

**Name:** AHMED ALISHA

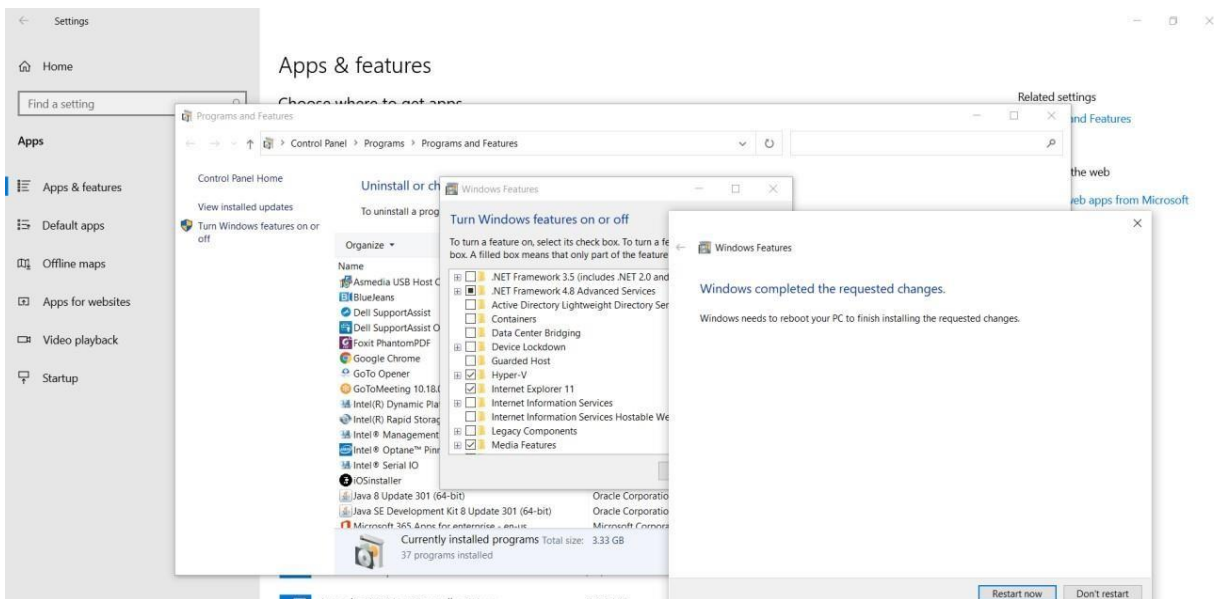
**700#:** 700752326

**Course:** Advance Operating Systems (CS5500)

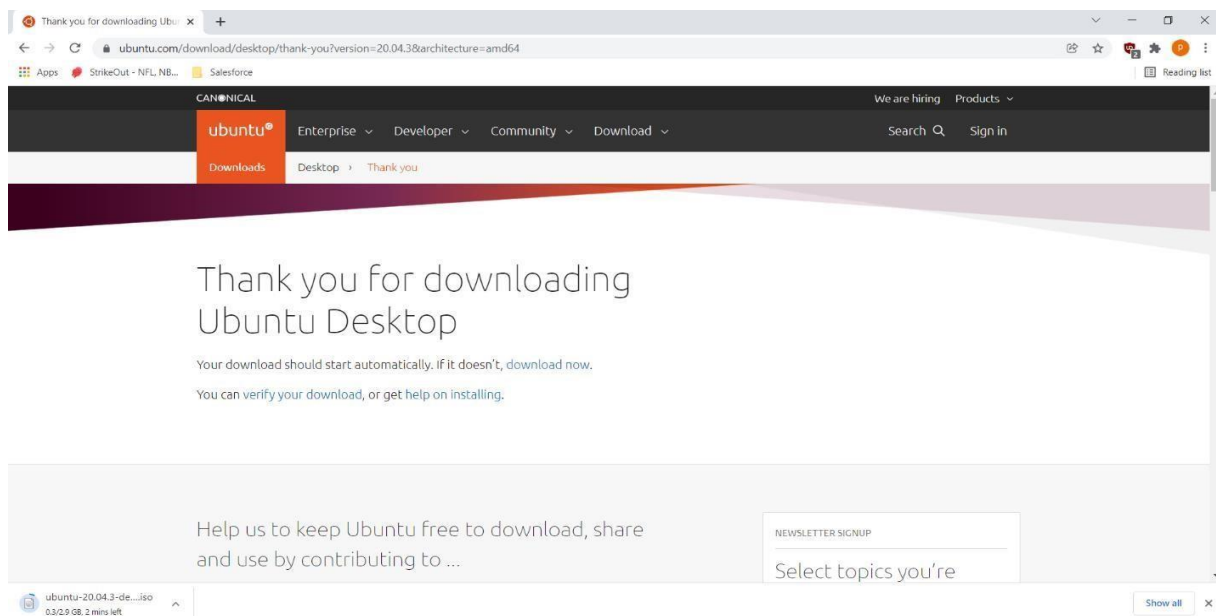
