

Q1. Install a Virtual box/VMWare workstation and launch Linux Server

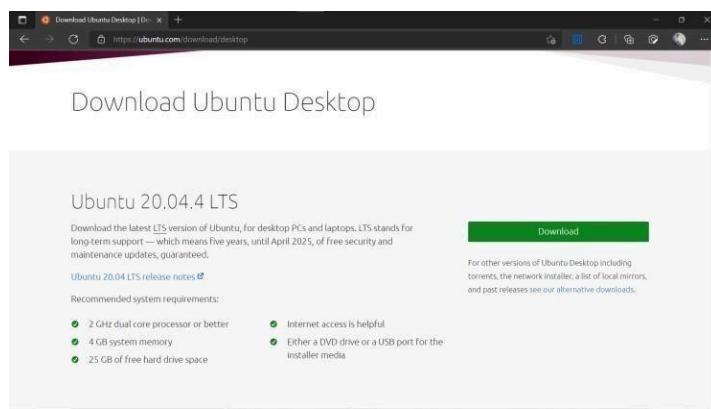
Steps:

Step-1: Download VirtualBox for Windows and install it on your computer



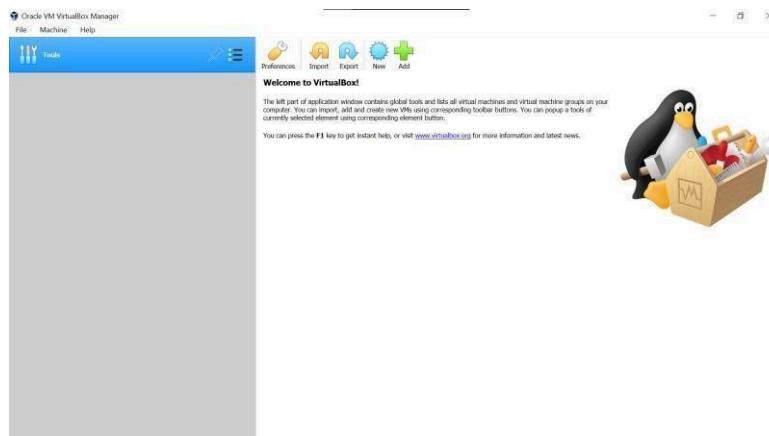
<https://www.virtualbox.org/wiki/Downloads>

Step-2: Download the Ubuntu ISO file you want to install from the Ubuntu download page.

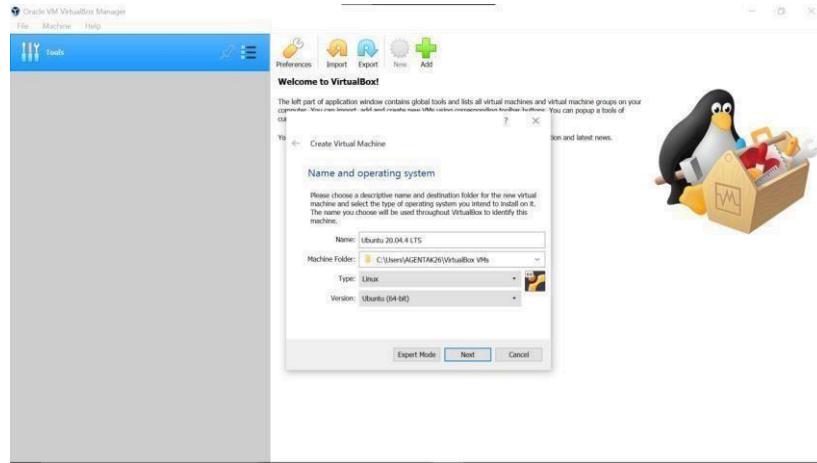


Note: The current version of Ubuntu only works on 64-bit machines.

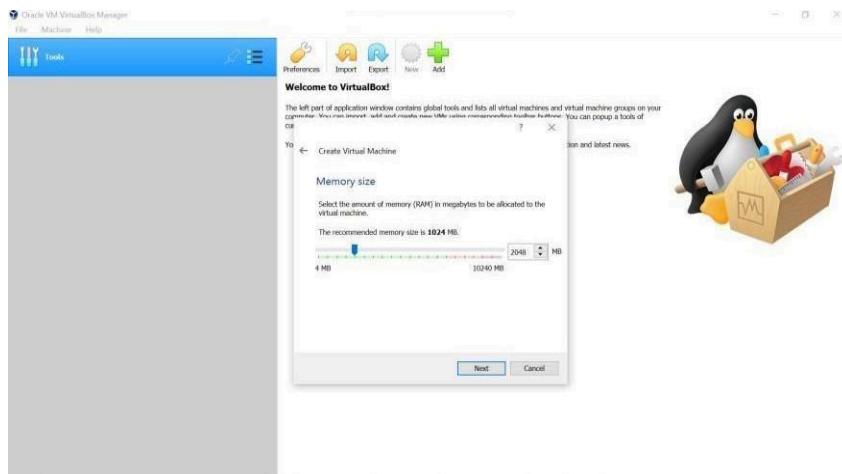
Step-3: Open VirtualBox and select New in the top toolbar.



Step-4: Give your VM a name, choose Linux as the Type, then choose Ubuntu as the Version and select Next.

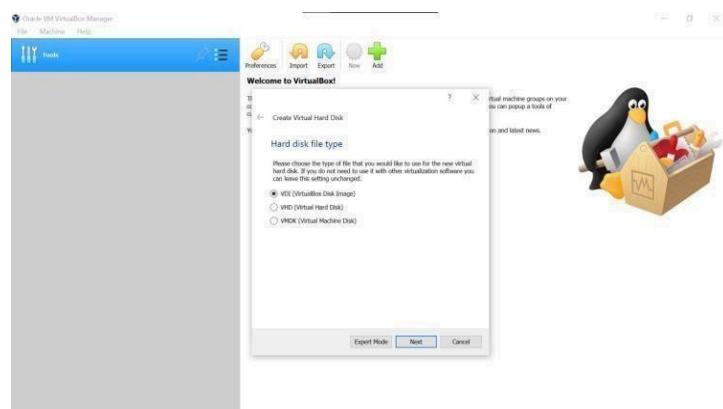


Step-5: Choose how much RAM you want to assign to the virtual machine and select Next. The recommended minimum is 1024 MB.



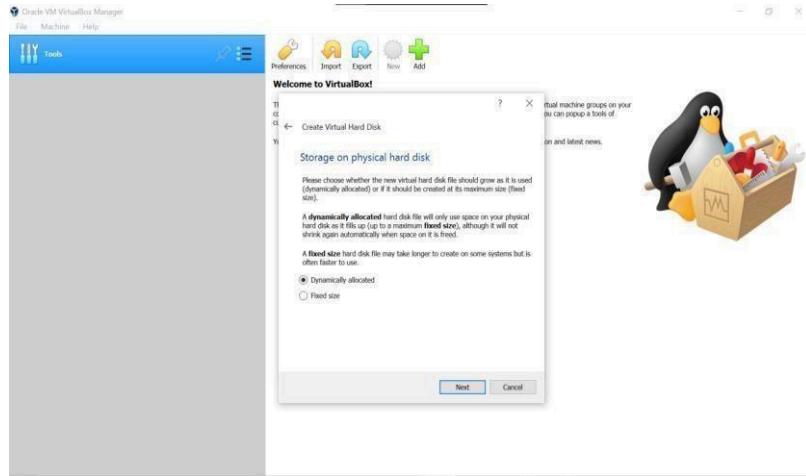
Step-6: Choose Create a virtual hard disk now and select Create.

Step-7: Choose VDI (VirtualBox Disk Image) and select Next.



Note on (VDI): Normally, Oracle VM VirtualBox uses its own container format for guest hard disks. This is called a Virtual Disk Image (VDI) file. This format is used when you create a new virtual machine with a new disk.

Step-8: Choose Dynamically allocated or Fixed size for the storage type and select Next.

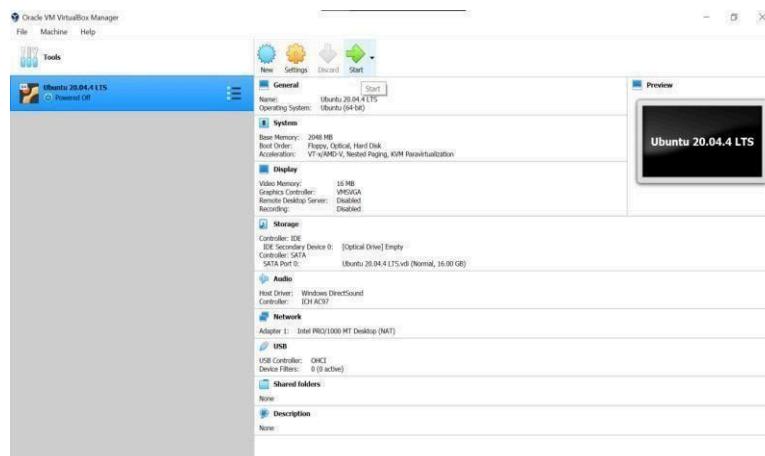


Tip: A fixed size disk performs better because the virtual machine doesn't have to increase the file size as you install software.

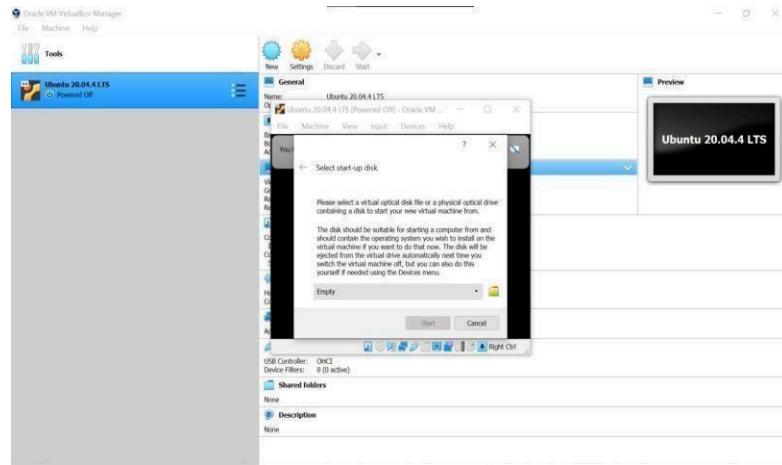
Step-9: Choose how much space you wish to set aside for Ubuntu and select Create.

Note: The amount of space you allocate for your virtual machine determines how much room you must install applications, so set aside a sample amount.

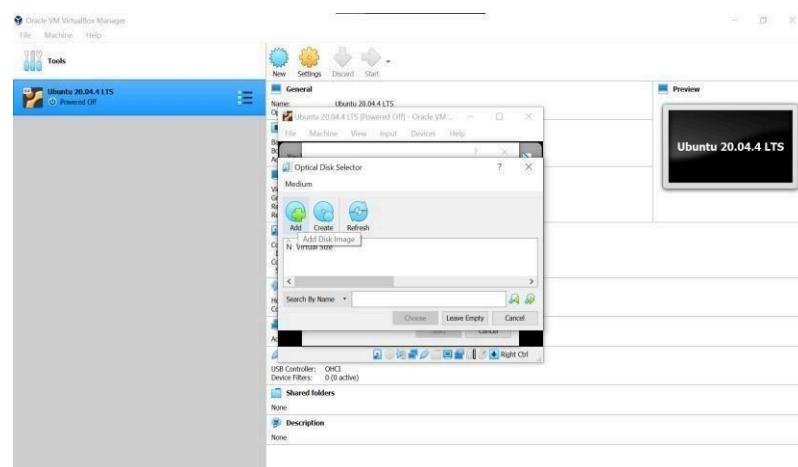
Step-10: The name of your virtual machine will now appear on the left side of the VirtualBox manager. Select Start in the toolbar to launch your VM.



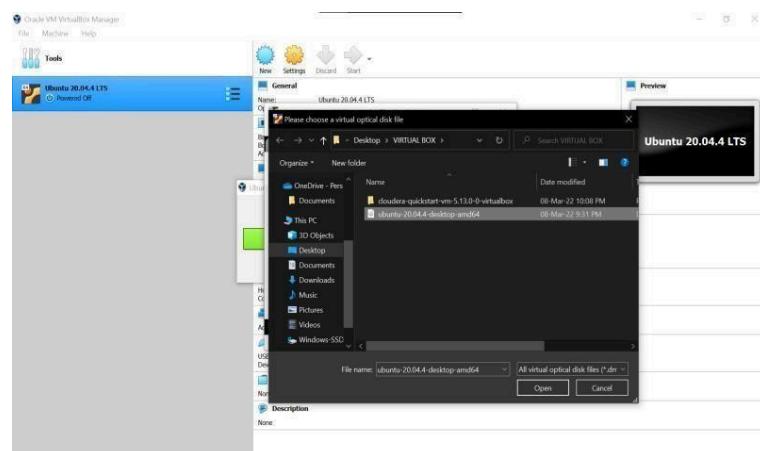
Step-11: This is the point where you need to choose the Ubuntu ISO file you downloaded earlier. If the VM doesn't automatically detect it, select the folder next to the Empty field.



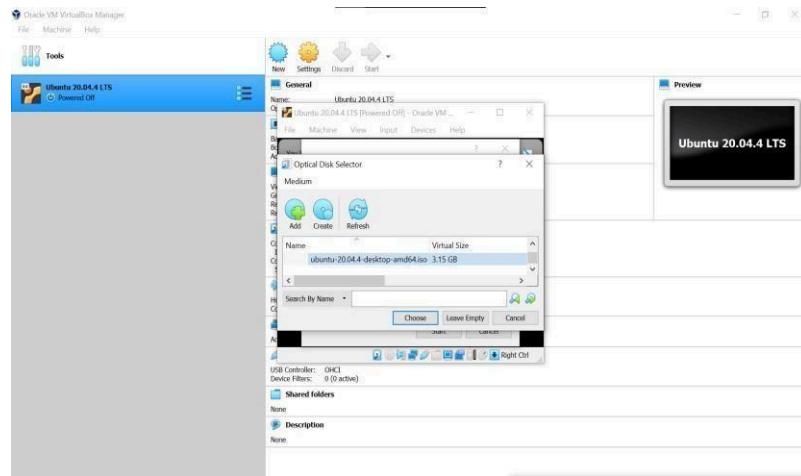
Step-12: Select Add in the window that pops up.



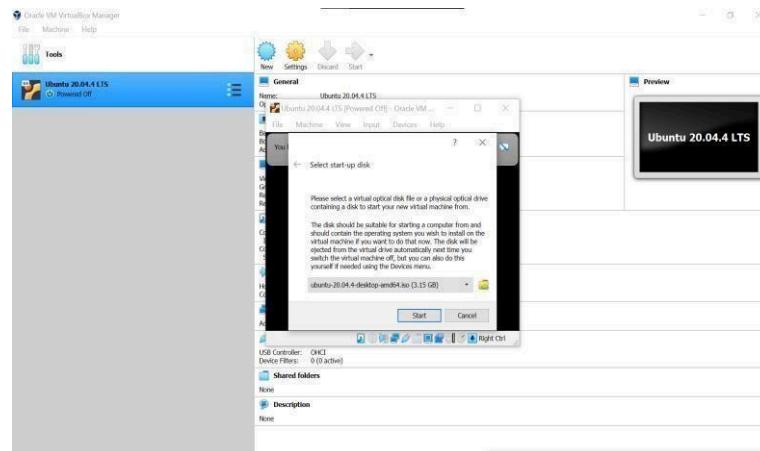
Step-13: Choose your Ubuntu disk image and select Open.



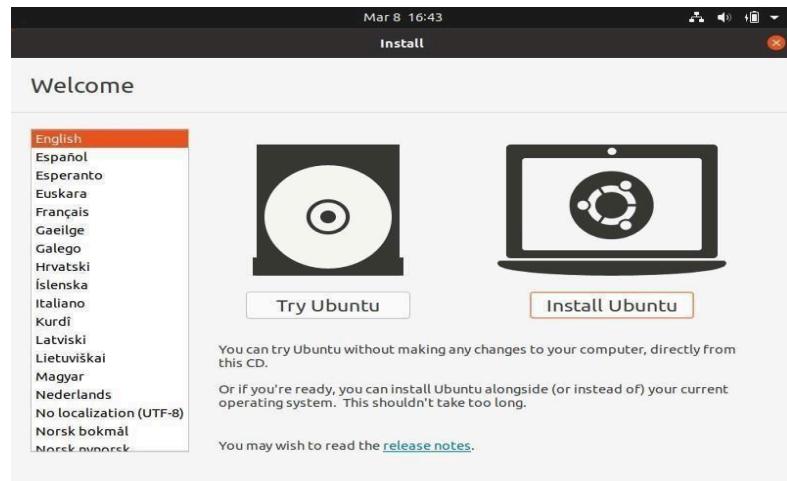
Step-14: - Select Choose



Step-15: Select Start.

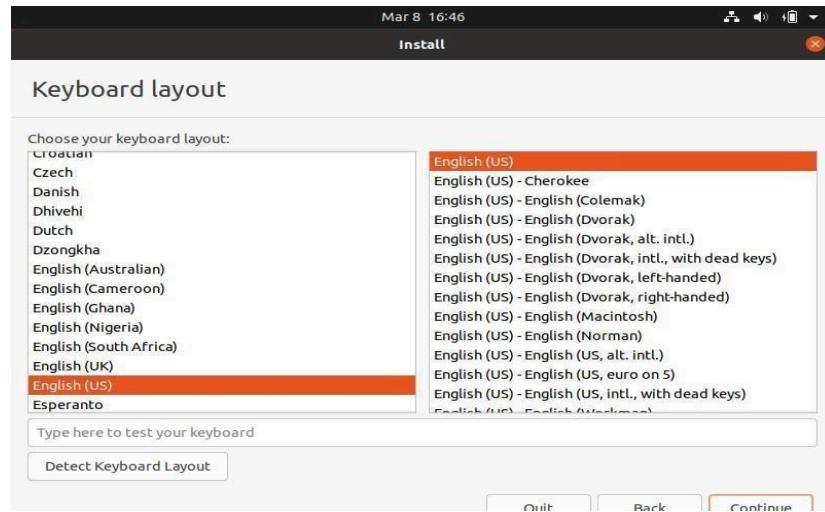


Step-16: Your VM will now boot into a live version of Ubuntu. Choose your language and select Install Ubuntu



U.

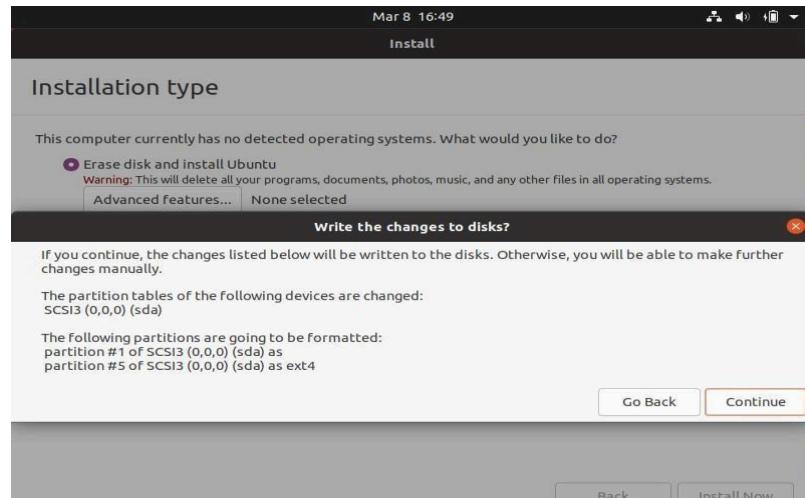
Step-17: Choose your keyboard layout and select Continue.



Step-18: Choose Normal installation or Minimal installation, then select Continue.

Step-19: Choose Erase disk and install Ubuntu and select Install Now, then select Continue to ignore the warning.

Note: This step will not erase your computer's physical hard drive; it only applies to the virtual machine.

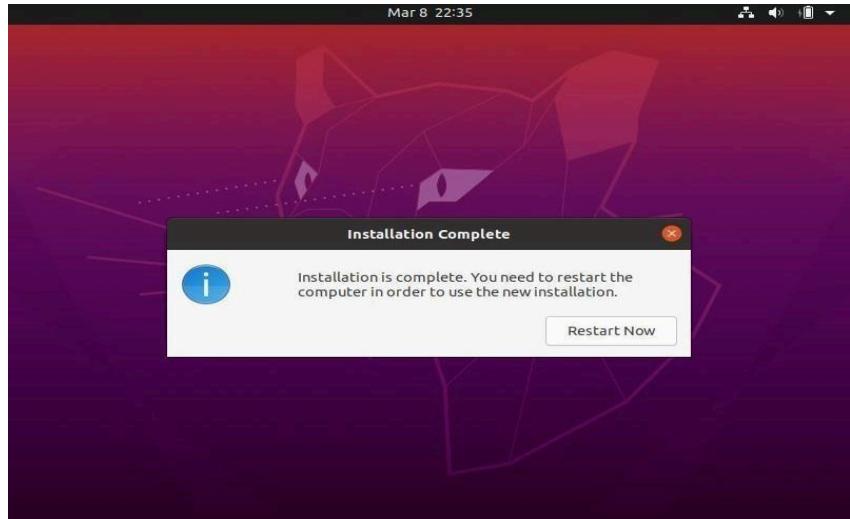


Step-20: - Choose your time zone on the map, then select Continue.

