(s)  14,498,914,304 bytes free

C:\Users\WELCOME\Desktop>type FilefromVM1.txt
hello from server1

C:\Users\WELCOME\Desktop>_
```