**Semester:** Spring 2024

**Project – 1 (Installation, Configuration of a network OS, deploying and execution of an application.)**

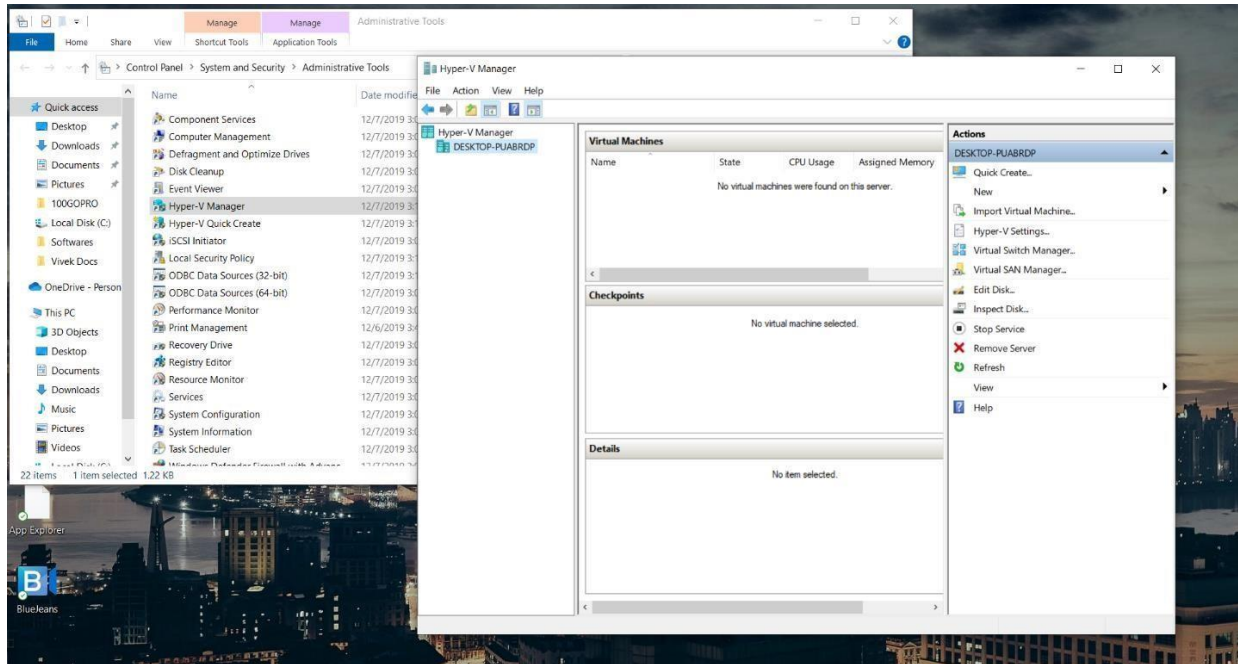
**Step-1:** Hyper – v enabled