Step-21: - Set up your user account and select Continue.



Step-22: - Select Restart Now.



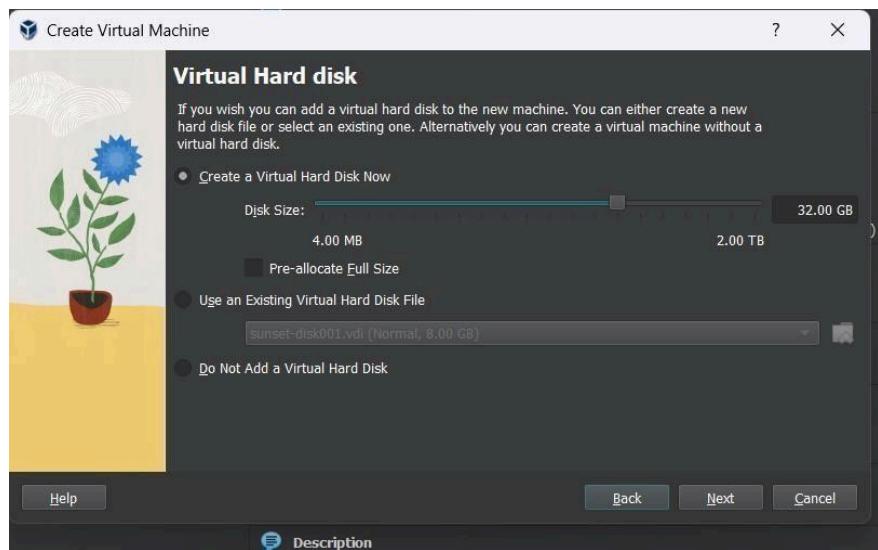
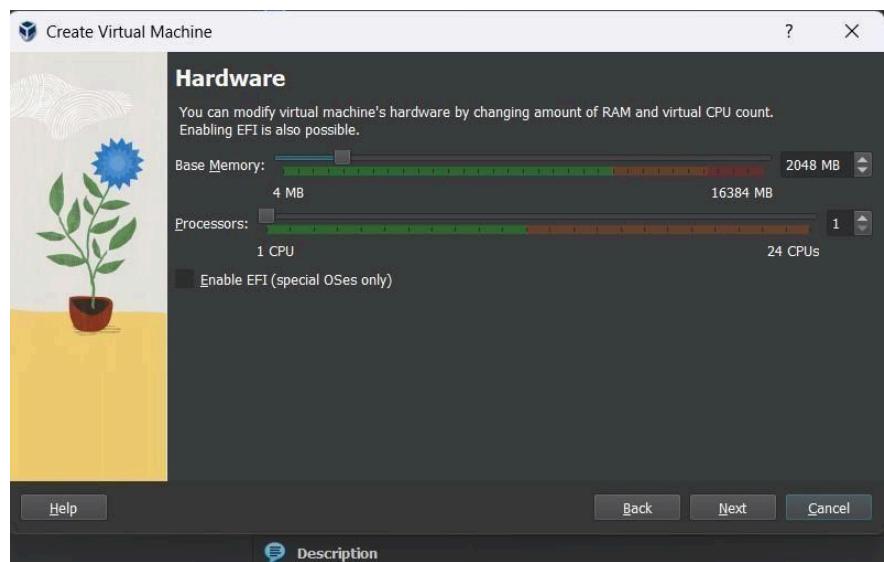
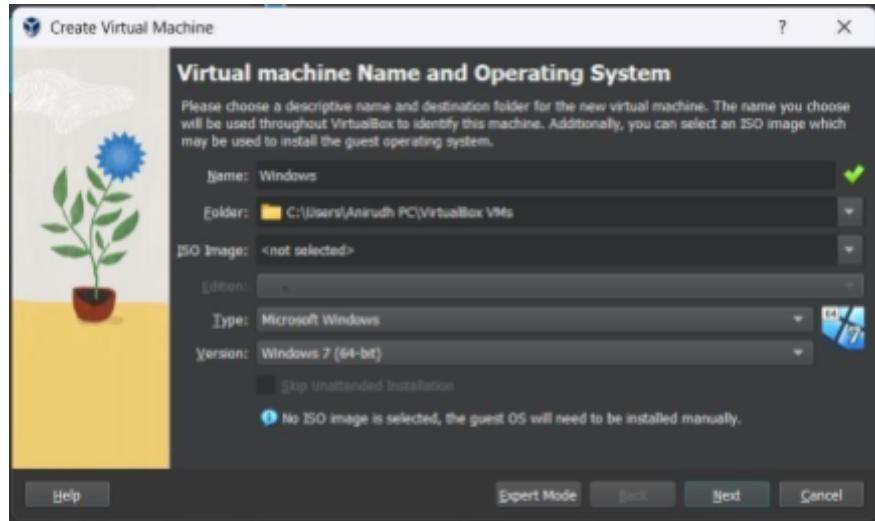
Step-23: - After restarting your VM and booting into Ubuntu, you may notice that the desktop doesn't scale correctly if you choose to view it in full-screen mode. You can fix this problem by selecting the VBox_Gas icon to install VirtualBox Guest Additions.

Output:



Q2. Install a Virtual box/VMWare workstation and launch Windows Server

Similarly, Follow the same steps above to Build Windows Virtual Machine.



Output:

Q3. Create an instance in Virtual Machine and launch Windows Server through Azure Portal.

Steps:

Step-1: Login to Azure and create a azure virtual machine.

The screenshot shows the Microsoft Azure portal interface for managing virtual machines. At the top, there's a search bar and various navigation icons. Below it, the 'Virtual machines' section is displayed. A modal window is open over the list, titled 'No virtual' with the sub-instruction 'Create a virtual machine that runs Linux or Windows'. It contains three main options: 'Azure virtual machine' (selected), 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. At the bottom of this modal is a blue 'Create' button. The overall page has a standard Azure color scheme with blue headers and white backgrounds.

This screenshot shows the 'Create a virtual machine' wizard in progress. The first step, 'Set instance details', is active. It requires several inputs: a 'Resource group' dropdown set to '(New) rg' with a 'Create new' link; 'Virtual machine name' set to 'VM1'; 'Region' set to '(Asia Pacific) Central India'; 'Availability options' set to 'Availability zone'; 'Availability zone' set to 'Zone 1'; 'Security type' set to 'Trusted launch virtual machines'; and 'Image' set to 'Windows Server 2019 Datacenter - x64 Gen2'. Below these fields are 'Next : Disks >' and 'Review + create' buttons. The 'Review + create' button is highlighted in blue, indicating it's the next step. The overall layout is clean with a white background and standard form controls.

Administrator account

Username * ✓

Password * ✓

Confirm password * ✓

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * None Allow selected ports

Select inbound ports *

< Previous Next : Disks > **Review + create** Give feedback

Step-2: Click on Review + create.

Validation passed

Alerts	Off
Boot diagnostics	On
Enable OS guest diagnostics	Off
Enable application health monitoring	Off

Advanced

Extensions	None
VM applications	None
Cloud init	No
User data	No
Disk controller type	SCSI
Proximity placement group	None
Capacity reservation group	None

< Previous Next > **Create** Download a template for automation Give feedback

Deployment

Your deployment is complete

Deployment name: CreateVm-MicrosoftWindowsServer.WindowsSe... Start time: 6/17/2024, 10:04:47 AM
Subscription: Azure for Students Correlation ID: 86d5f31-ad2e-49d6-820b-923
Resource group: rg

Deployment details

Setup auto-shutdown Recommended
Monitor VM health, performance and network dependencies Recommended
Run a script inside the virtual machine Recommended

Next steps

Go to resource **Create another VM**

Give feedback **Tell us about your experience with deployment**

Deployment succeeded
Deployment 'CreateVm-MicrosoftWindowsServer.WindowsServer-201-20240617100204' to resource group 'rg' was successful.

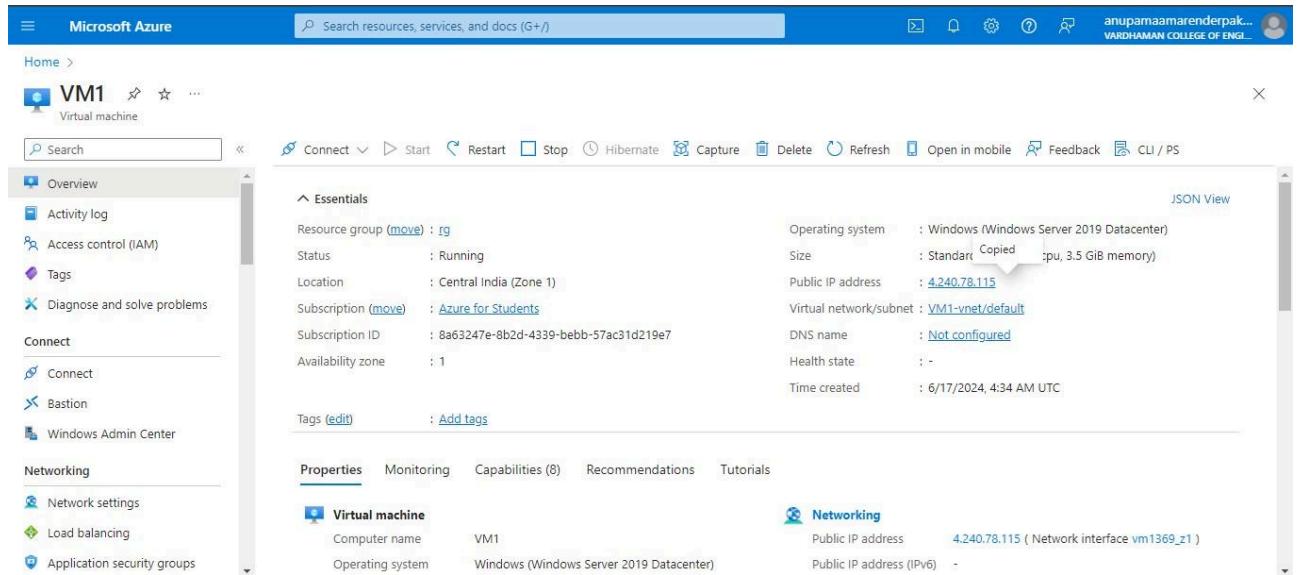
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Set up cost alerts >

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Step-3: Copy public IP address and paste it in Remote Desktop Connection.



The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with options like Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Bastion, Windows Admin Center, Networking, Network settings, Load balancing, and Application security groups. The main area is titled 'VM1' under 'Virtual machine'. It shows the following details:

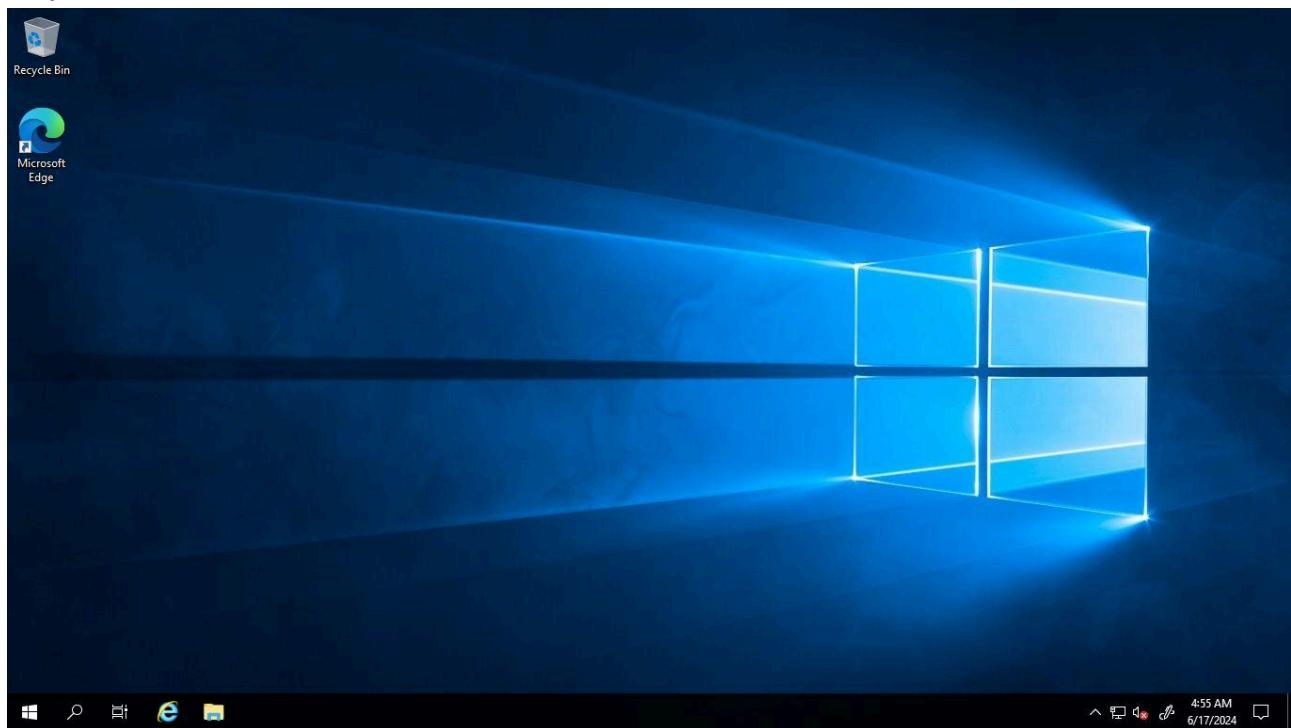
- Essentials:**
 - Resource group: rg
 - Status: Running
 - Location: Central India (Zone 1)
 - Subscription: Azure for Students
 - Subscription ID: 8a63247e-8b2d-4339-bebb-57ac31d219e7
 - Availability zone: 1
 - Operating system: Windows (Windows Server 2019 Datacenter)
 - Size: Standard CPU, 3.5 GiB memory
 - Public IP address: 4.240.78.115
 - Virtual network/subnet: VM1-vnet/default
 - DNS name: Not configured
 - Health state: -
 - Time created: 6/17/2024, 4:34 AM UTC
- Tags:** Tags (edit) : Add tags
- Properties:** Monitoring, Capabilities (8), Recommendations, Tutorials
- Virtual machine:** Computer name: VM1, Operating system: Windows (Windows Server 2019 Datacenter)
- Networking:** Public IP address: 4.240.78.115 (Network interface vm1369_z1), Public IP address (IPv6): -

A tooltip indicates that the Public IP address '4.240.78.115' has been copied.



Step-4: Click on connect.



Output:

Q4 . Create an instance in Virtual Machine and launch Linux Server through Azure Portal.

Steps

Step-1: Sign in to your Microsoft Azure account.

Step-2: Go To Virtual machine, and click on “Create” to create a window virtual machine.

The screenshot shows the Microsoft Azure portal interface. The user is on the 'Virtual machines' page, which displays a search bar and various filter options. A prominent 'Create' button is visible at the bottom left. A dropdown menu is open over the 'Create' button, listing three options: 'Azure virtual machine', 'Azure virtual machine with preset configuration', and 'More VMs and related solutions'. The 'More VMs and related solutions' option is currently selected. The background shows a table header for managing virtual machines, including columns for Name, Type, Subscription, Resource group, Location, Status, Operating system, Size, and Public IP.

Step-3: Fill the details in that ubuntu by creating a “Resource Group”, Zone: Asia, Image:

ubuntu, select “SSH”, Select the disk storage and so on. After that click on “Create + Review”. And Finally click on “Create”.

The screenshot shows the 'Create a virtual machine' wizard on the 'Resource group' step. The user has selected '(NEW) rg123' from the dropdown menu. The 'Instance details' section includes fields for 'Virtual machine name' (set to 'VM1'), 'Region' (set to '(Asia Pacific) Central India'), 'Availability options' (set to 'Availability zone'), and 'Availability zone' (set to 'Zone 1'). A note indicates that selecting multiple zones will create one VM per zone. The 'Security type' is set to 'Trusted launch virtual machines', and the 'Image' is set to 'Ubuntu Server 20.04 LTS - x64 Gen2'. At the bottom, there are navigation buttons for 'Previous', 'Next : Disks >', and 'Review + create'.

Create a virtual machine

Administrator account

Authentication type: SSH public key Password

Azure now automatically generates an SSH key pair for you and allows you to store it for future use. It is a fast, simple, and secure way to connect to your virtual machine.

Username *:

SSH public key source:

SSH Key Type: RSA SSH Format Ed25519 SSH Format
Ed25519 offers better performance and security with a smaller key size, while RSA is still widely used particularly for legacy systems and applications.

Key pair name *:

< Previous Give feedback

Create a virtual machine

Key pair name *:

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports *: Allow selected ports None

Select inbound ports *:

All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.

< Previous Give feedback

Create a virtual machine

Validation passed

Basics

Cost given below is an estimate and not the final price. For all your pricing needs, please use the pricing calculator. ⓘ

Price

1 X Standard DS1 v2 by Microsoft Subscription credits apply 6.9884 INR/hr Pricing for other VM sizes

TERMS

By clicking "Create", I (a) agree to the legal terms and privacy statement(s) associated with the Marketplace offer(s) listed.

< Previous Download a template for automation

Validation passed

Basics Disks Networking Management Monitoring Advanced Tags **Review + create**

Generate new key pair

An SSH key pair contains both a public key and a private key. Azure doesn't store the private key. After the SSH key resource is created, you won't be able to download the private key again. [Learn more](#)

Download private key and create resource

Return to create a virtual machine

Price
1 X Standard DS1 v2 by Microsoft **6.9884 INR/hr** Subscription credits apply
[Terms of use](#) | [Privacy policy](#)

TERMS
By clicking "Create", I/We agree to the legal terms and privacy statements(s) associated with the Marketplace offer(s)/listing.

< Previous Next > **Create** Download a template for automation [Give feedback](#)

Deployment

Search Delete Cancel Redeploy Download Refresh

Overview

Your deployment is complete

Deployment name: CreateVm-canonical.0001-com-ubuntu-server-f... Start time: 6/17/2024, 2:20:14 PM
Subscription: Azure for Students Correlation ID: 1716fab8-bbbe-4d58-ae6c-f517
Resource group: rg123

Deployment details

Next steps

- Setup auto-shutdown Recommended
- Monitor VM health, performance and network dependencies Recommended
- Run a script inside the virtual machine Recommended

Go to resource Create another VM

Give feedback Tell us about your experience with deployment

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Step-4: Firstly, copy the public IP Address of that created virtual machine.

