Assignment 4

AIM:-. Find a procedure to transfer the files from one virtual machine to another virtual Machine

Software Tools : VirtualBox

Theory:

Virtualization :

- Virtualization is the process of creating a software-based, or "virtual" version of a computer, with dedicated amounts of CPU, memory, and storage that are "borrowed" from a physical host computer—such as your personal computer—and/or a remote server—such as a server in a cloud provider's datacenter. A virtual machine is a computer file, typically called an image, that behaves like an actual computer. It can run in a window as a separate computing environment, often to run a different operating system—or even to function as the user's entire computer experience—as is common on many people's work computers. The virtual machine is partitioned from the rest of the system, meaning that the software inside a VM can't interfere with the host computer's primary operating system.

Virtual machines: virtual computers within computers

- A virtual machine, commonly shortened to just VM, is no different than any other physical computer like a laptop, smart phone, or server. It has a CPU, memory, disks to store your files, and can connect to the internet if needed. While the parts that make up your computer (called hardware) are physical and tangible, VMs are often thought of as virtual computers or software-defined computers within physical servers, existing only as code.

- A virtual machine (VM) is a digital version of a physical computer. Virtual machine software can run programs and operating systems, store data, connect to networks, and do other computing functions, and requires maintenance such as updates and system monitoring. Multiple VMs can be hosted on a single physical machine, often a server, and then managed using virtual machine software. This provides flexibility for compute resources (compute, storage, network) to be distributed among VMs as needed, increasing overall efficiency. This architecture provides the basic building

blocks for the advanced virtualized resources we use today, including cloud computing. What are virtual machines used for? VMs are the basic building blocks of virtualized computing resources and play a primary role in creating any application, tool, or environment—for virtual machines online and on-premises. Here are a few of the more common enterprise functions of virtual machines: Consolidate servers VMs can be set up as servers that host other VMs, which lets organizations reduce sprawl by concentrating more resources onto a single physical machine. Create development and test environments VMs can serve as isolated environments for testing and development that include full functionality but have no impact on the surrounding infrastructure. Support DevOps VMs can easily be turned off or on, migrated, and adapted, providing maximum flexibility for development

Advantages of Virtual machines :

Because of their flexibility and portability, virtual machines provide many benefits, such as:

- Cost savings—running multiple virtual environments from one piece of infrastructure means that you can drastically reduce your physical infrastructure footprint. This boosts your bottom line—decreasing the need to maintain nearly as many servers and saving on maintenance costs and electricity.

- Agility and speed—Spinning up a VM is relatively easy and quick and is much simpler than provisioning an entire new environment for your developers. Virtualization makes the process of running dev-test scenarios a lot quicker.

- Lowered downtime—VMs are so portable and easy to move from one hypervisor to another on a different machine—this means that they are a great solution for backup, in the event the host goes down unexpectedly.

- Scalability—VMs allow you to more easily scale your apps by adding more physical or virtual servers to distribute the workload across multiple VMs. As a result you can increase the availability and performance of your apps.

- Security benefits— Because virtual machines run in multiple operating systems, using a guest operating system on a VM allows you to run apps of questionable security and protects your host operating system. VMs also allow for better security

forensics, and are often used to safely study computer viruses, isolating the viruses to avoid risking their host computer.

Refer e-source: CC LAB - Google Drive

How to transfer the files from one virtual machine to another virtual machine - YouTube

Steps:

1. Download and install Oracle's Virtual Box. (Reboot needed after installation)

   VirtualBox - https://www.virtualbox.org/wiki/Downl...

2. Download Ubuntu VMDK Image.

   Ubuntu Image - https://drive.google.com/drive/u/0/fo... or
   https://app.vagrantup.com/bento/boxes...

3. Launch Virtualbox and create a new VM.

4. Click on new and mention the Name and the machine folder along with the Type and Version of the Machine to be created.

5. Assign memory size for our VM (1024 MB sufficient for now).

6. Select the option **Use an existing virtual hard disk file** and locate the donwloaded VMDK image below and create VM.

7. Now we have to create a NAT Network so go to **File -> Preferences -> Network -> Add a New NAT Network (Click on +)**

8. Right click and edit the Network name and CIDR if needed. Example :

```
Name - My VMbox Network
CIDR - 172.168.2.0/24 and save the changes.
```

9. Repeat the process of launching the VM for 2 instances.

10. Now go to the setting, go to the network setting and change the adapter to NAT Network and and select the NAT Network you made (in our case : **My VMbox Network**) and click ok.

11. Launch the VM now.

12. Install the net-tools to know the IP's of the instance.

```
$ sudo apt install net-tools
$ sudo apt update
```

13. To know the IP address

```
$ ifconfig
```

Now the IP will be in the range of **172.168.2.***

```
 * - any number in the range of 1 to 254 (total 256 addresses)
```

14. Now create a file and write something into it.

```
$ touch tranfer.txt
$ nano transfer.txt
-> hey, How are you?
ctrl + X and save

Some Commands for Linux Based Distros:

ls - list all the files and directories
cat - show the content inside a file
scp - it will help us to copy files from one vm to other
cd - change directory
mkdir - make a new directory
touch - it makes a new file
nano - nano is a editor inside linux os
```

15. If your file is on the VM with IP **172.168.2.4** and the second VM's IP is **172.168.2.5**.

16. Tranfer the file using **SCP**

```
$ scp tranfer.txt vagrant@172.168.2.5:/home/vagrant
```

Put in the password of the 2nd VM and done.

17. Check for the file in the Second VM under the **/home/vagrant** directory.

18. Done..!!!!

Conclusion: Hence we are concluded that we are successfully find a procedure to transfer the files from one virtual machine to another virtual machine.