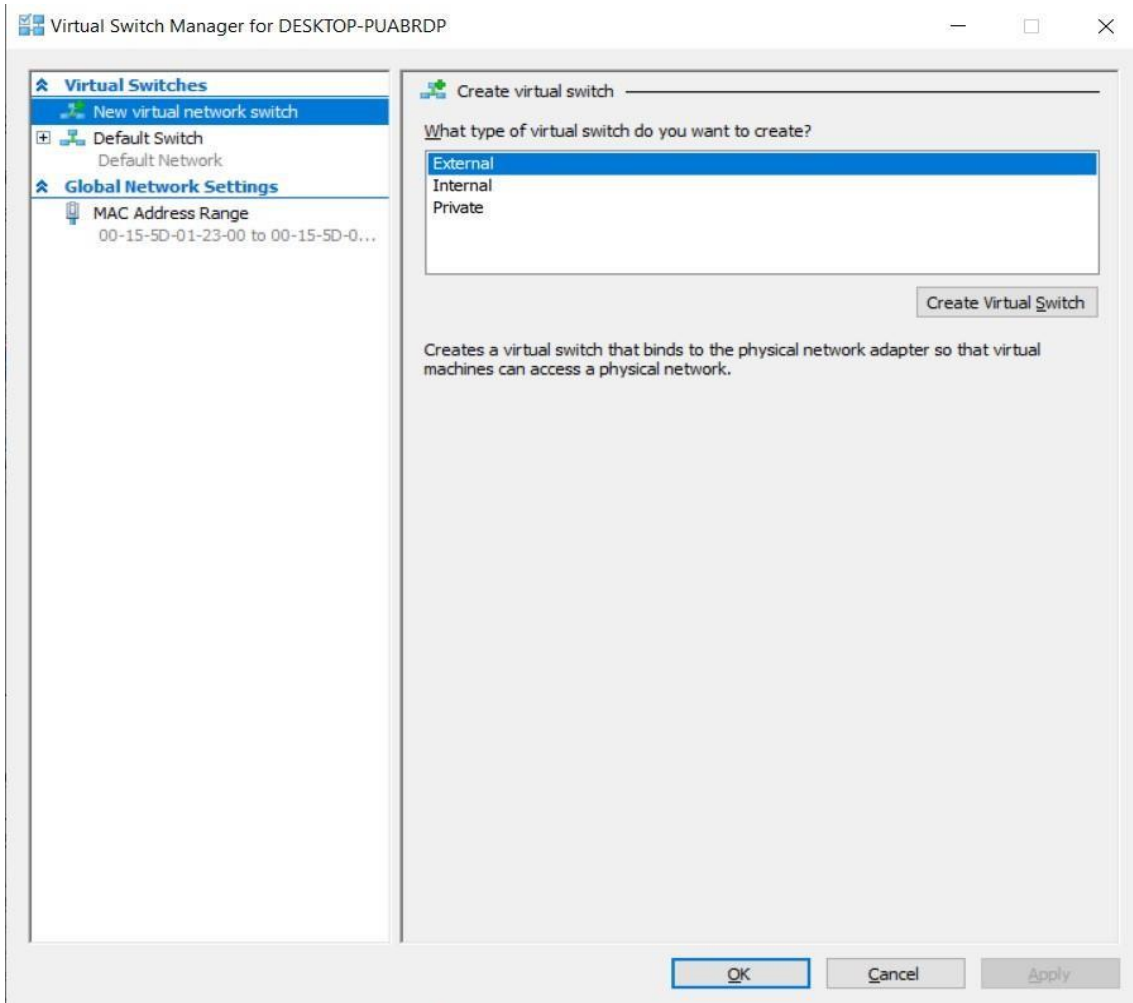
**Step – 2:** Downloaded Ubuntu



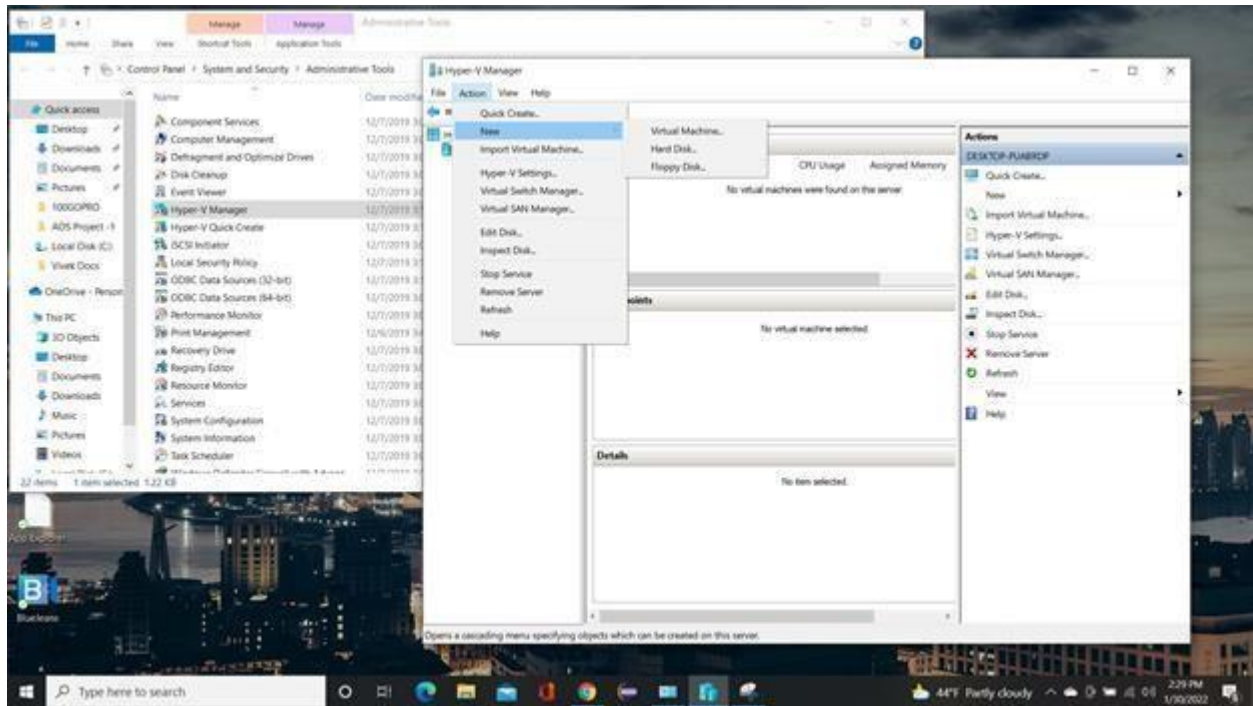
### Step – 3: Opened Hyper – V manager to create a virtual switch