VM1 Virtual machine

Search Connect Start Restart Stop Hibernate Capture Delete Refresh Open in mobile Feedback CLI / PS

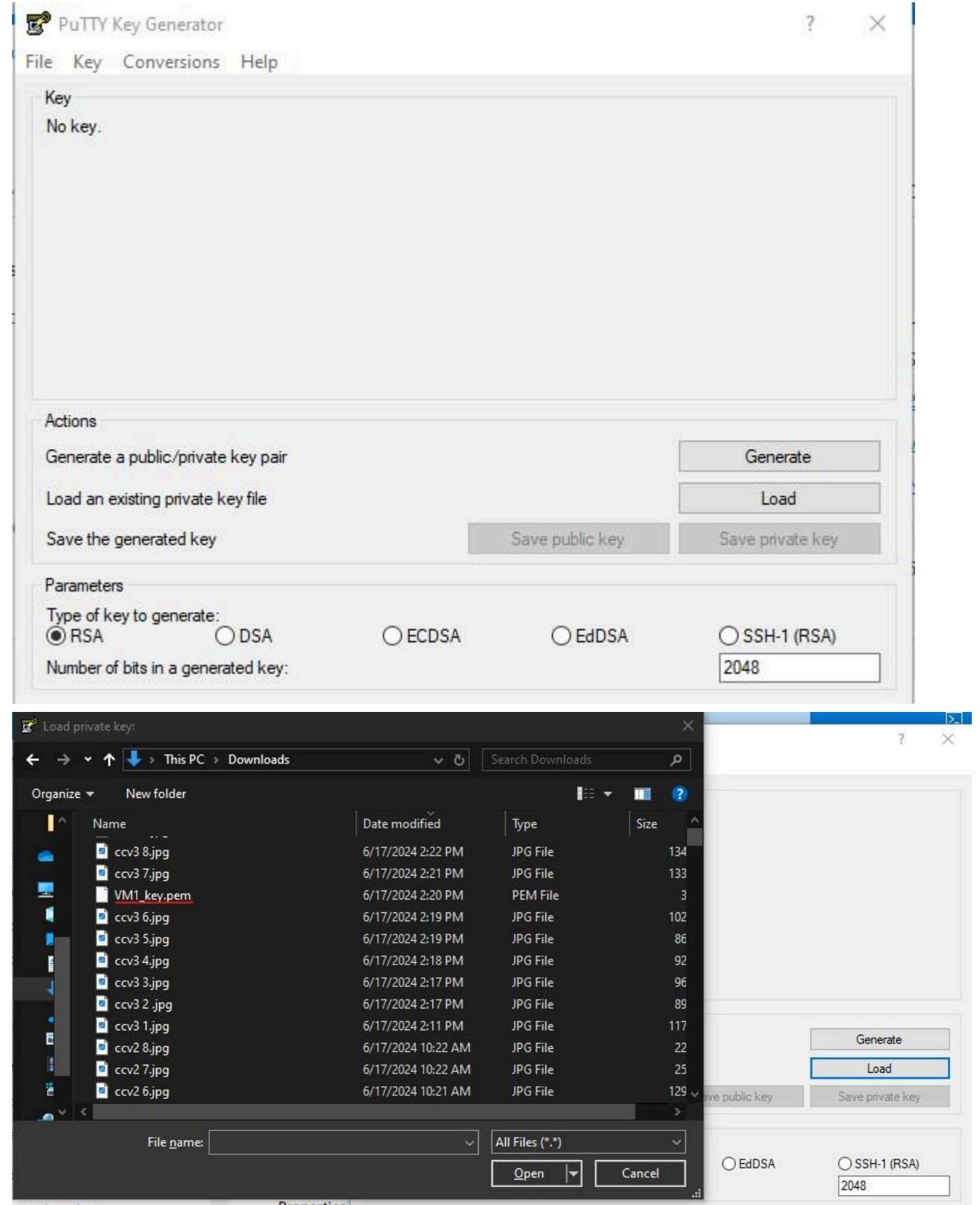
Essentials		JSON View	
Resource group (move)	: rg123	Operating system	: Linux (ubuntu 20.04)
Status	: Running	Size	: Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
Location	: Central India (Zone 1)	Public IP address	: 20.244.35.69
Subscription (move)	: Azure for Students	Virtual network/subnet	: VM1-vnet/default
Subscription ID	: 8a63247e-8b2d-4339-bebb-57ac31d219e7	DNS name	: Not configured
Availability zone	: 1	Health state	: -
Tags (edit)	: Add tags	Time created	: 6/17/2024, 8:50 AM UTC

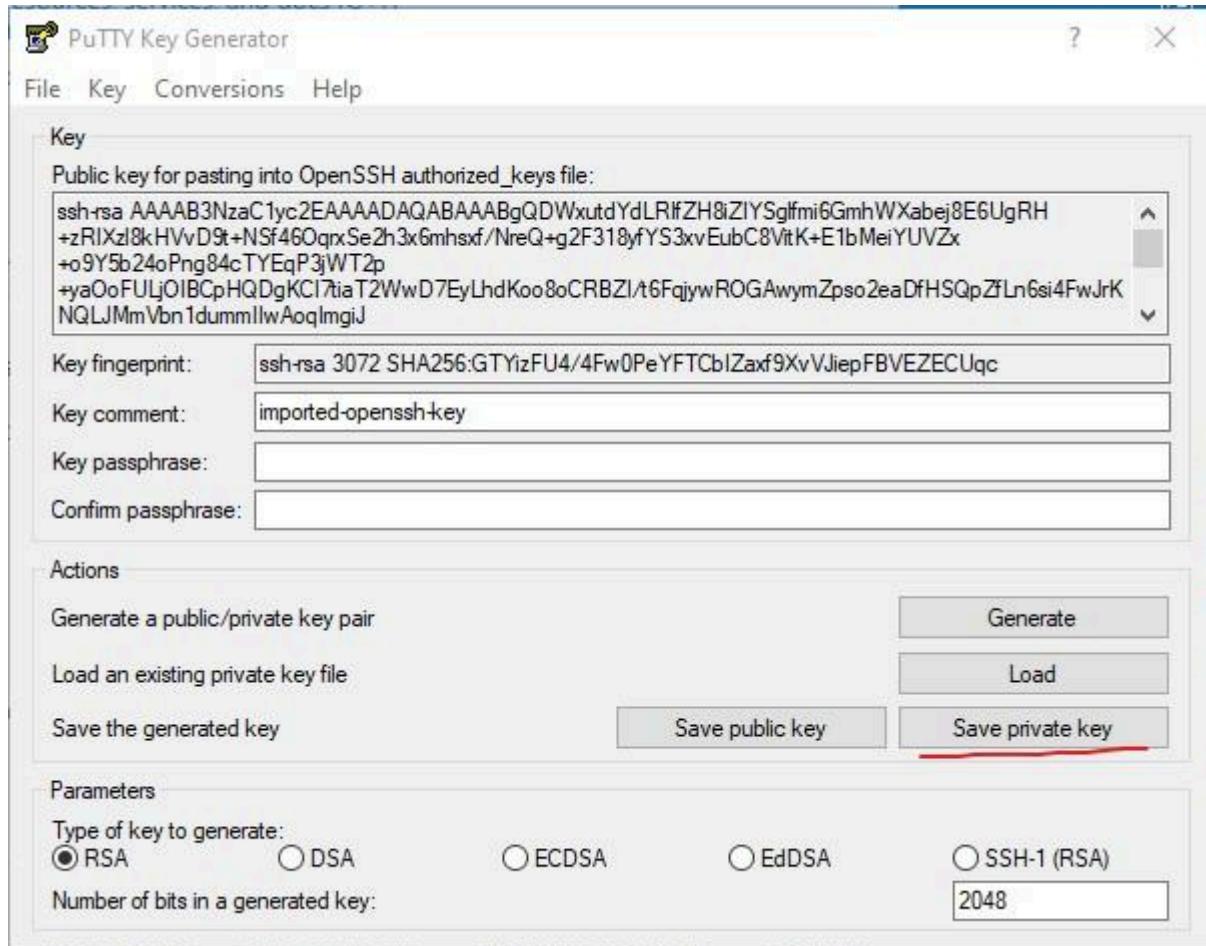
Properties Monitoring Capabilities (7) Recommendations Tutorials

Virtual machine		Networking	
Computer name	VM1	Public IP address	: 20.244.35.69 (Network interface vm1-vnet/default)
Operating system	Linux (ubuntu 20.04)	Public IP address (IPv6)	: -

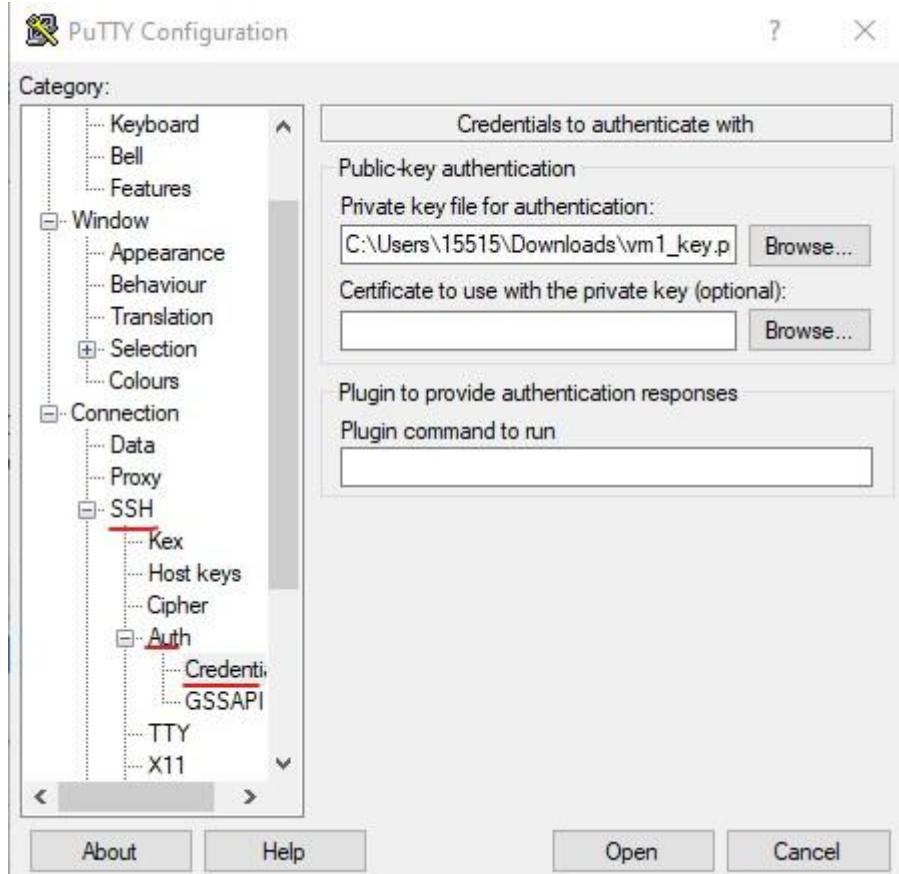
Networking

Step-5: Go to putty gen and click on load the key generator that you have downloaded.





Step-6: In putty, put the Copied IP Adress into it, and then go to ssh->auth->credentials And the put the generated private key.



Step-7: A login page will be opened in that type your username and you will be into the ubuntu.

Step-8: After this delete its resource group and virtual machine.

Output:

```
azureuser@VM1: ~
[?] login as: azureuser
[?] Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)

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

System information as of Mon Jun 17 09:00:29 UTC 2024

System load:  0.08           Processes:      116
Usage of /:   5.1% of 28.89GB  Users logged in:    0
Memory usage: 9%            IPv4 address for eth0: 10.0.0.4
Swap usage:   0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

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.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

azureuser@VM1:~$
```

Q5. Create an instance in virtual machine and launch windows server through Azure portal and transfer files from local machine to guest machine.

Steps:

Step-1: Login to Azure and create a azure virtual machine.

The screenshot shows the Azure portal interface for a virtual machine named 'VM1'. The 'Essentials' section displays the following details:

	Value
Resource group (move)	: rg
Status	: Stopped (deallocated)
Location	: Central India (Zone 1)
Subscription (move)	: Azure for Students
Subscription ID	: 8a63247e-8b2d-4339-bebb-57ac31d219e7
Availability zone	: 1
Operating system	: Windows
Size	: Standard Dv2s (4 vCPUs, 3.5 GiB memory)
Public IP address	: 4.240.110.127
Virtual network/subnet	: VM1-vnet/default
DNS name	: Not configured
Health state	: -
Time created	: 6/18/2024, 1:25 PM UTC

Tags (edit) : Add tags

Properties Monitoring Capabilities (8) Recommendations Tutorials

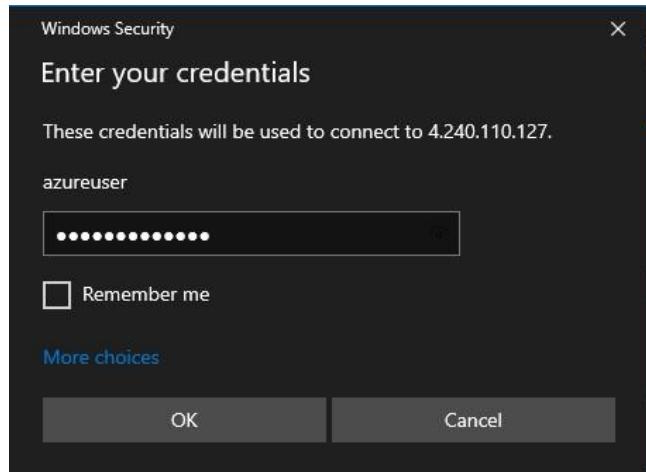
Virtual machine
Computer name: VM1
Operating system: Windows

Networking
Public IP address: 4.240.110.127 (Network interface vm1274_z1)
Public IP address (IPv6): -

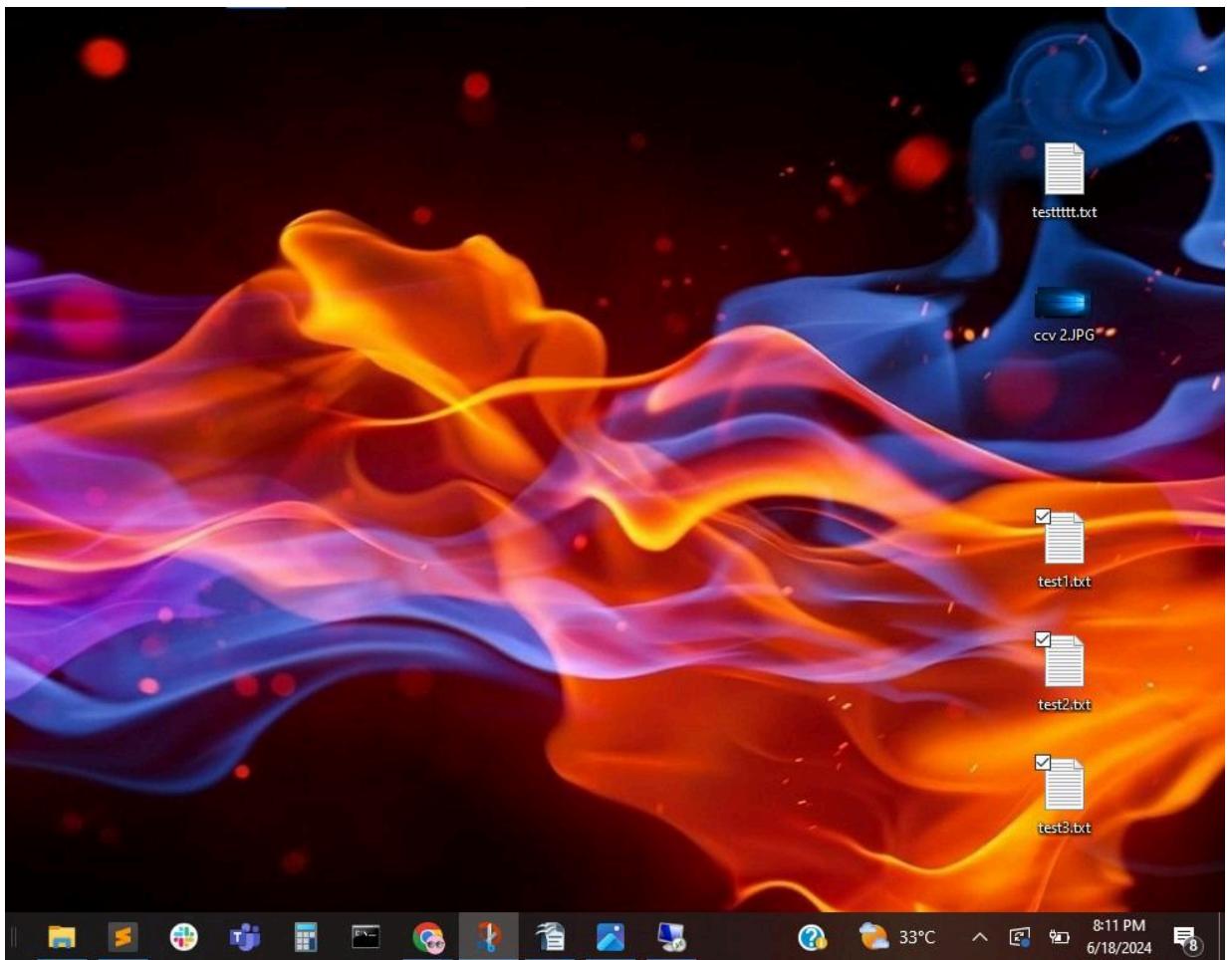
Step-2: Copy public IP address and paste it in Remote Desktop Connection.

The screenshot shows the 'Remote Desktop Connection' window. The 'Computer:' field contains the IP address '4.240.110.127'. The 'User name:' field is set to 'azureuser'. Below the fields, a message says 'You will be asked for credentials when you connect.' At the bottom, there are 'Show Options' and 'Connect' buttons.

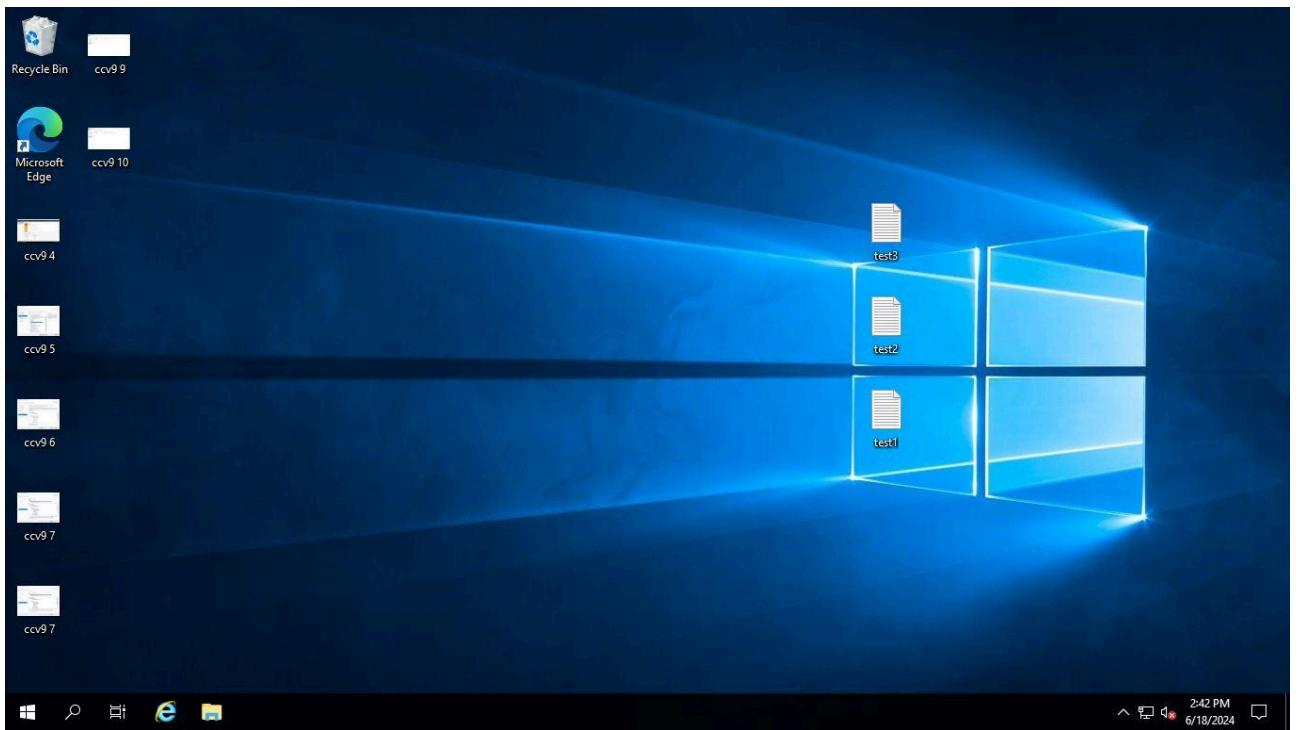
Step-3: Click on connect.



Step-4: Copy files from our local Windows and paste it in guest machine.



Output:



Create an instance in virtual machine and launch linux server through Azure portal and transfer files from local machine to guest machine.

Steps

Step-1: Create a ubuntu virtual machine using SSH as previous experiment and copy public IP address.

Microsoft Azure

Search resources, services, and docs (G/)

Home > CreateVm-canonical.0001-com-ubuntu-server-focal-2-20240617155800 | Overview >

VM1 Virtual machine

VM1

Virtual machine

Search

Connect Start Restart Stop Hibernate Capture Delete Refresh Open in mobile Feedback CLI / PS

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Connect

Connect

Bastion

Networking

Network settings

Load balancing

Application security groups

Network manager

Essentials

Resource group (move) : rg

Status : Running

Location : Central India (Zone 1)

Subscription (move) : Azure for Students

Subscription ID : 8a63247e-8b2d-4339-bebb-57ac31d219e7

Availability zone : 1

Operating system : Linux (ubuntu 20.04)

Size : Standard_D2s_v3 (2 vCPU, 3.5 GiB memory)

Public IP address : 4.240.73.166

Virtual network/subnet : VM1-vnet/default

DNS name : Not configured

Health state : -

Time created : 6/17/2024, 10:32 AM UTC

Tags (edit) : Add tags

Properties Monitoring Capabilities (7) Recommendations Tutorials

Virtual machine

Computer name : VM1

Operating system : Linux (ubuntu 20.04)

Networking

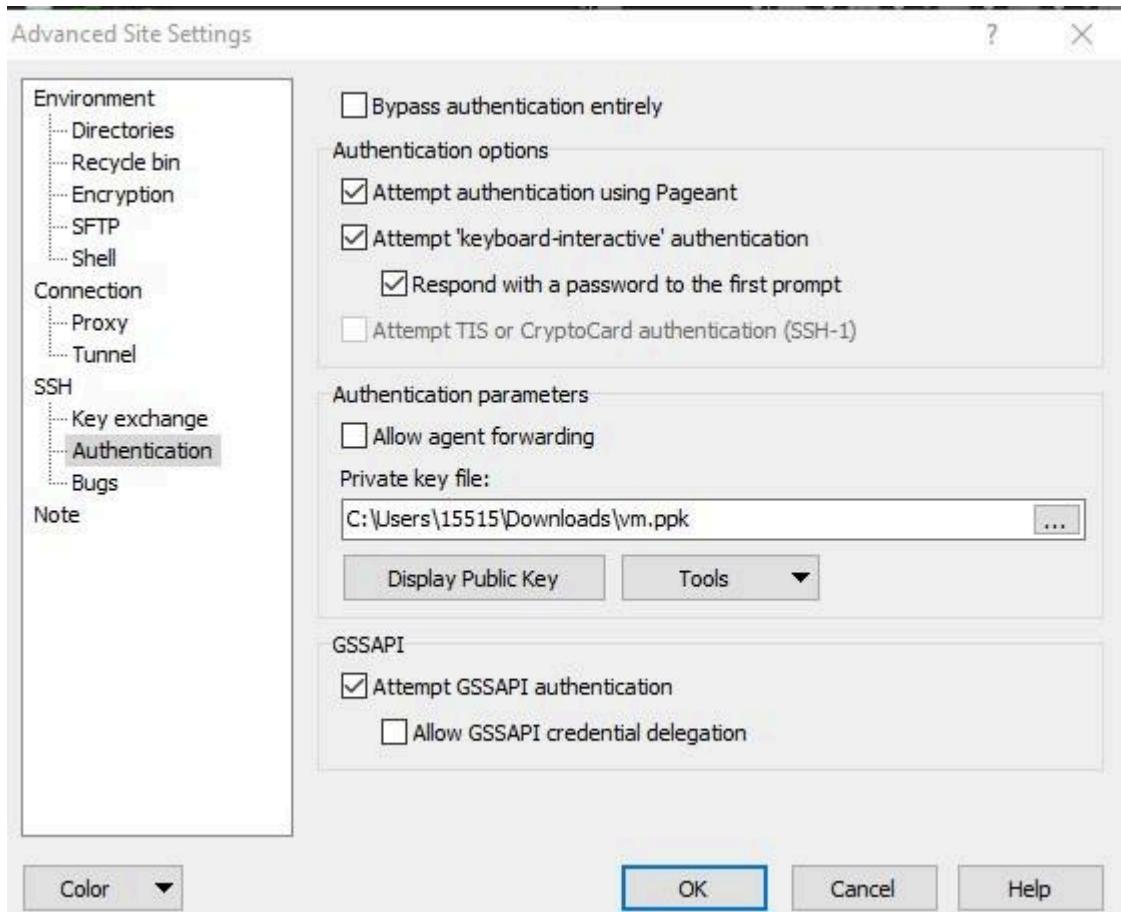
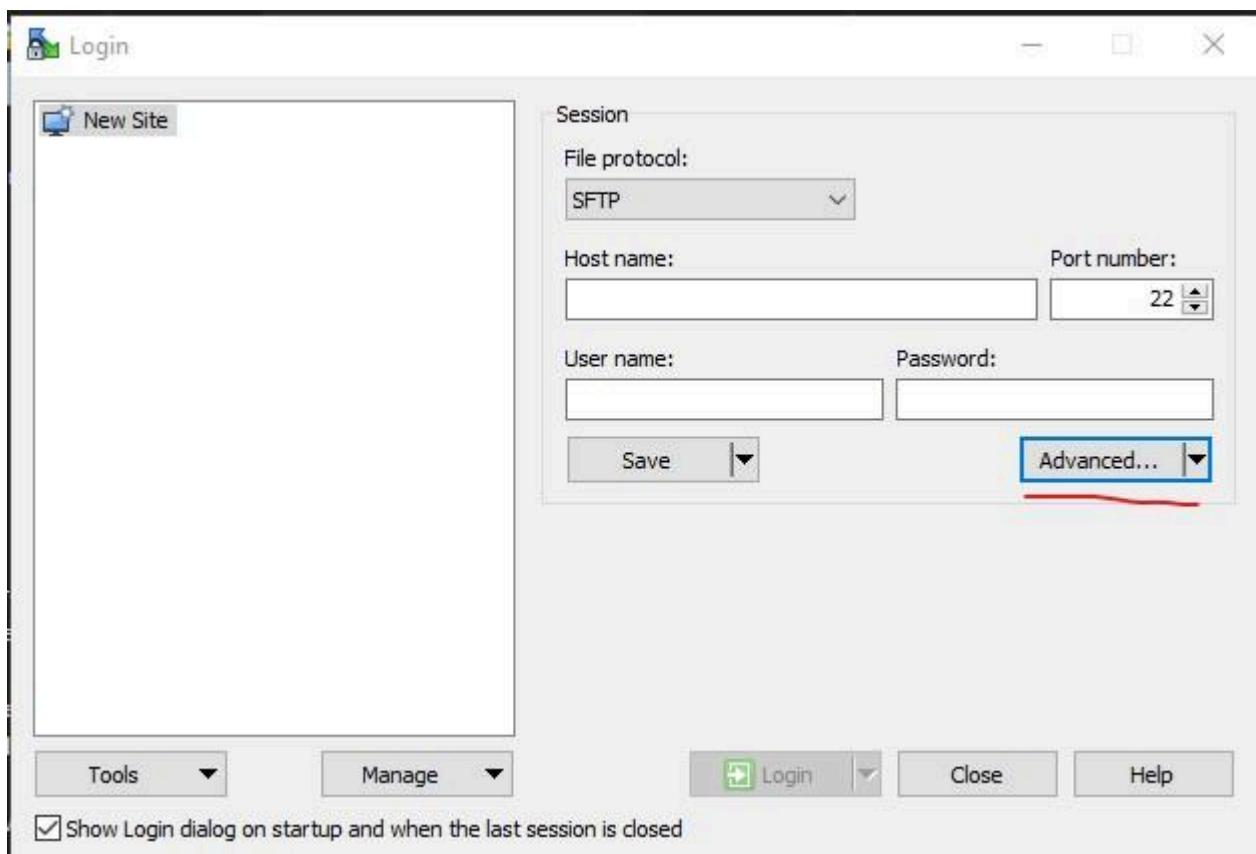
Public IP address : 4.240.73.166 (Network interface vm1824_z1)

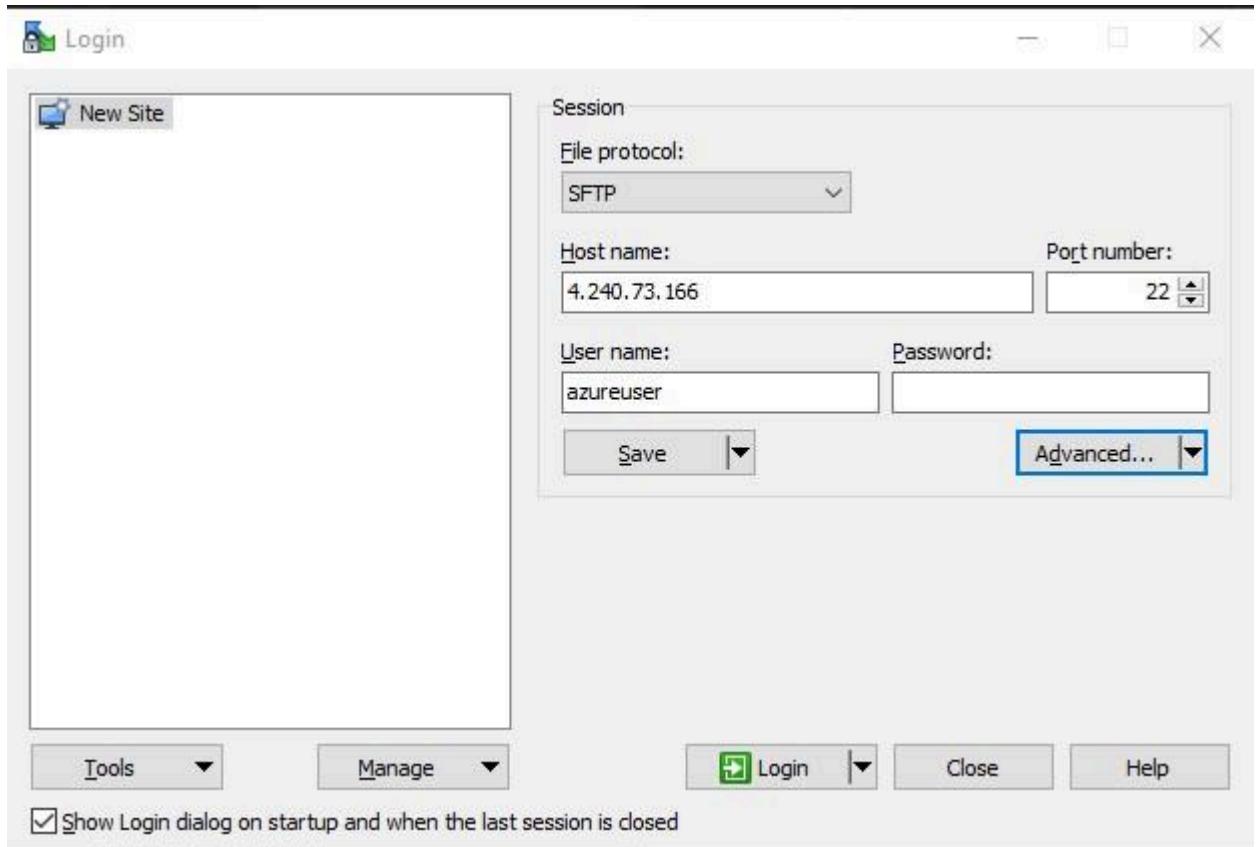
Public IP address (IPv6) : -

Step-2: Login into your ubuntu VM using PUTTY and type ls command as you can see nothing.

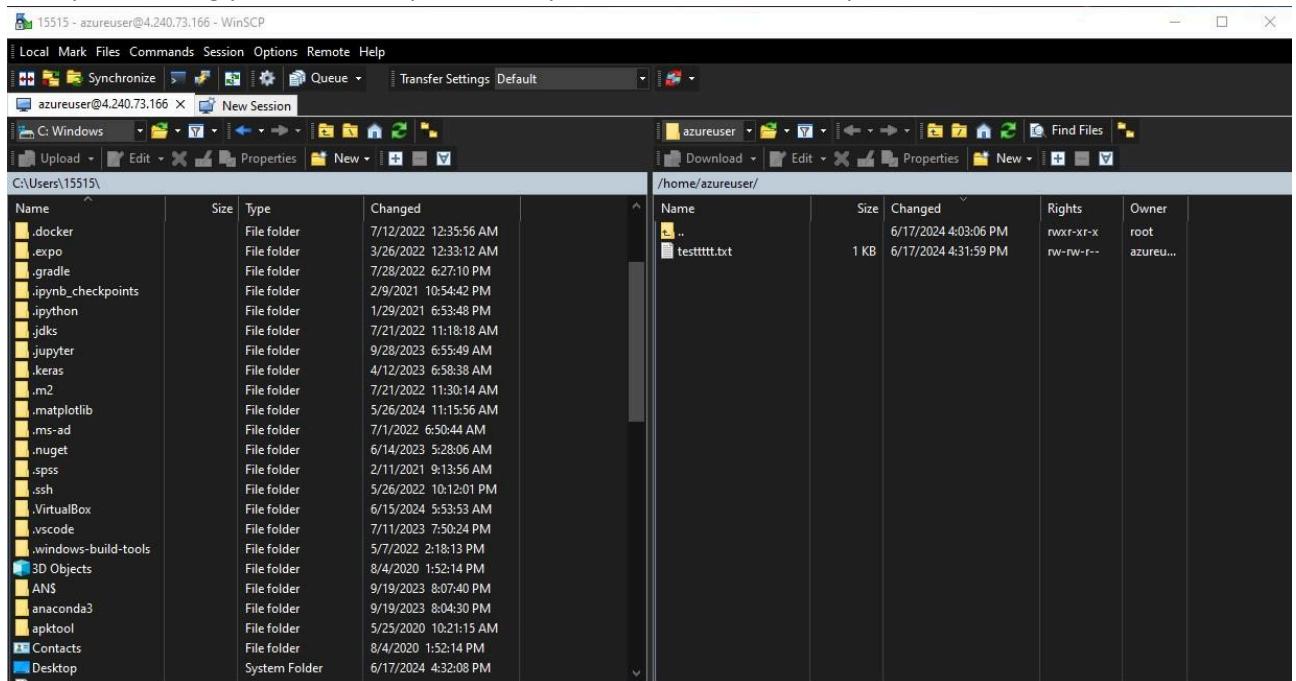
```
azureuser@VM1:~  
[?] login as: azureuser  
Authenticating with public key "imported-openssh-key"  
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)  
  
* Documentation: https://help.ubuntu.com  
* Management: https://landscape.canonical.com  
* Support: https://ubuntu.com/pro  
  
System information as of Mon Jun 17 10:34:30 UTC 2024  
  
System load: 0.17 Processes: 121  
Usage of /: 5.1% of 28.89GB Users logged in: 0  
Memory usage: 8% IPv4 address for eth0: 10.0.0.4  
Swap usage: 0%  
  
Expanded Security Maintenance for Applications is not enabled.  
  
0 updates can be applied immediately.  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
  
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.  
  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
azureuser@VM1:~$ ls  
azureuser@VM1:~$
```

Step-3: Open WinScp at right bottom you can see Advanced option->SSH>Authentication->In that drag private key file and click on ok.



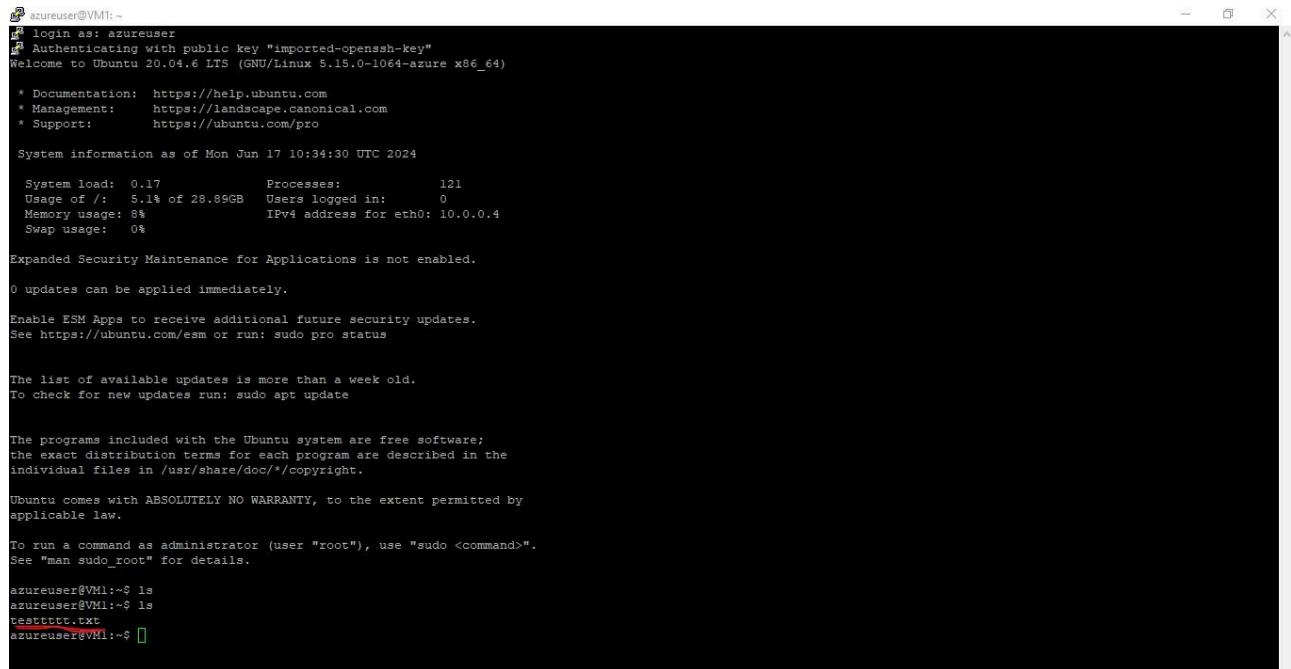


At last Login into your account using public IP address and username in WinScp.
Now, you can drag your files from your desktop to ubuntu VM in WinScp.



Step-4: Now again type ls command as you can see file inside ubuntu VM.

Output



```
azureuser@VM1: ~
[1] login as: azureuser
[2] Authenticating with public key "imported-openssh-key"
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1064-azure x86_64)

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

System information as of Mon Jun 17 10:34:30 UTC 2024

System load: 0.17      Processes:           121
Usage of /: 5.1% of 28.89GB  Users logged in: 0
Memory usage: 8%          IPv4 address for eth0: 10.0.0.4
Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

0 updates can be applied immediately.

Enable ESM Apps to receive additional future security updates.
See https://ubuntu.com/esm or run: sudo pro status

The list of available updates is more than a week old.
To check for new updates run: sudo apt update

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.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.

azureuser@VM1:~$ ls
azureuser@VM1:~$ ls
testttt.txt
azureuser@VM1:~$
```

Q6. Setup and configure Linux server as webserver in Azure portal.

Steps:

Step-1: Create a ubuntu virtual machine using SSH as previous experiment and copy public IP address.

The screenshot shows the Microsoft Azure portal interface for a virtual machine named "vm123". The main pane displays the "Essentials" section with the following details:

- Resource group: rg123
- Status: Running
- Location: Central India (Zone 1)
- Subscription: Azure for Students
- Subscription ID: 8a63247e-8b2d-4339-bebb-57ac31d219e7
- Availability zone: 1
- Operating system: Linux (ubuntu 20.04)
- Size: Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
- Public IP address: 20.244.39.245
- Virtual network/subnet: vm123-vnet/default
- DNS name: Not configured
- Health state: -
- Time created: 6/17/2024, 11:41 AM UTC

The left sidebar shows navigation links for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Bastion, Networking, Network settings, Load balancing, Application security groups, and Network manager.

Step-2: Login into your Ubuntu VM using your username and type the following commands.

```
$sudo su
```

```
$sudo apt-get update
```

After typing the two command, now install web server using the below command

```
$sudo apt-get install nginx
```

```
azureuser@VM1:~$ sudo su
root@VM1:/home/azureuser# sudo apt-get update
Get:1 http://azure.archive.ubuntu.com/ubuntu focal InRelease [265 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu focal-updates InRelease [128 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu focal-backports InRelease [128 kB]
Hit:4 http://azure.archive.ubuntu.com/ubuntu focal-security InRelease
Get:5 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 Packages [970 kB]
Get:6 http://azure.archive.ubuntu.com/ubuntu focal/main Translation-en [506 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 c-n-f Metadata [29
.5 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu focal/restricted amd64 Packages [22
.0 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu focal/restricted Translation-en [62
12 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu focal/restricted amd64 c-n-f Metad
ata [392 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu focal/universe amd64 Packages [862
8 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu focal/universe Translation-en [512
4 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu focal/universe amd64 c-n-f Metadat
a [265 kB]
Get:14 http://azure.archive.ubuntu.com/ubuntu focal/multiverse amd64 Packages [1
44 kB]
Get:15 http://azure.archive.ubuntu.com/ubuntu focal/multiverse Translation-en [1
04 kB]
Get:16 http://azure.archive.ubuntu.com/ubuntu focal/multiverse amd64 c-n-f Metad
ata [9136 B]
Get:17 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages
[3359 kB]
Get:18 http://azure.archive.ubuntu.com/ubuntu focal-updates/main Translation-en
[528 kB]
Get:19 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Met
adata [9136 B]
root@VM1:/home/azureuser#
```

```
root@VM1:~$ sudo apt-get update
Get:1 [9136 B]
Get:17 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 Packages
[3359 kB]
Get:18 http://azure.archive.ubuntu.com/ubuntu focal-updates/main Translation-en
[528 kB]
Get:19 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 c-n-f Met
adata [17.2 kB]
Get:20 http://azure.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 Pac
kages [2979 kB]
Get:21 http://azure.archive.ubuntu.com/ubuntu focal-updates/restricted Translati
on-en [417 kB]
Get:22 http://azure.archive.ubuntu.com/ubuntu focal-updates/restricted amd64 c-n
-f Metadata [552 B]
Get:23 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe amd64 Pack
ages [1194 kB]
Get:24 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe Translation
-en [287 kB]
Get:25 http://azure.archive.ubuntu.com/ubuntu focal-updates/universe amd64 c-n-f
Metadata [25.7 kB]
Get:26 http://azure.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 Pac
kages [26.2 kB]
Get:27 http://azure.archive.ubuntu.com/ubuntu focal-updates/multiverse Translati
on-en [7880 B]
Get:28 http://azure.archive.ubuntu.com/ubuntu focal-updates/multiverse amd64 c-n
-f Metadata [620 B]
Get:29 http://azure.archive.ubuntu.com/ubuntu focal-backports/main amd64 Package
s [45.7 kB]
Get:30 http://azure.archive.ubuntu.com/ubuntu focal-backports/main Translation-e
n [16.3 kB]
Get:31 http://azure.archive.ubuntu.com/ubuntu focal-backports/main amd64 c-n-f M
etadata [1420 B]
Get:32 http://azure.archive.ubuntu.com/ubuntu focal-backports/restricted amd64 c
-n-f Metadata [116 B]
Get:33 http://azure.archive.ubuntu.com/ubuntu focal-backports/universe amd64 Pac
kages [25.0 kB]
Get:34 http://azure.archive.ubuntu.com/ubuntu focal-backports/universe Translati
on-en [16.3 kB]
Get:35 http://azure.archive.ubuntu.com/ubuntu focal-backports/universe amd64 c-n
-f Metadata [880 B]
Get:36 http://azure.archive.ubuntu.com/ubuntu focal-backports/multiverse amd64 c
-n-f Metadata [116 B]
Fetched 25.3 MB in 4s (5673 kB/s)
Reading package lists... Done
root@VM1:/home/azureuser#
```

```
root@VM1:/home/azureuser# sudo apt-get install nginx
Reading package lists... Done
Building dependency tree
Reading state information... Done
The following additional packages will be installed:
  fontconfig-config fonts-dejavu-core libfontconfig1 libgd3 libjbig0 libjpeg-turbo8 libjpeg8 libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter
  libnginx-mod-mail libnginx-mod-stream libtiff5 libwebp6 libxpm4 nginx-common nginx-core
Suggested packages:
  libgd-tools fcgiwrap nginx-doc ssl-cert
The following NEW packages will be installed:
  fontconfig-config fonts-dejavu-core libfontconfig1 libgd3 libjbig0 libjpeg-turbo8 libjpeg8 libnginx-mod-http-image-filter libnginx-mod-http-xslt-filter
  libnginx-mod-mail libnginx-mod-stream libtiff5 libwebp6 libxpm4 nginx nginx-common nginx-core
0 upgraded, 17 newly installed, 0 to remove and 4 not upgraded.
Need to get 2438 kB of archives.
After this operation, 7925 kB of additional disk space will be used.
Do you want to continue? [Y/n] y
Get:1 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 fonts-dejavu-core all 2.37-1 [1041 kB]
Get:2 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 fontconfig-config all 2.13.1-2ubuntu3 [28.8 kB]
Get:3 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 libfontconfig1 amd64 2.13.1-2ubuntu3 [114 kB]
Get:4 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libjpeg-turbo8 amd64 2.0.3-0ubuntu1.20.04.3 [118 kB]
Get:5 http://azure.archive.ubuntu.com/ubuntu focal/main amd64 libjpeg8 amd64 8c-2ubuntu8 [2194 B]
Get:6 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libjbig0 amd64 2.1-3.ubuntu0.20.04.1 [27.3 kB]
Get:7 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libwebp6 amd64 0.6.1-2ubuntu0.20.04.3 [185 kB]
Get:8 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libtiff5 amd64 4.1.0+git191117-2ubuntu0.20.04.13 [164 kB]
Get:9 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libxpm4 amd64 1.3.5.12-1ubuntu0.20.04.2 [34.9 kB]
Get:10 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libgd3 amd64 2.2.5-5.2ubuntu2.1 [118 kB]
Get:11 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 nginx-common all 1.18.0-0ubuntu1.4 [37.7 kB]
Get:12 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod-http-image-filter amd64 1.18.0-0ubuntu1.4 [14.8 kB]
Get:13 http://azure.archive.ubuntu.com/ubuntu focal-updates/main amd64 libnginx-mod-http-xslt-filter amd64 1.18.0-0ubuntu1.4 [13.0 kB]
root@VM1:/home/azureuser#
```

After installing in VM, paste the public ip address in desktop browser and you can see.