### Step – 4 : External virtual switch is selected



## Step 5: New Virtual Machine



## Step 6: Wizard steps followed to create new VM

New Virtual Machine Wizard

**Specify Name and Location**

Before You Begin

**Specify Name and Location**

Specify Generation

Assign Memory

Configure Networking

Connect Virtual Hard Disk

Installation Options

Summary

Choose a name and location for this virtual machine.


The name is displayed in Hyper-V Manager. We recommend that you use a name that helps you easily identify this virtual machine, such as the name of the guest operating system or workload.

Name:

You can create a folder or use an existing folder to store the virtual machine. If you don't select a folder, the virtual machine is stored in the default folder configured for this server.

☐ Store the virtual machine in a different location

Location:

 If you plan to take checkpoints of this virtual machine, select a location that has enough free space. Checkpoints include virtual machine data and may require a large amount of space.

< Previous   **Next >**   Finish   Cancel



## Specify Generation

Before You Begin

Specify Name and Location

**Specify Generation**

Assign Memory

Configure Networking

Connect Virtual Hard Disk

Installation Options

Summary


Choose the generation of this virtual machine.

☒ Generation 1

This virtual machine generation supports 32-bit and 64-bit guest operating systems and provides virtual hardware which has been available in all previous versions of Hyper-V.

☐ Generation 2

This virtual machine generation provides support for newer virtualization features, has UEFI-based firmware, and requires a supported 64-bit guest operating system.

 Once a virtual machine has been created, you cannot change its generation.

[More about virtual machine generation support](#)

< Previous

Next >

Finish

Cancel



## Assign Memory

Before You Begin

Specify Name and Location

Specify Generation

**Assign Memory**

Configure Networking

Connect Virtual Hard Disk


Installation Options

Summary

Specify the amount of memory to allocate to this virtual machine. You can specify an amount from 32 MB through 251658240 MB. To improve performance, specify more than the minimum amount recommended for the operating system.

Startup memory:  MB

☒ Use Dynamic Memory for this virtual machine.

 When you decide how much memory to assign to a virtual machine, consider how you intend to use the virtual machine and the operating system that it will run.

< Previous

Next >

Finish

Cancel



## Configure Networking

Before You Begin

Specify Name and Location

Specify Generation

Assign Memory

Configure Networking

Connect Virtual Hard Disk

Installation Options

Summary

Each new virtual machine includes a network adapter. You can configure the network adapter to use a virtual switch, or it can remain disconnected.

Connection:

< Previous

Next >

Finish

Cancel



## Connect Virtual Hard Disk

Before You Begin

Specify Name and Location

Specify Generation

Assign Memory

Configure Networking

Connect Virtual Hard Disk

Installation Options

Summary

A virtual machine requires storage so that you can install an operating system. You can specify the storage now or configure it later by modifying the virtual machine's properties.

☒ Create a virtual hard disk

Use this option to create a VHDX dynamically expanding virtual hard disk.

Name:

Location:

Size:  GB (Maximum: 64 TB)

☐ Use an existing virtual hard disk

Use this option to attach an existing virtual hard disk, either VHD or VHDX format.

Location:

☐ Attach a virtual hard disk later

Use this option to skip this step now and attach an existing virtual hard disk later.