Welcome to nginx!

If you see this page, the nginx web server is successfully installed and working. Further configuration is required.

For online documentation and support please refer to nginx.org.
Commercial support is available at nginx.com.

Thank you for using nginx.



Step-3: To remove following information and keep new information in that page type the following command and refresh the browser page.

```
$cd /var/www/html
```

```
$rm index.nginx-debian.html
```

```
$echo "Welcome to CSM ">index.html
```



Output



Welcome to CSM



7Q. Setup and configure Windows server as webserver in Azure portal.

Steps:

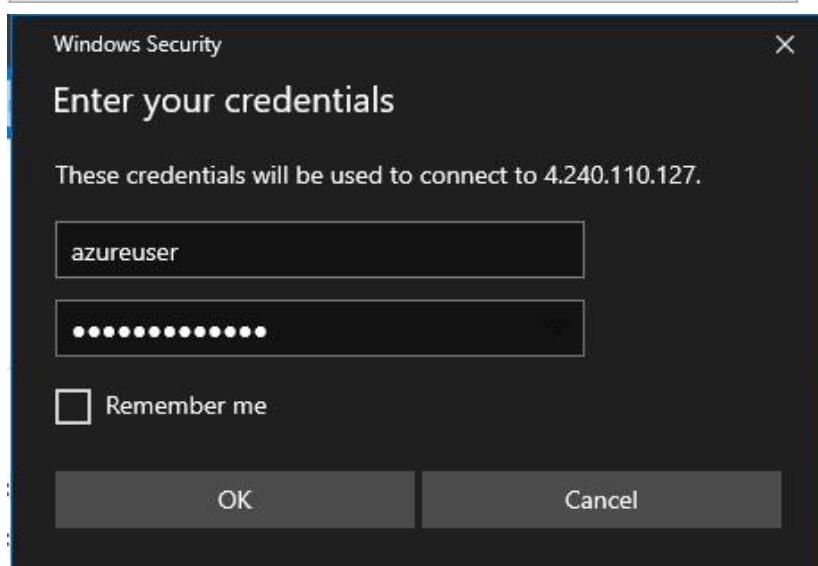
Step-1: Login to Azure and create a Virtual machine.

The screenshot shows the Microsoft Azure portal interface. The top navigation bar includes 'Microsoft Azure', a search bar, and various icons. Below the navigation bar, the main content area shows a 'VM1' virtual machine card. The card displays the following details:

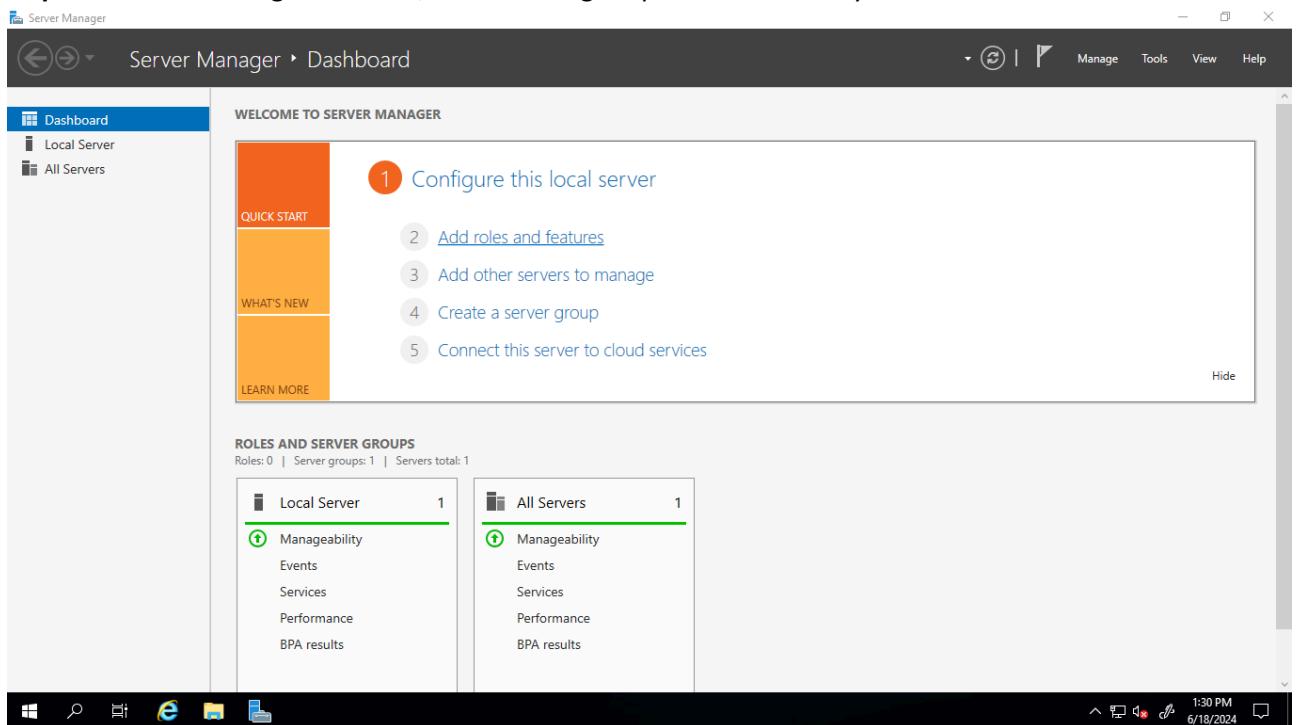
- Overview:** Resource group (move) : rg, Status : Running, Location : Central India (Zone 1), Subscription (move) : Azure for Students, Subscription ID : 8a63247e-8b2d-4339-bebb-57ac31d219e7, Availability zone : 1.
- Properties:** Computer name : VM1, Operating system : Windows (Windows Server 2019 Datacenter).
- Networking:** Public IP address : 4.240.110.127 (Network interface vm1274_z1), Public IP address (IPv6) : -.

On the left sidebar, there are sections for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect (with options for Connect and Bastion), and Windows Admin Center. The Networking section is also visible.

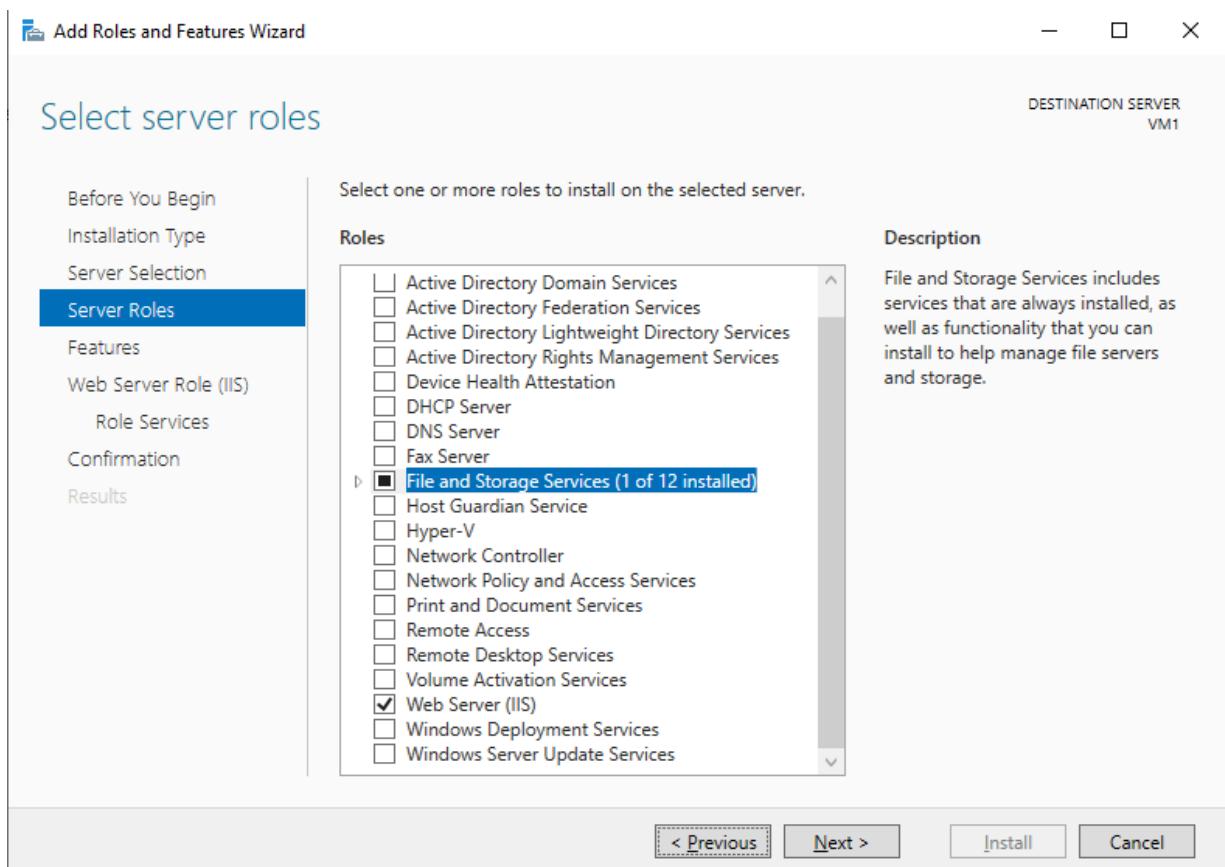
Step-2: Copy public IP address and paste it in Remote Desktop Connection.

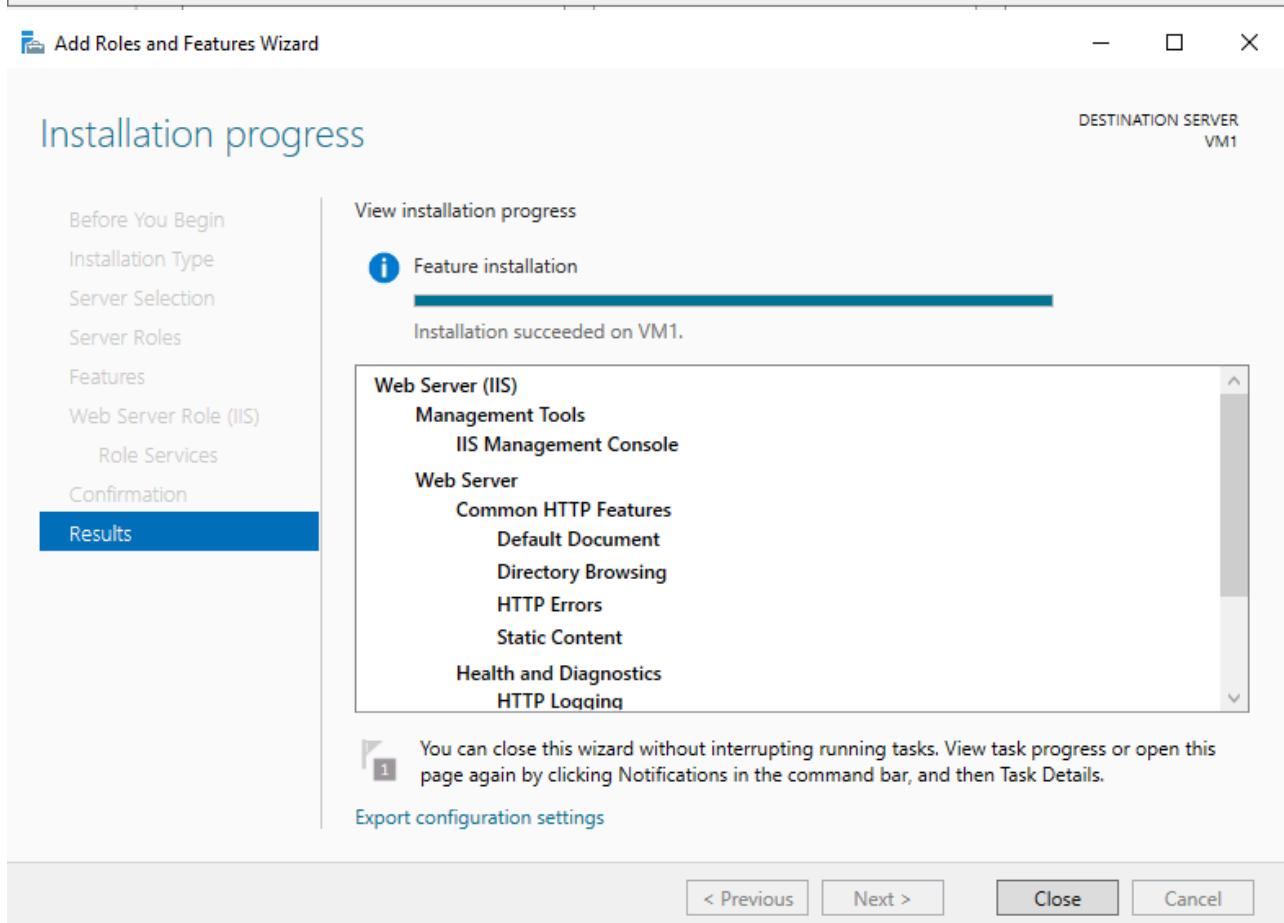
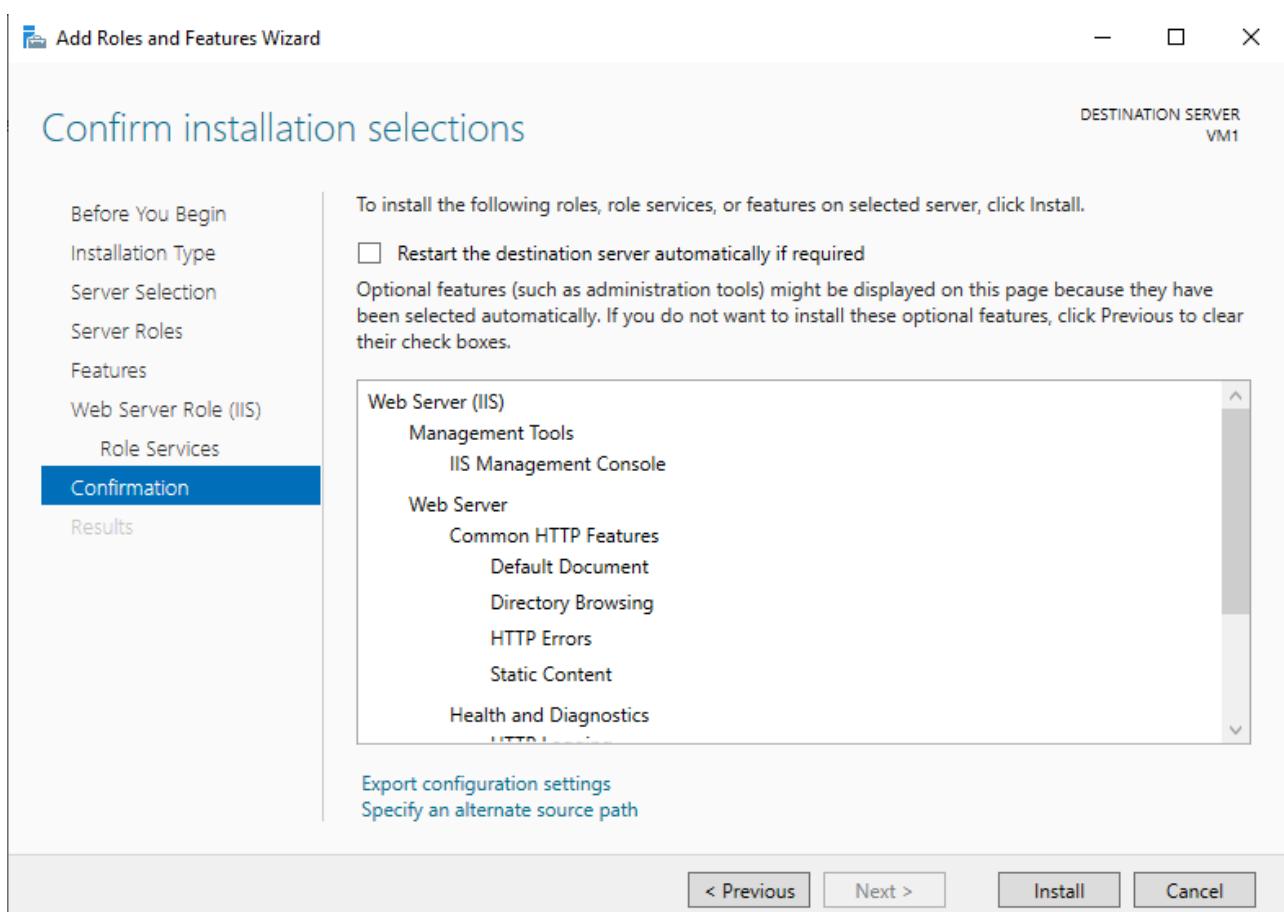


Step-3: After launching windows 7, server manager opens automatically.



1. Server Manager ->Dashboard ->Add Roles and Features -> install IIS.
2. Select a sever ->Select web server (IIS) -> next ->next ->next -> Install.

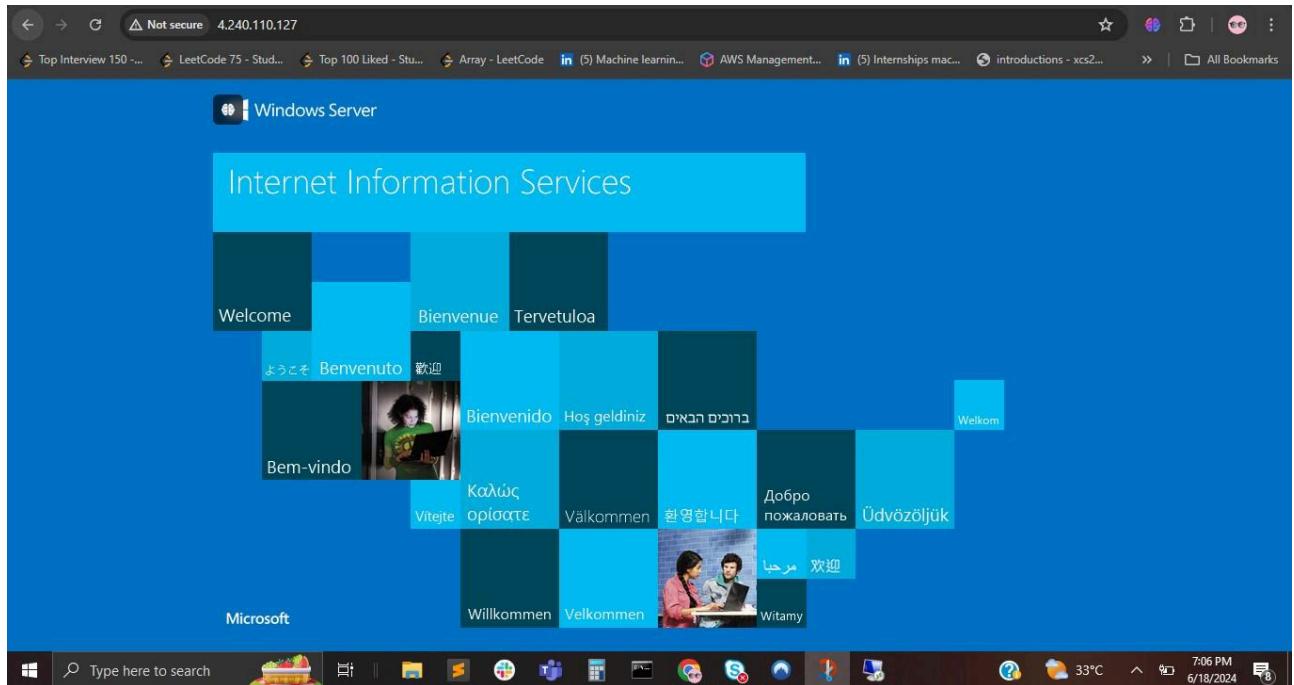




Step-4: After completion of installation, refresh the vm in azure.

Step-5: Copy public IP address and paste it in browser, we can get IIS.

Output



8Q. Implement Locks in Azure Portal

Steps:

Step-1: Create a virtual machine (ubuntu or windows).

Step-2: Stop the virtual machine before doing lock.

Microsoft Azure

VM1 Virtual machine

Search resources, services, and docs (G+/-)

Home > VM1

Essentials

- Resource group (move) : rg
- Status : Stopped (deallocated)
- Location : Central India (Zone 1)
- Subscription (move) : Azure for Students
- Subscription ID : 8a63247e-8b2d-4339-bebb-57ac31d219e7
- Availability zone : 1
- Operating system : Linux
- Configuration
- Advisor recommendations
- Properties
- Locks**
- Availability + scale
- Size

Tags (edit) : Add tags

Properties Monitoring Capabilities (7) Recommendations Tutorials

Virtual machine

- Computer name : VM1
- Operating system : Linux

Networking

- Public IP address : 4.188.72.55 (Network interface vm1330_z1)
- Public IP address (IPv6) : -

JSON View

Step-3: On the left side there will be settings and click on locks, give lock name and select lock type.

Microsoft Azure

VM1 | Locks

Search resources, services, and docs (G+/-)

Home > VM1

Add Resource group Subscription Refresh Feedback

Add lock

Lock name *	lock1	Lock type *	Read-only
Notes			
OK		Cancel	

1. Click on ok.
2. After doing lock, we cannot delete virtual machine, resource groups.

Delete VM1

VM1 Virtual machine

Essentials

- Resource group (move) : rg
- Status : Stopped
- Location : Central India
- Subscription (move) : Azure for Students
- Subscription ID : 8a63247e-8b2d-4339-bebb-57ac31d219e7
- Availability zone : 1

Associated resource type

Quantity	Delete with VM
1	<input checked="" type="checkbox"/>
1	<input type="checkbox"/>
1	<input type="checkbox"/>

I have read and understand that this virtual machine as well as any selected associated resources listed above will be deleted.

Virtual machine

Computer name : VM1
Operating system : Linux

Properties **Monitoring** **Capabilities (7)** **Recommendations** **Tutorials**

Feedback

VM1 Virtual machine

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Connect

Network settings

Load balancing

Application security groups

Network manager

Essentials

- Resource group (move) : rg
- Status : Stopped (deallocated)
- Location : Central India (Zone 1)
- Subscription (move) : Azure for Students
- Subscription ID : 8a63247e-8b2d-4339-bebb-57ac31d219e7
- Availability zone : 1

Properties

Operating system : Linux

Size : Standard D2s v4 (2 vCPUs, 8 GB memory)

Public IP address : 4.188.72.55

Virtual network/subnet : VM1-vnet/default

DNS name : Not configured

Health state : -

Time created : 6/17/2024, 9:14 AM UTC

Tags (edit) : Add tags

Virtual machine

Computer name : VM1
Operating system : Linux

Networking

Public IP address : 4.188.72.55 (Network interface vm1330_z1)
Public IP address (IPv6) : -

Step-4: After creating the lock, you need to delete it for deleting VM.

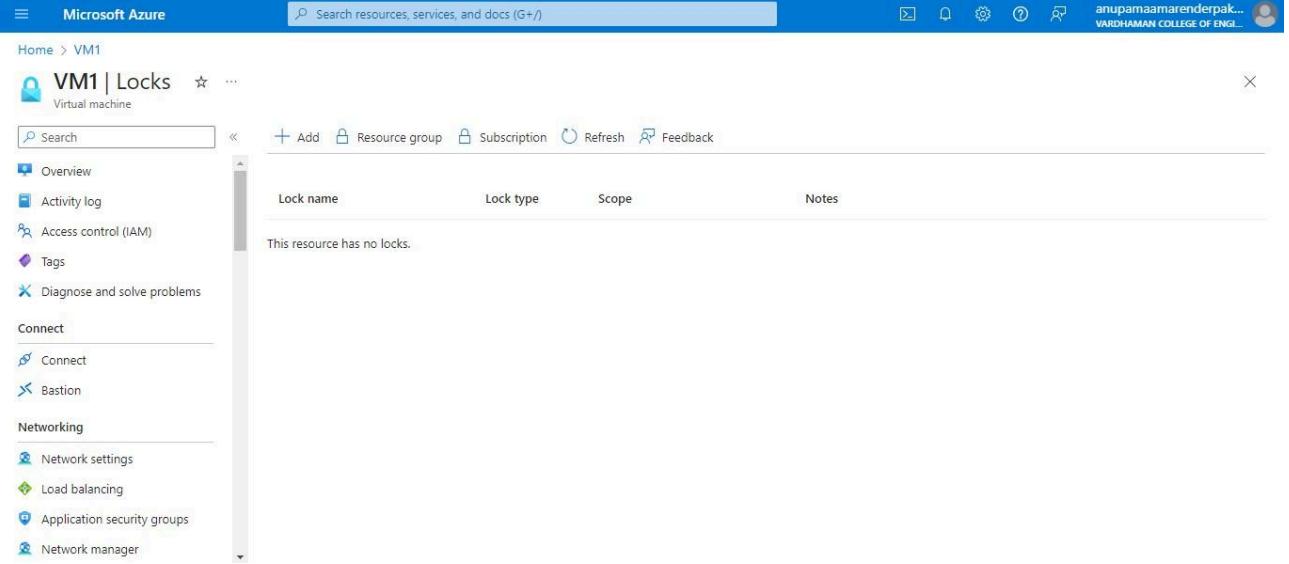
Home > VM1

VM1 | Locks

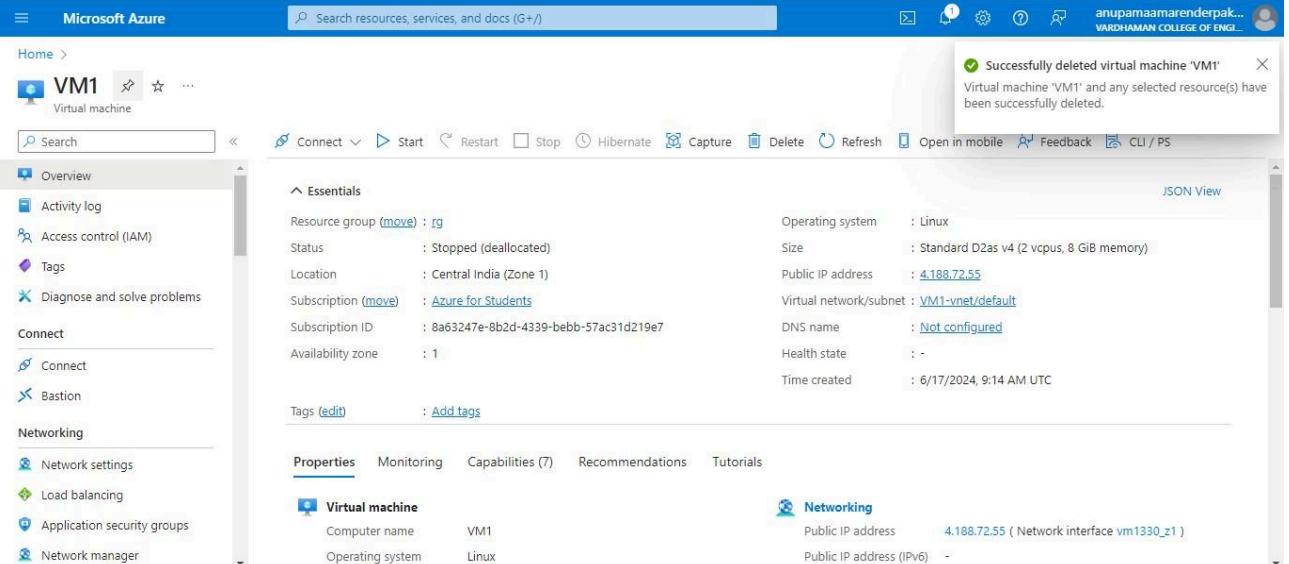
Lock name Lock type Scope Notes

lock1 Read-only VM1

Edit **Delete**



The screenshot shows the Microsoft Azure Locks page for a virtual machine named VM1. The left sidebar contains navigation links for Overview, Activity log, Access control (IAM), Tags, Diagnose and solve problems, Connect, Networking, Network settings, Load balancing, Application security groups, and Network manager. The main content area displays a table with columns: Lock name, Lock type, Scope, and Notes. A message at the top of the table states, "This resource has no locks."



The screenshot shows the Microsoft Azure VM1 details page. The left sidebar is identical to the previous screenshot. The main content area shows the VM1 configuration under the Essentials tab. On the right side, there is a success message: "Successfully deleted virtual machine 'VM1'". Below the message, it says, "Virtual machine 'VM1' and any selected resource(s) have been successfully deleted." The Properties tab is selected, displaying information about the Virtual machine and Networking.

Output

Locks have been implemented successfully and have also been deleted.

9Q. Perform Scaling in Azure Portal

Steps:

Step-1: Create a virtual machine (ubuntu or windows).

The screenshot shows the Microsoft Azure portal interface for a virtual machine named VM1. The main content area displays the VM's overview, including its resource group (rg), operating system (Linux), and location (Central India). A prominent warning message states: "VM1 virtual machine agent status is not ready. Troubleshoot the issue →". Below this, the "Essentials" section provides detailed information such as subscription details, public IP address (4.188.72.55), and DNS name (Not configured). The "Properties" tab is selected, showing tags (Add tags). Other tabs include Monitoring, Capabilities (7), Recommendations, and Tutorials.

Step-2: After deployment of VM stop VM for scaling.

The screenshot shows the Microsoft Azure portal interface for the same VM1. A modal dialog box titled "Stop this virtual machine" is displayed, asking "Do you want to stop 'VM1?'". Below the dialog, a note states: "Deallocation operations usually complete within 1-2 minutes but may take up to 90 minutes in some cases. You can leave the page and track the progress via notifications." At the bottom of the dialog are two buttons: "Yes" (highlighted in blue) and "No". The main content area shows the VM's properties again, including its standard DS1 v2 configuration and creation date (6/17/2024, 9:14 AM UTC).

Step-3: On the left side there will be settings and click on disks.

VM1 | Disks

OS disk

Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MB/s)	Encryption
VM1_OsDisk_1_cbf7527ce87947b68d3252f	Premium SSD LRS	30	120	25	SSE with PMK

Data disks

LUN	Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (MB/s)	Encryption
No data disks attached						

Buttons: Apply, Discard changes

Step-4: Click on disk name and select preferred size and save it.

VM1_OsDisk_1_cbf7527ce87947b68d3252f5f41dc80f | Size + performance

Size	IOPS	Throughput	Latency	Encryption	Throughput (MB/s)	I/O
32 GiB	P4	120	25	S	500	170
64 GiB	P6	240	50	S	3500	170
128 GiB	P10	500	100	S	3500	170
256 GiB	P15	1100	125	S	3500	170
512 GiB	P20	2300	150	S	3500	170
1024 GiB	P30	5000	200	S	-	-
2048 GiB	P40	7500	250	S	-	-
4096 GiB	P50	7500	250	S	-	-
8192 GiB	P60	16000	500	S	-	-
16384 GiB	P70	18000	750	S	-	-
32767 GiB	P80	20000	900	S	-	-

Custom disk size (GiB) *

Buttons: Save, Discard, Give feedback

VM1

VM architecture: x64

Hibernation: Disabled

Host group: -

Host: -

Proximity placement group: -

Colocation status: N/A

Capacity reservation group: -

Disk controller type: SCSI

Private IP address (IPv6): -

Virtual network/subnet: VM1-vnet/default

DNS name: Configure

Size

Size: Standard DS1 v2

vCPUs: 1

RAM: 3.5 GiB

Source image details

Source image publisher: canonical

Source image offer: 0001-com-ubuntu-server-focal

Source image plan: 20_04-lts-gen2

Disk

OS disk: VM1_OsDisk_1_cbf7527ce87947b68d3252f5f41dc80f

Encryption at host: Disabled

Availability + scaling

Availability zone (edit): 1

Availability set: -

Scale Set: -

Security type

Step-5: On the left side there will be select + performance and click on size.

The screenshot shows the Microsoft Azure portal interface for a virtual machine named VM1. The left sidebar has 'VM1 | Size' selected under 'Virtual machine'. The main content area displays a table titled 'The most used sizes by users in Azure' with the following data:

VM Size	Type	vCPUs	RAM (GiB)	Data disks	Max IOPS	Loc.
DS1_v2	General purpose	1	3.5	4	3200	7
D2s_v3	General purpose	2	8	4	3200	1
D2as_v4	General purpose	2	8	4	3200	1
DS2_v2	General purpose	2	7	8	6400	1
D4s_v3	General purpose	4	16	8	6400	3
DS3_v2	General purpose	4	14	16	12800	2

Below the table, a note states: 'Prices presented are estimates in INR that include only Azure infrastructure costs and any discounts for the subscription and location. The prices don't include any applicable software costs. Final charges will appear in your local currency in cost analysis and billing views.' A 'View Azure pricing calculator' link is also provided.

Step-6: We have scaled up the VM, we can see results in Size option.

The screenshot shows the Microsoft Azure portal interface for a virtual machine named VM1. The left sidebar has 'Overview' selected under 'Virtual machine'. The main content area displays various configuration details, including:

- Size:** Standard D2as v4, 2 vCPUs, 8 GiB RAM.
- Source image details:** Source image publisher: canonical, Source image offer: 0001-com-ubuntu-server-focal, Source image plan: 20_04-lts-gen2.
- Disk:** OS disk: VM1_OsDisk_1_cbf7527ce87947b68d3252f5f41dc80f, Encryption at host: Disabled, Azure disk encryption: Not enabled, Ephemeral OS disk: N/A.

Output

Scaling up of resources has been done successfully.

10Q. Configure/Perform Attach and Detach of data disks to Linux server in Azure datacenter

Steps:

Step-1: Create a Virtual name with VM name as "Ubuntu" with username and password.

Instance details

Virtual machine name * VM1

Region * (Asia Pacific) Central India

Availability options Availability zone

Availability zone * Zone 1

You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type Trusted launch virtual machines
Configure security features

Image * Ubuntu Server 20.04 LTS - x64 Gen2

[See all images](#) | [Configure VM generation](#)

< Previous [Next : Disks >](#) [Review + create](#) [Give feedback](#)

Authentication type SSH public key Password

Username * azureuser

Password *

Confirm password *

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * None Allow selected ports

Select inbound ports * SSH (22)

< Previous [Next : Disks >](#) [Review + create](#) [Give feedback](#)

- 1) click on "Next:Disks>".
- 2) Click on "Create & attach a new disk".

Create a virtual machine

OS disk size (Image default (30 GB))

OS disk type * (Premium SSD (locally-redundant storage))

Delete with VM (checked)

Key management (Platform-managed key)

Enable Ultra Disk compatibility (unchecked)

Data disks for VM1

You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.

LUN	Name	Size (GiB)	Disk type	Host caching	Delete with VM

[Create and attach a new disk](#) [Attach an existing disk](#)

[< Previous](#) [Next : Networking >](#) [Review + create](#) [Give feedback](#)

3) Select Storage type -----Premium SSD(LRS), Custom disk size (GB)5 ,click on OK.

Create a new disk

Create a new disk to store applications and data on your VM. Disk pricing varies based on factors including disk size, storage type, and number of transactions. [Learn more](#)

Name * (VM1_DataDisk_0)

Source type * (None (empty disk))

Size * (1024 GiB - Premium SSD LRS) [Change size](#)

Key management (Platform-managed key)

Enable shared disk (No)

Delete disk with VM (unchecked)

[OK](#) [Give feedback](#)

Select a disk size

512 GiB	P20	2300	150	3	3500	170
1024 GiB	P30	5000	200	5	-	-
2048 GiB	P40	7500	250	5	-	-
4096 GiB	P50	7500	250	5	-	-
8192 GiB	P60	16000	500	10	-	-
16384 GiB	P70	18000	750	10	-	-
32767 GiB	P80	20000	900	10	-	-

Custom disk size (GiB) * (5)

Performance tier (Select a performance tier to upgrade)

[OK](#) [Give feedback](#)

Create a new disk

Create a new disk to store applications and data on your VM. Disk pricing varies based on factors including disk size, storage type, and number of transactions. Learn more [↗](#)

Name *	VM1_DataDisk_0
Source type * ⓘ	None (empty disk)
Size * ⓘ	5 GiB Premium SSD LRS Change size
Key management ⓘ	Platform-managed key
Enable shared disk	<input type="radio"/> Yes <input checked="" type="radio"/> No
Delete disk with VM	<input checked="" type="checkbox"/>

OK [Give feedback](#)

Create a virtual machine

Key management ⓘ Platform-managed key

Enable Ultra Disk compatibility ⓘ Ultra disk is not supported for the selected VM size Standard_DS1_v2 in Central India.

Data disks for VM1

You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.

LUN	Name	Size (GiB)	Disk type	Host caching	Delete with VM ⓘ
0	VM1_DataDisk_0	5	Premium SSD LRS	Read-only	<input checked="" type="checkbox"/> Edit

[Create and attach a new disk](#) [Attach an existing disk](#)

Advanced

[< Previous](#) [Next : Networking >](#) **Review + create** [Give feedback](#)

<https://portal.azure.com/#>

Step-2: Click on "Review+ create" & click on create.

Step-3: Click on "Go to resource group".