< Previous

Next >

Finish

Cancel





## Installation Options

Before You Begin  
Specify Name and Location  
Specify Generation  
Assign Memory  
Configure Networking  
Connect Virtual Hard Disk  
**Installation Options**  
Summary

You can install an operating system now if you have access to the setup media, or you can install it later.

- ☐ Install an operating system later
- ☒ Install an operating system from a bootable CD/DVD-ROM

### Media

☐ Physical CD/DVD drive:

☒ Image file (.iso):

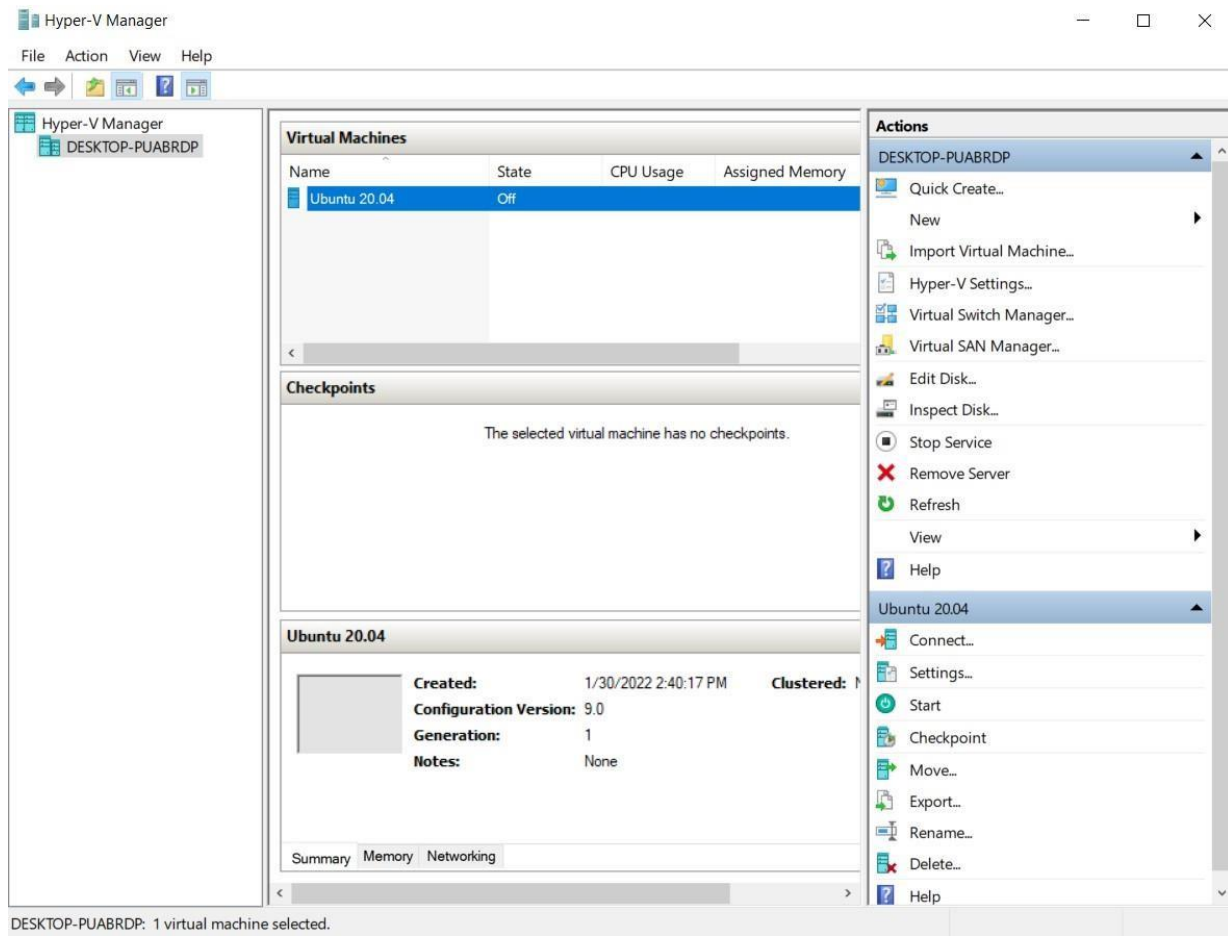
- ☐ Install an operating system from a bootable floppy disk