VM1 Virtual machine

Overview

Essentials

Resource group (move) : rg	Operating system : Linux (ubuntu 20.04)
Status : Running	Size : Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
Location : Central India (Zone 1)	Public IP address : 98.70.73.145
Subscription (move) : Azure for Students	Virtual network/subnet : VM1-vnet/default
Subscription ID : 8a63247e-8b2d-4339-bebb-57ac31d219e7	DNS name : Not configured
Availability zone : 1	Health state : -
Tags (edit) : Add tags	Time created : 6/19/2024, 3:00 AM UTC

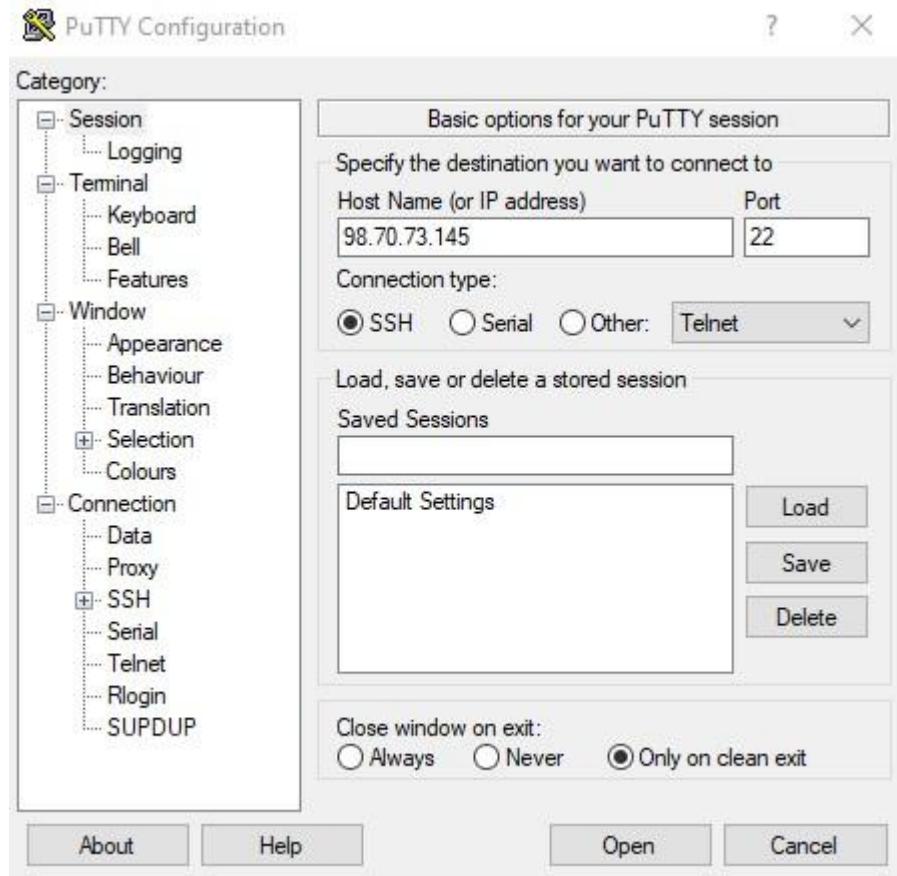
Properties Monitoring Capabilities (7) Recommendations Tutorials

Virtual machine Computer name VM1 Operating system Linux (ubuntu 20.04)

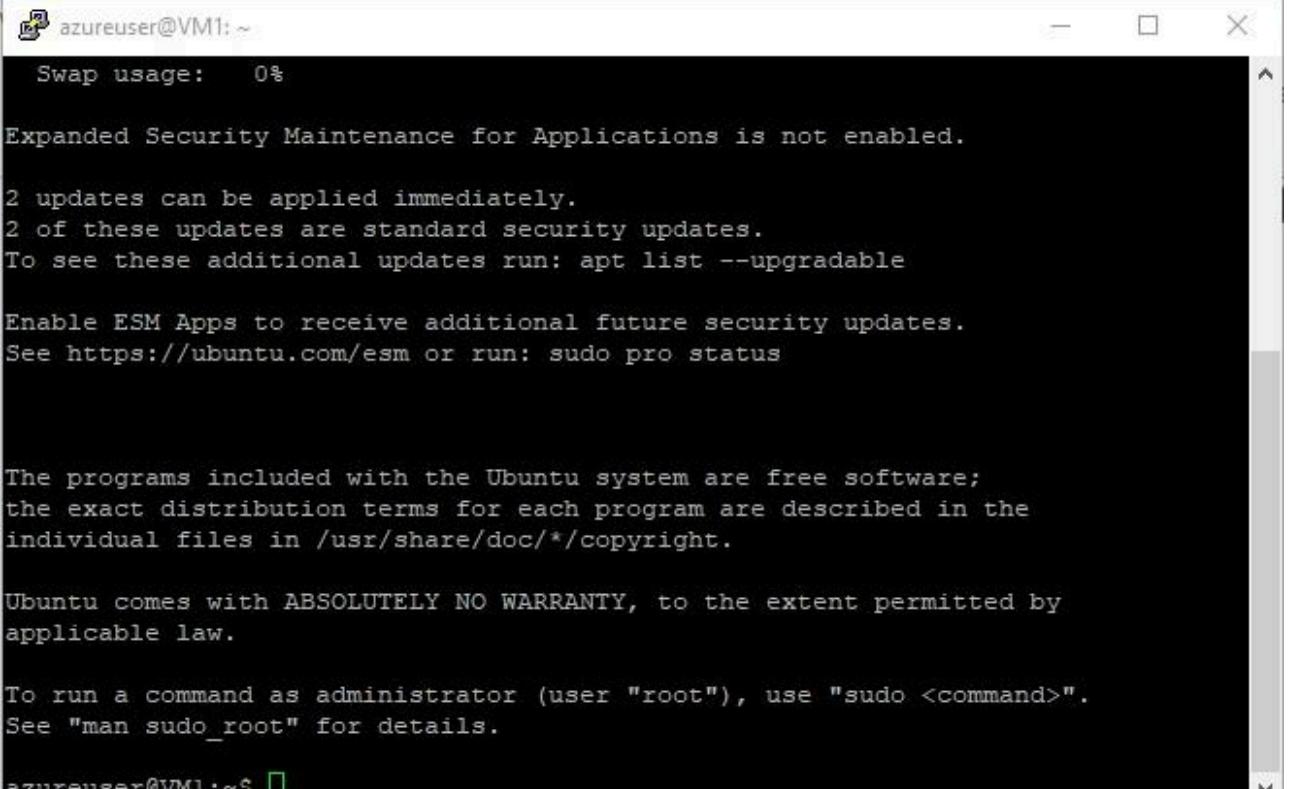
Networking Public IP address 98.70.73.145 (Network interface vm128_z1) Public IP address (IPv6) -

Step-4: Copy public IP Address.

Step-5: Open "PUTTY" & paste the IP address and click on "open".



Step-6: Login into it with username and password.



Swap usage: 0%

Expanded Security Maintenance for Applications is not enabled.

2 updates can be applied immediately.

2 of these updates are standard security updates.

To see these additional updates run: apt list --upgradable

Enable ESM Apps to receive additional future security updates.

See <https://ubuntu.com/esm> or run: sudo pro status

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.

To run a command as administrator (user "root"), use "sudo <command>". See "man sudo_root" for details.

azureuser@VM1:~\$

Step-7: Type the below commands \$ df -hT

```
$ lsblk  
$ sudo file -s/dev/sdc  
$ sudo mkfs -t ext4 /dev/sdc  
$ mkdir test  
$ sudo mount /dev/sdc/ test  
$ cd test
```

```

azureuser@VM1:~$ lsblk
NAME      MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
loop0      7:0    0   64M  1 loop /snap/core20/2318
loop1      7:1    0  91.9M  1 loop /snap/lxd/24061
loop2      7:2    0  38.8M  1 loop /snap/snapd/21759
sda        8:0    0     5G  0 disk 
sdb        8:16   0   30G  0 disk 
└─sdb1     8:17   0  29.9G 0 part /
└─sdb14    8:30   0     4M  0 part 
└─sdb15    8:31   0  106M 0 part /boot/efi
sdc        8:32   0     7G  0 disk 
└─sdcl     8:33   0     7G  0 part /mnt
sr0       11:0   1   628K 0 rom 

azureuser@VM1:~$ sudo file -s /dev/sdc
/dev/sdc: DOS/MBR boot sector MS-MBR Windows 7 english at offset 0x163 "Invalid
partition table" at offset 0x17b "Error loading operating system" at offset 0x19
a "Missing operating system", disk signature 0xeedf9d28; partition 1 : ID=0x7, s
tart-CHS (0x0,32,33), end-CHS (0x390,254,63), startsector 2048, 14675968 sectors
azureuser@VM1:~$ 

```

```

azureuser@VM1:~$ sudo mount /dev/sdc test
mount: /home/azureuser/test: /dev/sdc already mounted or mount point busy.
azureuser@VM1:~$ cd test
azureuser@VM1:~/test$ ls
azureuser@VM1:~/test$ df -hT
Filesystem      Type      Size  Used Avail Use% Mounted on
/dev/root       ext4      29G  1.5G  28G  6%  /
devtmpfs        devtmpfs  1.7G   0  1.7G  0%  /dev
tmpfs           tmpfs     1.7G   0  1.7G  0%  /dev/shm
tmpfs           tmpfs     336M  992K 335M  1%  /run
tmpfs           tmpfs     5.0M   0  5.0M  0%  /run/lock
tmpfs           tmpfs     1.7G   0  1.7G  0%  /sys/fs/cgroup
/dev/loop0       squashfs  64M   64M   0 100% /snap/core20/2318
/dev/loop1       squashfs  92M   92M   0 100% /snap/lxd/24061
/dev/loop2       squashfs  39M   39M   0 100% /snap/snapd/21759
/dev/sdb15      vfat      105M  6.1M  99M  6%  /boot/efi
/dev/sdcl        ext4      6.8G  28K  6.5G  1%  /mnt
tmpfs           tmpfs     336M   0  336M  0%  /run/user/1000
azureuser@VM1:~/test$ 

```

Step-8: Open the VM and move to disks.

The screenshot shows the Microsoft Azure portal interface for a virtual machine named VM1. The left sidebar has 'Disks' selected under 'Settings'. The main area displays the 'OS disk' section with one entry: VM1_OsDisk_1_5c607626dc384b3687ef3e8, which is a Premium SSD LRS type disk with 30 GiB size, 120 Max IOPS, 25 Max throughput, and SSE with PMK encryption. Below it is the 'Data disks' section, which shows one attached disk: VM1_DataDisk_1_5c607626dc384b3687ef3e8, a Premium SSD LRS type disk with 5 GiB size, 120 Max IOPS, 25 Max throughput, and SSE with PMK encryption. The status bar at the bottom indicates 'Read-only'.

Step-9: Click on detach and click on apply.

This screenshot shows the same Azure portal interface after the data disk has been detached. The 'Data disks' section now displays the message 'No data disks attached'. The rest of the interface remains the same, including the OS disk information and the 'Read-only' status bar.

This screenshot shows the Azure portal interface again, but this time the data disk has been reattached. The 'Data disks' section now lists the previously detached disk VM1_DataDisk_1_5c607626dc384b3687ef3e8. The rest of the interface, including the OS disk and the 'Read-only' status bar, remains consistent with the previous screenshots.

Output

Data disks have been attached and detached successfully.

11Q. Configure/Perform Attach and Detach of data disks to Windows server in Azure datacenter

Step-1: Create a Virtual name with VM name as "Windows" with username and password

Microsoft Azure

Search resources, services, and docs (G+/)

anupamaamarenderpakk...
VARDHAMAN COLLEGE OF ENGL...

Home > Create a resource >

Create a virtual machine ...

Resource group (NEW) rg2

Virtual machine name * vm

Region * (Asia Pacific) Central India

Availability options Availability zone

Availability zone * Zone 1

You can now select multiple zones. Selecting multiple zones will create one VM per zone. [Learn more](#)

Security type Trusted launch virtual machines

Configure security features

Image * Windows Server 2019 Datacenter - x64 Gen2

< Previous Next : Disks > Review + create Give feedback

Microsoft Azure

Search resources, services, and docs (G+/)

anupamaamarenderpakk...
VARDHAMAN COLLEGE OF ENGL...

Home > Create a resource >

Create a virtual machine ...

Administrator account

Username * azureuser

Password *

Confirm password *

Inbound port rules

Select which virtual machine network ports are accessible from the public internet. You can specify more limited or granular network access on the Networking tab.

Public inbound ports * None Allow selected ports

Select inbound ports * RDP (3389)

< Previous Next : Disks > Review + create Give feedback

1)click on "Next:Disk>"

OS disk size (127 GiB)

OS disk type * Premium SSD (locally-redundant storage)

Delete with VM (checked)

Key management Platform-managed key

Enable Ultra Disk compatibility (unchecked)

Data disks for vm

You can add and configure additional data disks for your virtual machine or attach existing disks. This VM also comes with a temporary disk.

LUN	Name	Size (GiB)	Disk type	Host caching	Delete with VM
	Create and attach a new disk				
	Attach an existing disk				

< Previous Next : Networking > Review + create Give feedback

2) Click on "Create & attach a new disk"

Create a new disk to store applications and data on your VM. Disk pricing varies based on factors including disk size, storage type, and number of transactions. [Learn more](#)

Name *	vm_DataDisk_0
Source type *	None (empty disk)
Size *	1024 GiB Premium SSD LRS Change size
Key management	Platform-managed key
Enable shared disk	<input type="radio"/> Yes <input checked="" type="radio"/> No
Delete disk with VM	<input type="checkbox"/>

OK Give feedback

3) click on “change size”

4)select OS Disk Size-10GB.Enable “Delete with VM”

The screenshot shows the 'Select a disk size' step in the Azure portal. It displays a table of disk sizes with their corresponding performance metrics (P4 to P80) and prices (3500 to 170). A 'Custom disk size (GiB)*' input field is set to 10, with a green checkmark indicating it's valid. An 'OK' button is visible at the bottom left.

Size	Performance	Price
32 GiB	P4	120
64 GiB	P6	240
128 GiB	P10	500
256 GiB	P15	1100
512 GiB	P20	2300
1024 GiB	P30	5000
2048 GiB	P40	7500
4096 GiB	P50	7500
8192 GiB	P60	16000
16384 GiB	P70	18000
32767 GiB	P80	20000

Custom disk size (GiB)* ⓘ
10 ✓

OK Give feedback

The screenshot shows the 'Create a new disk' step in the Azure portal. It includes fields for Name (vm_DataDisk_0), Source type (None (empty disk)), Size (10 GiB, Premium SSD LRS), Key management (Platform-managed key), and checkboxes for Enable shared disk (No selected) and Delete disk with VM (checked). An 'OK' button is visible at the bottom left.

Create a new disk to store applications and data on your VM. Disk pricing varies based on factors including disk size, storage type, and number of transactions. [Learn more ⓘ](#)

Name * vm_DataDisk_0

Source type * ⓘ None (empty disk)

Size * ⓘ 10 GiB
Premium SSD LRS
[Change size](#)

Key management ⓘ Platform-managed key

Enable shared disk Yes No

Delete disk with VM

OK Give feedback

5) Select

Source type -----None(empty disk), Size -----1024GB, Key manager Platform managed key,

Enable shared disk NO and finally click on OK

Step-2: Click on "Review+create" & click on create

Step-3: Click on "Go to resource group"

Step-4: Copy public IP Address

Essentials

- Resource group (move) : rg2
- Status : Running
- Location : Central India (Zone 1)
- Subscription (move) : Azure for Students
- Subscription ID : 8a63247e-8b2d-4339-bebb-57ac31d219e7
- Availability zone : 1
- Operating system : Windows (Windows Server 2019 Datacenter)
- Size : Standard DS1 v2 (1 vcpu, 3.5 GiB memory)
- Public IP address : 20.244.32.253
- Virtual network/subnet : vm-vnet/default
- DNS name : Not configured
- Health state : -
- Time created : 6/19/2024, 5:23 AM UTC

Tags (edit) : Add tags

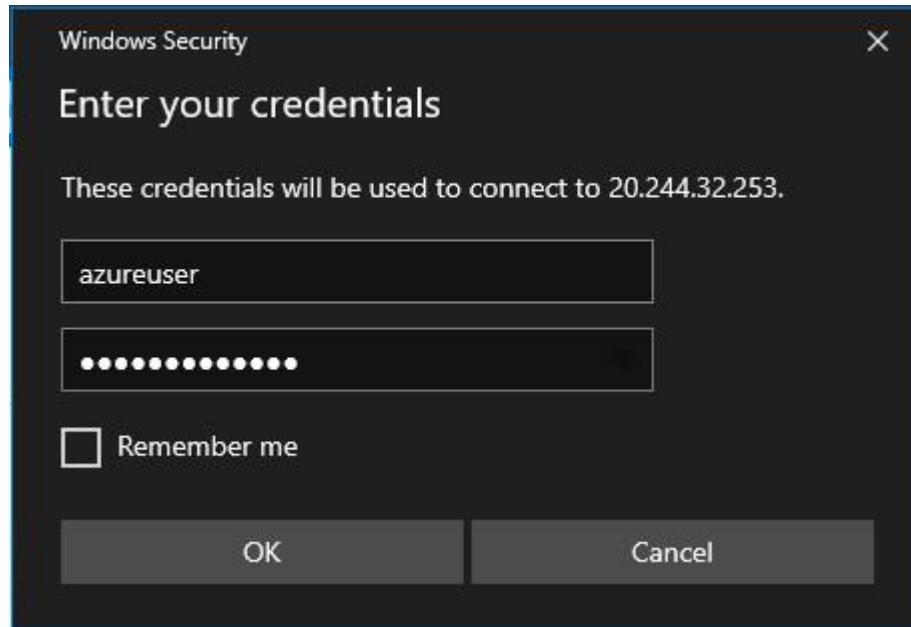
Properties Monitoring Capabilities (8) Recommendations Tutorials

Virtual machine		Networking	
Computer name	vm	Public IP address	20.244.32.253 (Network interface vm00_z1)
Operating system	Windows (Windows Server 2019 Datacenter)	Public IP address (IPv6)	-

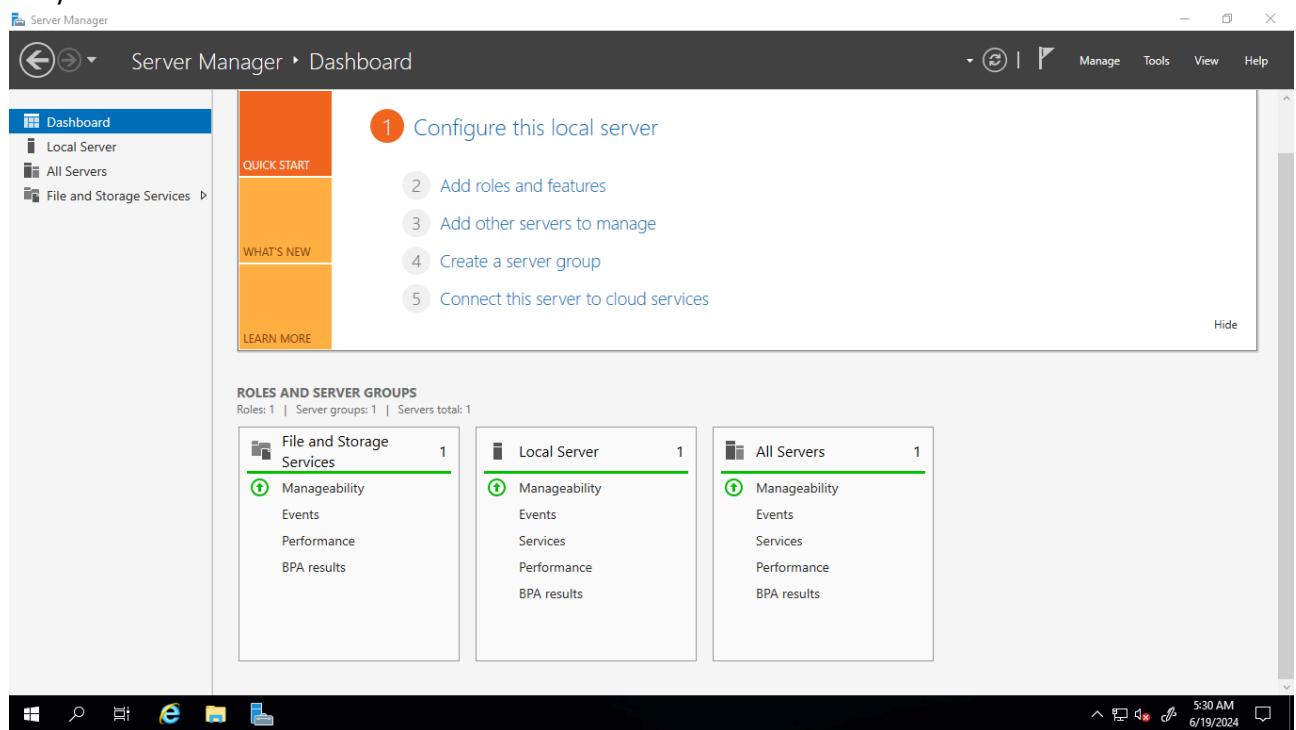
Step-5: Open “remote Disk Connection” & paste the IP address and connect



Step-6: Login Into it with given username and password



Step-7: after entering the credentials then click “yes” you will be getting a windows data disk account in system



Step-8: open “VM”, on left side go to disks

OS disk

Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (...)	Encryption
vm_disk1_a86a624399c543698f872193a08c	Premium SSD LRS	127	500	100	SSE with PMK

Data disks

LUN	Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (...)	Encryption
0	vm_DataDisk_0	Premium SSD LRS	10	120	25	SSE with PMK

Step-9: the disk you created at right corner you will be getting a detach

OS disk

Storage type	Size (GiB)	Max IOPS	Max throughput (...)	Encryption	Host caching
Premium SSD LRS	127	500	100	SSE with PMK	Read/write

Data disks

LUN	Disk name	Storage type	Size (GiB)	Max IOPS	Max throughput (...)	Encryption
						No data disks attached

Step-10: By clicking on detach the connection will be removed and no data disk are present

The screenshot shows the Microsoft Azure Disks blade for a virtual machine named 'vm'. The left sidebar lists various management options like Connect, Bastion, Windows Admin Center, Networking, and Settings, with 'Disks' selected. The main area displays a table for the 'Swap OS disk' operation, showing one entry: 'vm_disk1_a86a624399c543698f872193a08k' (Premium SSD LRS, 127 GiB, 500 Max IOPS, 100 Max throughput, SSE with PMK encryption). Below this, a section for 'Data disks' shows a message: 'Showing 0 of 0 attached data disks'. There are buttons for 'Create and attach a new disk' and 'Attach existing disks'. At the bottom are 'Apply' and 'Discard changes' buttons.

Output

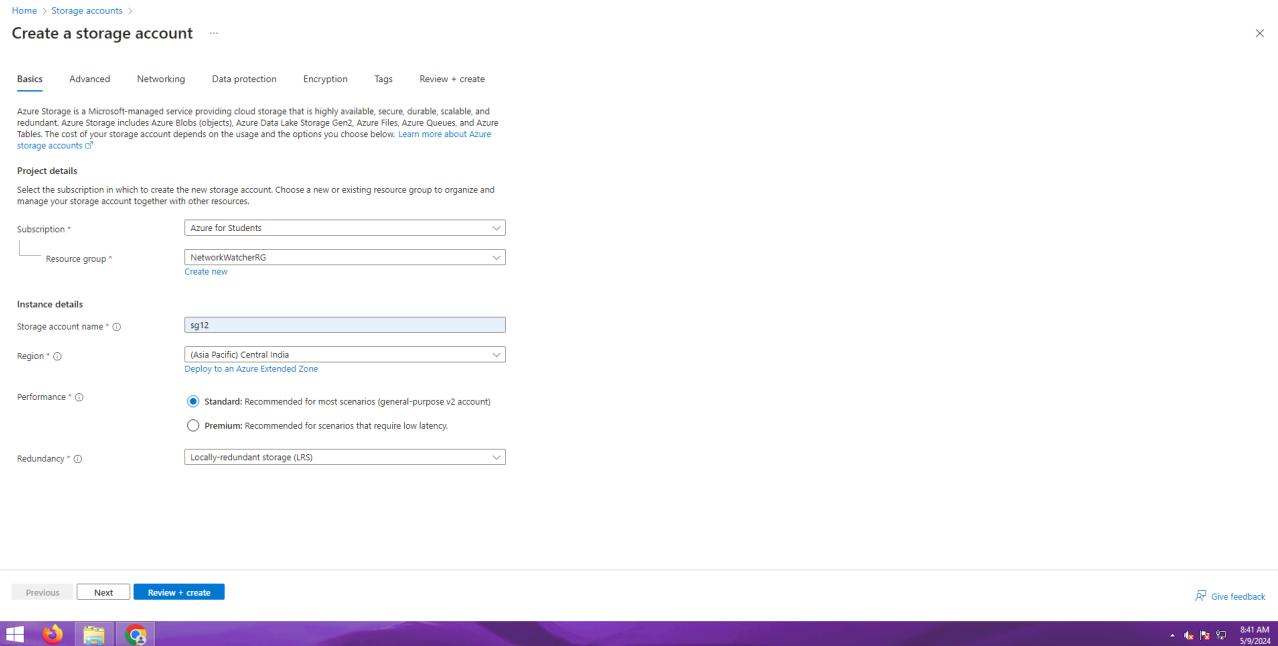
Data disks have been attached and detached successfully.

Q12. Configure/Create Azure Storage Account,Container, and Upload/Delete Objects in it

Steps :

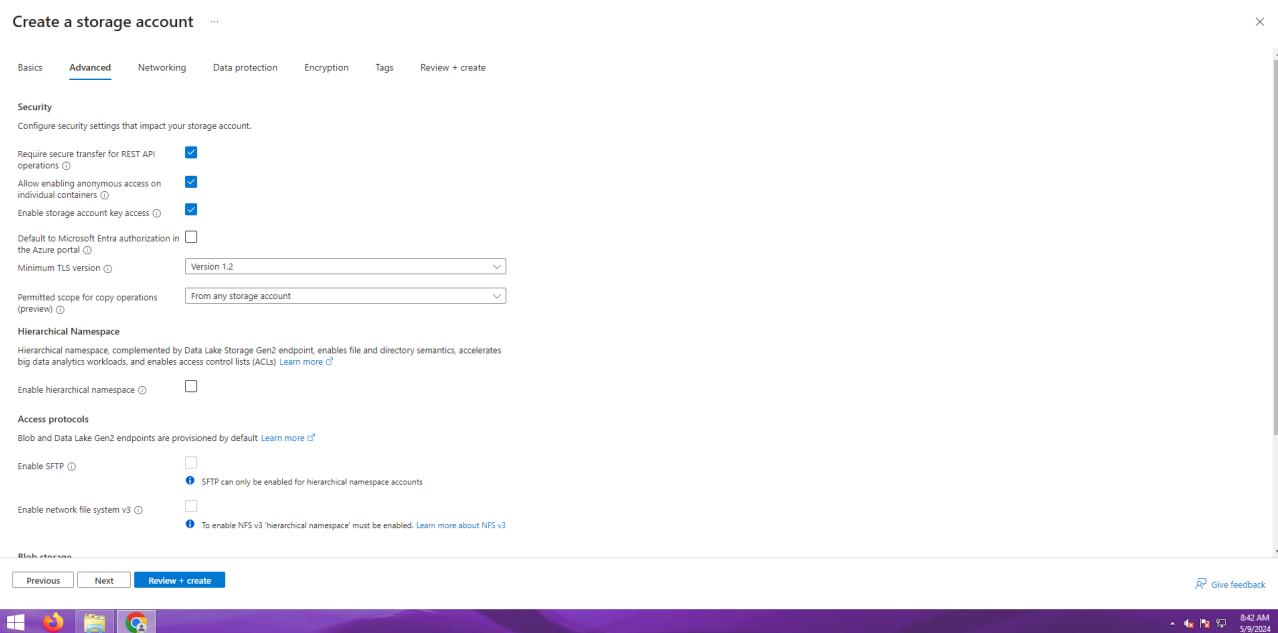
Step-1: Login to Azure account and create a storage account.

Step-2: Giving a resource name, storage account name and changing region to (Asia Pacific) South India and change redundancy to LRS(Local redundant storage).



Step-3: Click Review + Create .

Step-4: Now go to “ Advanced “ option and choose “ Allow enabling anonymous access on individual containers ”.Click on Review + Create .



- Step-5:** After completion of deployment, click on “ Go to resources ”.
- Step-6:** Click on container and “ + container ” and give a name to create and set anonymous access level to “ Blob ”.

New container X

Name * ✓

Anonymous access level (i) ▼

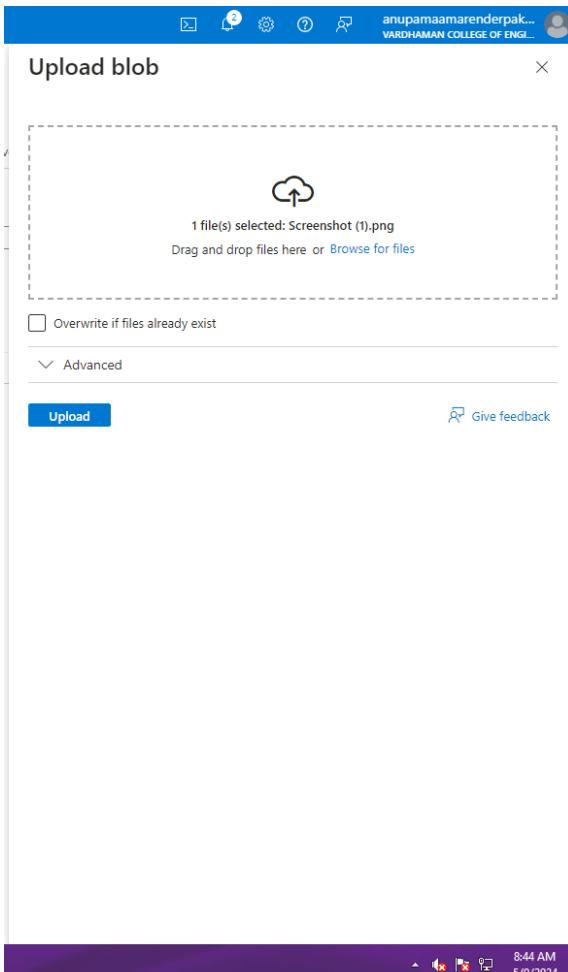
⚠ Blobs within the container can be read by anonymous request, but container data is not available. Anonymous clients cannot enumerate the blobs within the container.

▼ Advanced

Create Give feedback ↗

▲ 🔍 🗑️ ⌂ 8:44 AM 5/9/2024

Step-7: Open named container and click on upload and upload a file.



Name	Status	Retention (days)	Modified	Access tier	Archive status	Blob type	Size	Lease state
Screenshot (1).png	Current version	-	5/9/2024, 2:15:12 PM	Hot (Inferred)	Not yet archived	Block blob	150 KiB	Available



Step-8: Open the file and copy the URL and paste it in browser.

Screenshot (1).png

Overview

Properties

URL: https://sg12.blob.core.windows.net/container/Screenshot%20(1).png

Last Modified: 5/9/2024, 2:15:12 PM
Creation Time: 5/9/2024, 2:15:12 PM
Version ID: -
Type: Block blob
Size: 150 KB
Access Tier: Hot (Inferred)
Access Tier Last Modified: N/A
Archive Status: -
Rehydrate Priority: -
Server Encrypted: true
ETAG: 0x8DC700456EB3930
Version-Level Immutability Policy: Disabled
Cache-Control:
Content-Type: image/png
Content-MD5: hI8gkYQPtpAsW+MgT12Q...
Content-Encoding:
Content-Language:
Content-Disposition:
Lease Status: Unlocked
Lease State: Available
Lease Duration: -
COPY Status: -
COPY Completion Time: -

Undelete

Screenshot (1).png - Microsoft Edge | Screenshot (1).png (1920x1080) | +

sg12.blob.core.windows.net/container/Screenshot%20(1).png

Flowchart

Shapes

```

graph TD
    DA[Data Acquisition] --> PP[PreProcessing]
    PP --> FE[Feature Extraction]
    FE --> OD[Object Detection]
    OD --> V[Visualization]
    V --> AAR[Analysing and Reporting]
    
```

Containers

Import Data

Flowchart

Selected objects

9:45 AM 5/9/2024

8:45 AM 5/9/2024

9:25 AM 5/9/2023

8:45 AM 5/9/2024

Step-9: Do this step 7 by changing access level to “ Private ”.



Step-10: Click on delete to delete a file along with Blobs.

Name	Status	Retention (days)	Modified	Access tier	Archive status	Blob type	Size	Lease state
Screenshot (1).png	Deleted	6	5/9/2024, 2:15:12 PM	Hot (inferred)		Block blob	150 Kib	



The screenshot shows the Microsoft Azure Storage Container Overview page. At the top, there's a navigation bar with links for Home, sg12, and Overview. Below that is a search bar and a toolbar with various actions like Upload, Refresh, Delete, Change tier, Acquire lease, Break lease, View snapshots, Create snapshot, and Give feedback. On the left, there's a sidebar with sections for Overview, Diagnose and solve problems, Access Control (IAM), Settings, Shared access tokens, Access policy, Properties, and Metadata. The main content area has a heading "Authentication method: Access key (Switch to Microsoft Entra user account)" and a location "Location: container". It includes a search bar for blobs by prefix and a "Show deleted blobs" toggle. A table header is shown with columns: Name, Modified, Access tier, Archive status, Blob type, Size, and Lease state. Below the table, it says "No results". The bottom of the screen shows the Windows taskbar with icons for Start, File Explorer, Task View, Edge browser, and File Explorer again, along with system status icons.

Output

Uploaded object (picture) in container and deleted it successfully.

Q13. Perform File sSharing in Azure Portal

Steps:

Step-1: Login to Azure Account and Create a Storage account.

The screenshot shows the 'Create a storage account' page in the Microsoft Azure portal. The 'Subscription' dropdown is set to 'Azure for Students'. The 'Resource group' dropdown is set to 'NetworkWatcherRG'. The 'Storage account name' field contains 'sgacct123'. The 'Region' dropdown is set to '(Asia Pacific) Central India'. Under 'Performance', the 'Standard' radio button is selected. Under 'Redundancy', the 'Locally-redundant storage (LRS)' option is chosen. At the bottom, there are 'Previous', 'Next', and 'Review + create' buttons, with 'Review + create' being highlighted in blue. The URL in the address bar is https://portal.azure.com/#.

Step-2: Click on “Review + Create”.

The screenshot shows the 'sgacct123_1718779341288 | Overview' page in the Microsoft Azure portal. The main message is 'Your deployment is complete'. Deployment details are listed: Deployment name: sgacct123_1718779341288, Start time: 6/19/2024, 12:12:35 PM, Subscription: Azure for Students, Resource group: NetworkWatcherRG. There are buttons for 'Delete', 'Cancel', 'Redeploy', 'Download', and 'Refresh'. On the left, there's a navigation menu with 'Overview', 'Inputs', 'Outputs', and 'Template'. Below the main area, there are links for 'Give feedback' and 'Tell us about your experience with deployment'. On the right, there are promotional sections for 'Cost Management', 'Microsoft Defender for Cloud', and 'Free Microsoft tutorials'.

Step-3: Click on “Goto resources”. And click on “File Shares” in Disk Storage.

Microsoft Azure

Search resources, services, and docs (G+ /)

anupamaamarenderp...
VARDHAMAN COLLEGE OF ENGI...

Home > sgacct123

sgacct123 | File shares

Storage account

+ File share Refresh Give feedback

File share settings

Identity-based access: Not configured Default share-level permissions: Disabled Soft delete: 7 days Maximum capacity: 100 TiB

Security: Maximum compatibility

Search file shares by prefix (case-sensitive)

Show deleted shares

Name	Modified	Tier	Quota
You don't have any file shares yet. Click '+ File share' to get started.			

Overview Activity log Tags Diagnose and solve problems Access Control (IAM) Data migration Events Storage browser Storage Mover

Data storage

Containers **File shares** Queues

Step-4: Click on “+ File Share” and give Access Tier : TransactionOptimized.

Microsoft Azure

Search resources, services, and docs (G+ /)

anupamaamarenderp...
VARDHAMAN COLLEGE OF ENGI...

Home > sgacct123_1718779341288 | Overview > sgacct123 | File shares >

New file share

Basics Backup Review + create

Name * fileshare

Access tier * Transaction optimized

Performance

Maximum IO/s ⓘ 20000

Maximum capacity 100 TiB

To use the SMB protocol with this share, check if you can communicate over port 445. These scripts for [Windows clients](#)

Review + create < Previous Next : Backup > Give feedback

<https://portal.azure.com/#>

Step-5: Click on upload and upload some files and click on upload.

The screenshot shows the Microsoft Azure portal interface. The main title bar says "Upload files - Microsoft Azure". Below it, the URL is "portal.azure.com/#view/Microsoft_Azure_FileStorage/FileShareMenuBlade/~/overview/id/%2Fsubscriptions%2F74f6aa57-82cd-4319-8b36-eda6216f8a25%2Fresourcegroups%2Fstorage...". The search bar at the top has the placeholder "Search resources, services, and docs (G+)". On the left, there's a sidebar with "Microsoft Azure" branding and links for "Overview", "Diagnose and solve problems", "Access Control (IAM)", "Browse", "Operations", "Solutions", and "Backup". The main content area is titled "Upload files" and shows a file named "forest fire abstract.pdf" selected for upload. There's a checkbox for "Overwrite if files already exist" and a blue "Upload" button. The Azure status bar at the bottom shows "ENG IN", "05-06-2024", and the time "19:26".

Step-6: Click on connect and select Drive letter.

The screenshot shows the Microsoft Azure portal interface. The main title bar says "Microsoft Azure". Below it, the URL is "Home > sgacct123 | File shares > fileshare". The search bar at the top has the placeholder "Search resources, services, and docs (G+)". On the left, there's a sidebar with "Microsoft Azure" branding and links for "Overview", "Diagnose and solve problems", "Access Control (IAM)", "Browse", "Operations", "Solutions", and "Backup". The main content area is titled "Connect" and shows the "Windows" tab selected. It provides instructions to connect from Windows using PowerShell commands. A "Drive letter" dropdown is set to "U". Under "Authentication method", there are two options: "Active Directory or Microsoft Entra" (radio button) and "Storage account key" (radio button). A note at the bottom states: "Connecting to a share using the storage account key is only appropriate for admin". The Azure status bar at the bottom shows "anupamaamarenderp...", "VARDHAMAN COLLEGE OF ENGL...", "ENG IN", "05-06-2024", and the time "19:26".

The screenshot shows the Microsoft Azure portal interface. On the left, there's a sidebar with navigation links like Home, sgacct123, Overview, Diagnose and solve problems, Access Control (IAM), Browse, Operations, Snapshots, and Backup. The main area displays a file share named 'fileshare' (SMB File share). A 'Connect' button is visible, and a tooltip provides the PowerShell command to mount the share:

```
$connectTestResult = Test-NetConnection -ComputerName sgacct123.file.core.windows.net -Port 445
if ($connectTestResult.TcpTestSucceeded) {
    # Save the password so the drive will persist on reboot
    cmd.exe /C "cmdkey /add: \"sgacct123.file.core.windows.net\" /user: \"localhost\sgacct123\" /pass: \"uV7KiSwWYgsA7qVCx+SdYp+zqWVMggR9ijyzL3hctJWtdf+yEZUsIHbL8rBMTvRh5BkBiBPzlo+EAStrXM8Q==\""
    # Mount the drive
    New-PSDrive -Name Z -PSProvider FileSystem -Root "\\sgacct123.file.core.windows.net\fileshare" -Persist
} else {
    Write-Error -Message "Unable to reach the Azure storage account via port 445. Check to make sure your organization or ISP is not blocking port 445, or use Azure P2S VPN, Azure S2S VPN, or Express Route to tunnel SMB traffic over a different port."
}
```

Step-7: Open Windows PowerShell and paste Script.

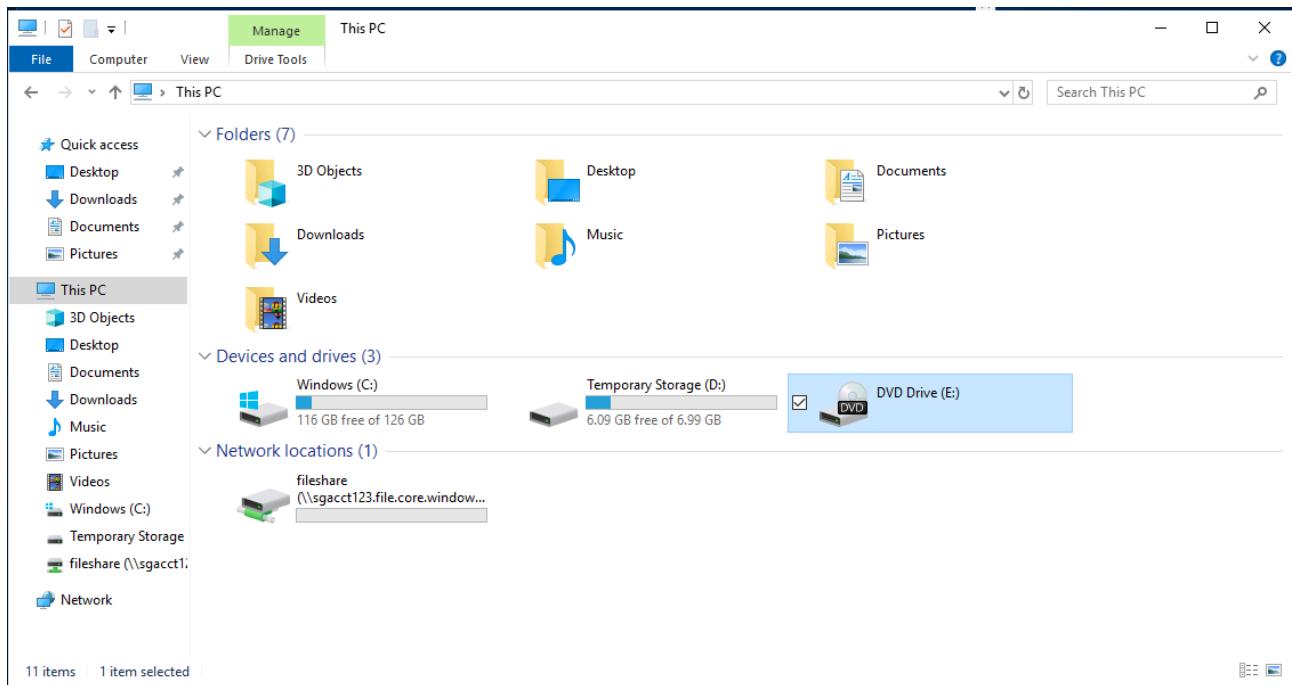
The screenshot shows an Administrator: Windows PowerShell window. The command executed was the same one shown in the tooltip of the previous screenshot. The output shows the credential was added successfully and lists the mounted drive Z:

```
PS C:\Users\azureuser> $connectTestResult = Test-NetConnection -ComputerName sgacct123.file.core.windows.net -Port 445
PS C:\Users\azureuser> if ($connectTestResult.TcpTestSucceeded) {
>>     # Save the password so the drive will persist on reboot
>>     cmd.exe /C "cmdkey /add: \"sgacct123.file.core.windows.net\" /user: \"localhost\sgacct123\" /pass: \"uV7KiSwWYgsA7qVCx+SdYp+zqWVMggR9ijyzL3hctJWtdf+yEZUsIHbL8rBMTvRh5BkBiBPzlo+EAStrXM8Q==\""
>>     # Mount the drive
>>     New-PSDrive -Name Z -PSProvider FileSystem -Root "\\sgacct123.file.core.windows.net\fileshare" -Persist
>> } else {
>>     Write-Error -Message "Unable to reach the Azure storage account via port 445. Check to make sure your organization or ISP is not blocking port 445, or use Azure P2S VPN, Azure S2S VPN, or Express Route to tunnel SMB traffic over a different port."
>> }

CMDKEY: Credential added successfully.

Name      Used (GB)    Free (GB) Provider      Root          CurrentLocation
----      -----      -----      -----      \\
sgacct123.file.core.windows.net...      Z      0.00      102400.00 FileSystem      \\sgacct123.file.core.windows.net\fileshare
```

Step-8: Now open file explorer we can see our uploaded files.



Output