### Media

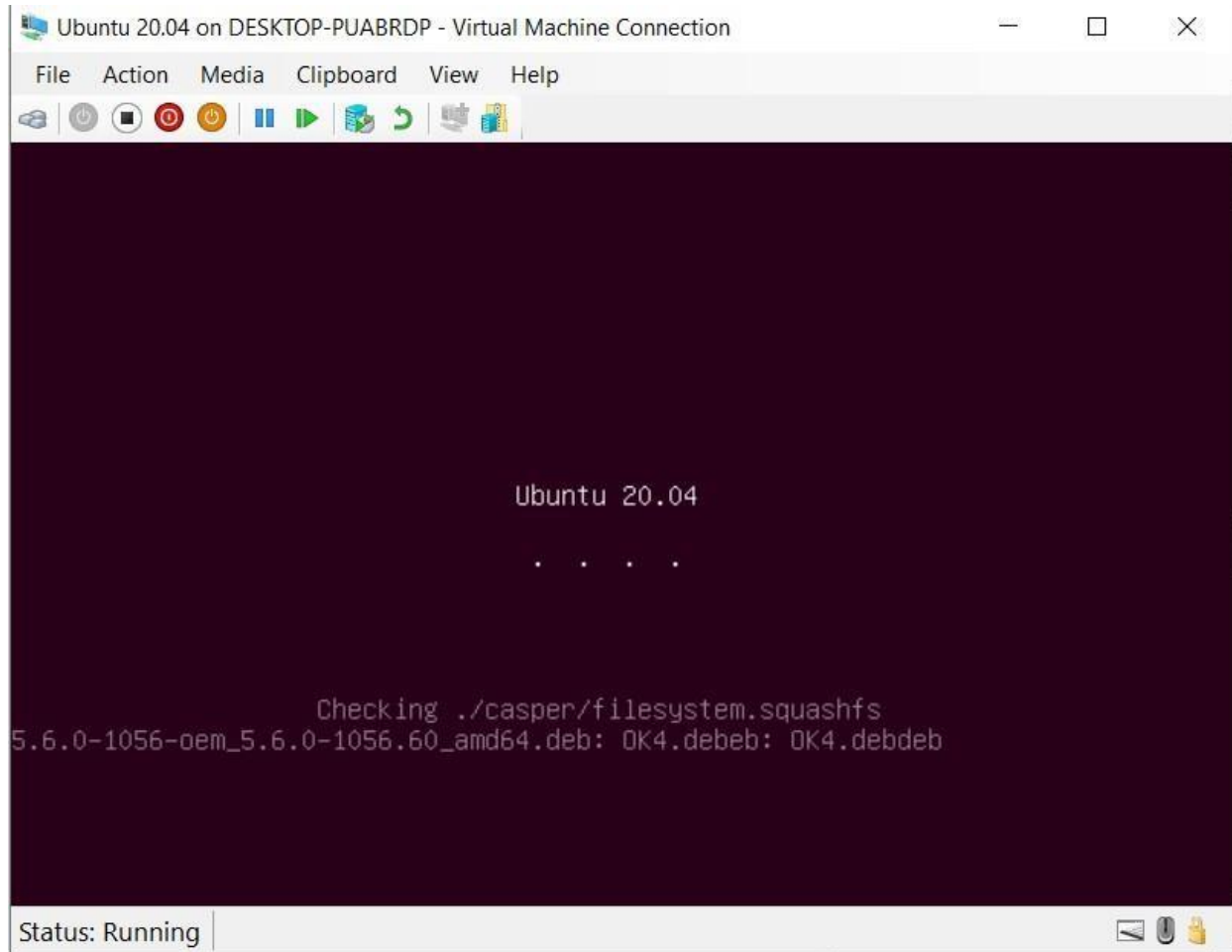
Virtual floppy disk (.vfd):

- ☐ Install an operating system from a network-based installation server

## Step 7: New VM is created and ready to connect



**Step 8:** VM connected and starting





**Step 9:** VM configured to be a SSH server as below

```
Setting up openssh-sftp-server (1:8.2p1-4ubuntu0.4) ...
Setting up openssh-server (1:8.2p1-4ubuntu0.4) ...

Creating config file /etc/ssh/sshd_config with new version
Creating SSH2 RSA key; this may take some time ...
3072 SHA256:1FPkY3Zbps0E8RhrzS+XwexPDdwrqLs8rTYzzl00UPc root@ramcharan-Virtual-M
achine (RSA)
Creating SSH2 ECDSA key; this may take some time ...
256 SHA256:Ha33j8E9BXUY9k2oxkkZi/c0llFlym819CDwkD3XNyA root@ramcharan-Virtual-Ma
chine (ECDSA)
Creating SSH2 ED25519 key; this may take some time ...
256 SHA256:e1xNltqdGhGIpfQh/OX2E9FUxR+vnDAsB00rm0pG0jY root@ramcharan-Virtual-Ma
chine (ED25519)
Created symlink /etc/systemd/system/ssh.service → /lib/systemd/system/ssh.servi
ce.
Created symlink /etc/systemd/system/multi-user.target.wants/ssh.service → /lib/s
ystemd/system/ssh.service.
rescue-ssh.target is a disabled or a static unit, not starting it.
Processing triggers for systemd (245.4-4ubuntu3.11) ...
Processing triggers for man-db (2.9.1-1) ...
Processing triggers for ufw (0.36-6) ...
```

**Step 10:** Using PuTTY, tried to connect from window to Ubuntu Virtual machine

```
Welcome to Ubuntu 20.04.3 LTS (GNU/Linux 5.13.0-27-generic x86_64)

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

193 updates can be applied immediately.
116 of these updates are standard security updates.
To see these additional updates run: apt list --upgradable

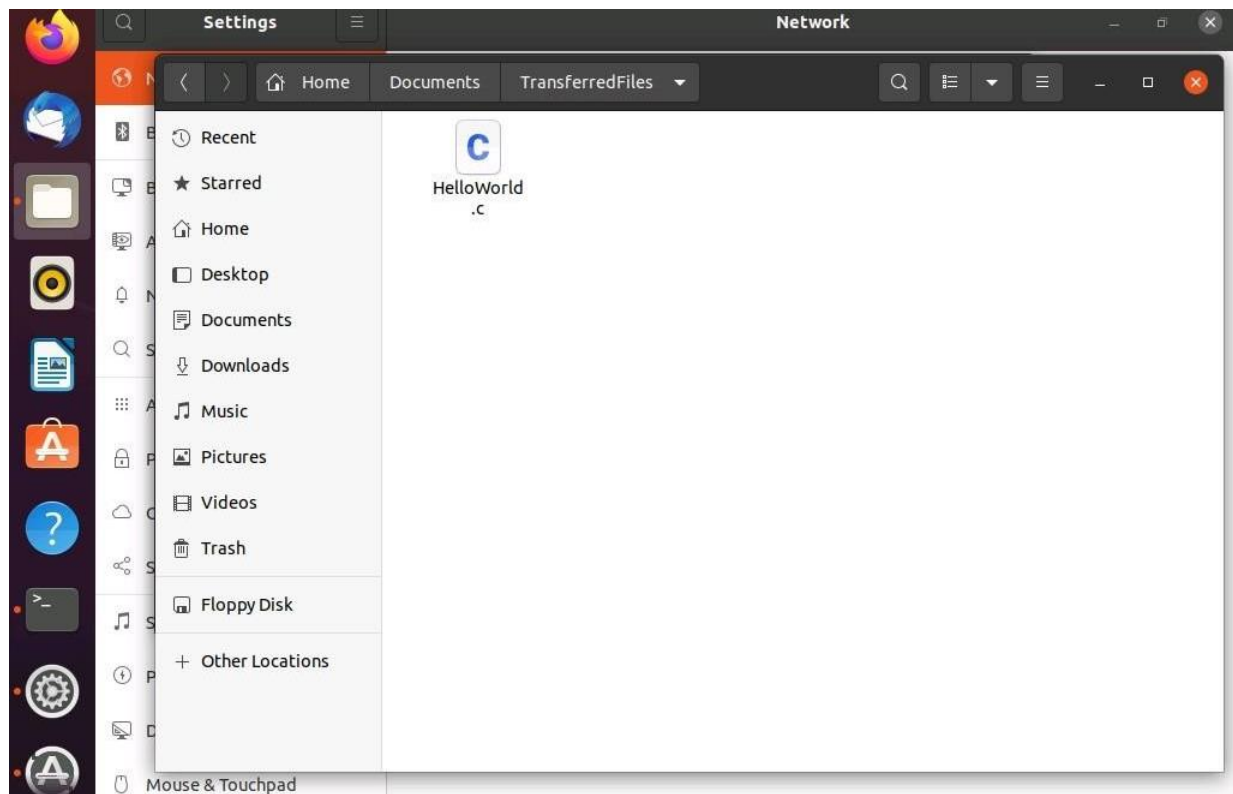
Your Hardware Enablement Stack (HWE) is supported until April 2025.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.
```

**Step 11:** Using cmd and pscp command, C/c++ files are copied from windows to Ubuntu Server

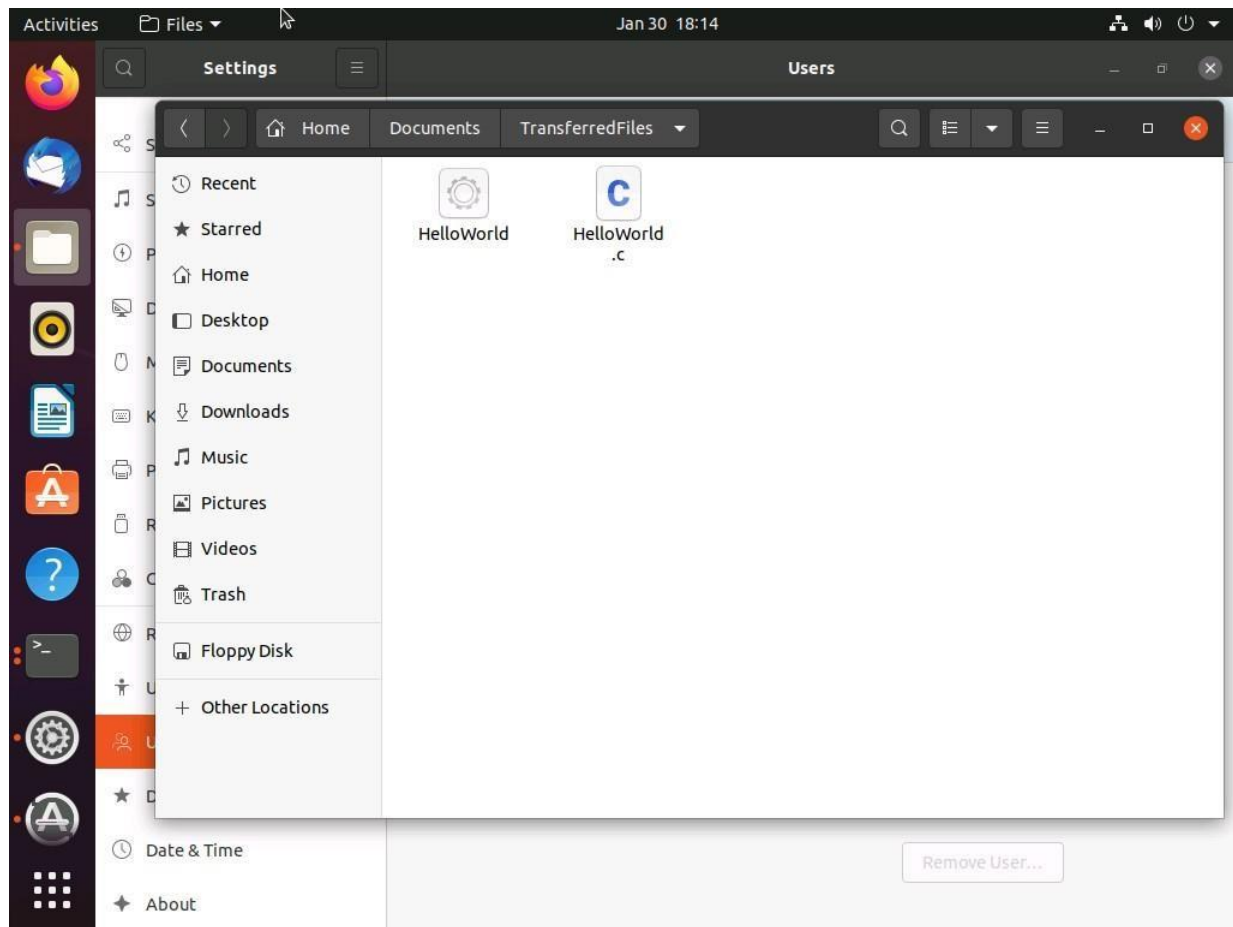
**Step 12:** Successfully completed transferred HelloWorld.c from windows to Ubuntu server



**Step 13:** Used putty to connect to VM and the used GCC to remotely compile the .c file.

```
Virtual-Machine:~/Documents/TransferredFiles$ gcc HelloWorld.c
Virtual-Machine:~/Documents/TransferredFiles$
```

**Step 14:** The Output file is created.



**Step 15:** Used gcc in putty to run the program. The program ran successfully.

