

Name - **SAUNDARYA**
Registered Email - 1806516@kiit.ac.in
Topic - Microsoft Azure Cloud Computing (June-July '20)

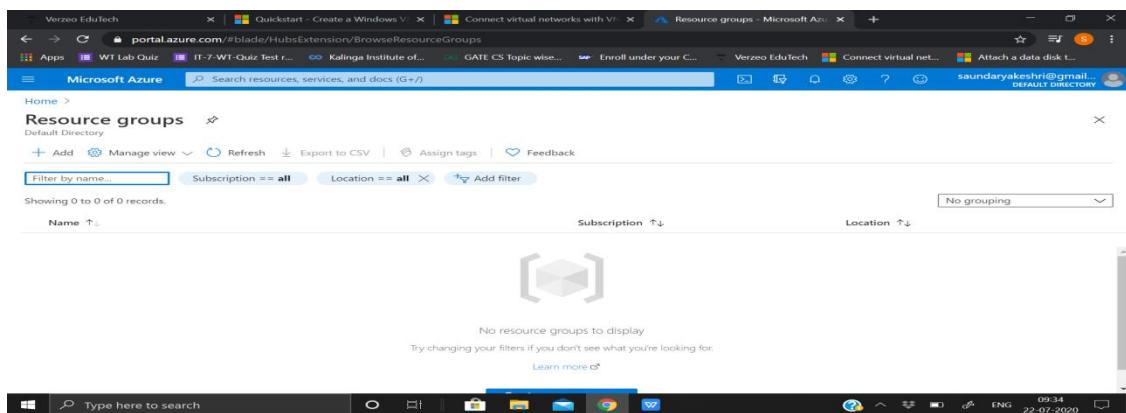
Under guidance of - **Mr. Rajdeep Das Sir (Verzeo)**

Minor Project 01

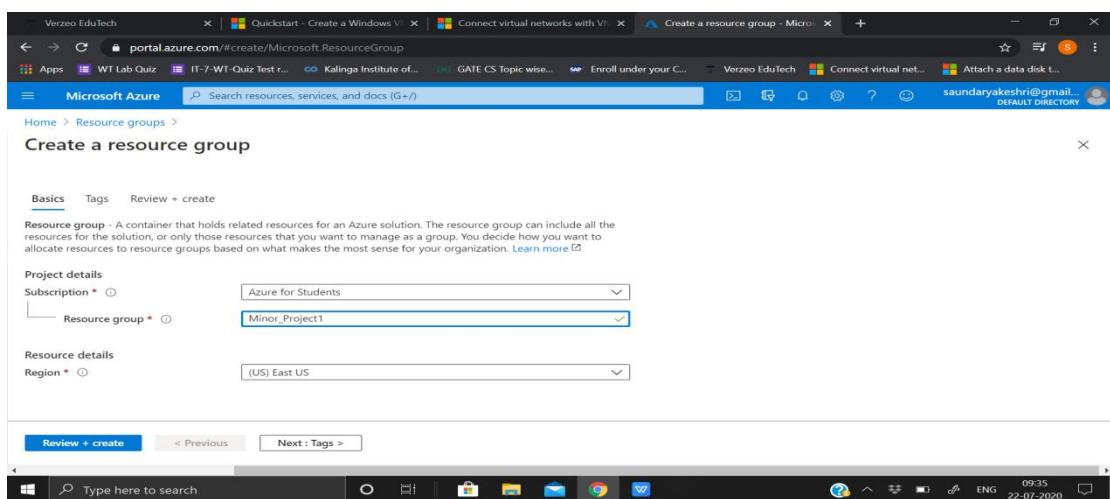
- Creating a Resource Group

➤ Resource group are like folders which contain all resources (Virtual Networks , Virtual Machines etc)
----- It is a container that holds related resources for an Azure solution. The resources group can include all the resources for the solution, or only those resources that you want to manage as a group. You decide how you want to allocate resources to resource group based on what makes the most sense for your organization.

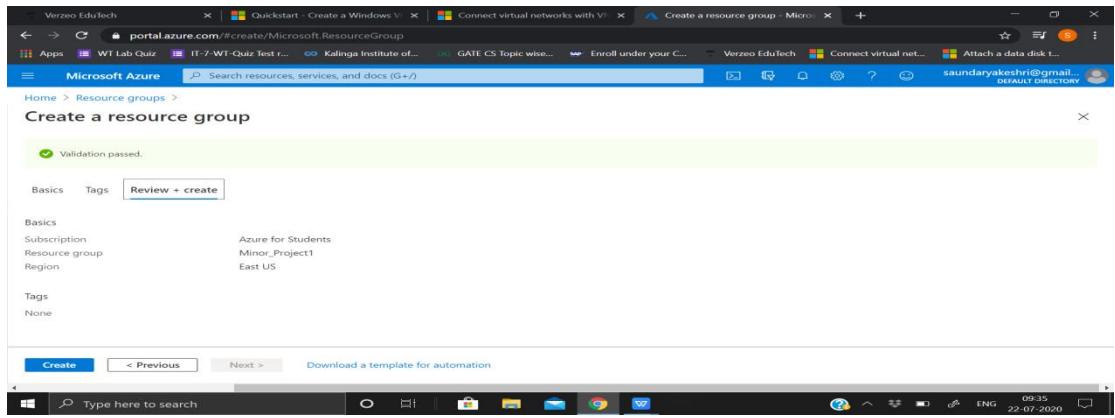
- How to create Resource group:
- 1.Sign in to the Azure portal at <https://portal.azure.com>
 - 2.From the All services blade,search for and select **Resource Group**,and then click+Add.



3.Fill the required details such as - Resource Group name , Region.

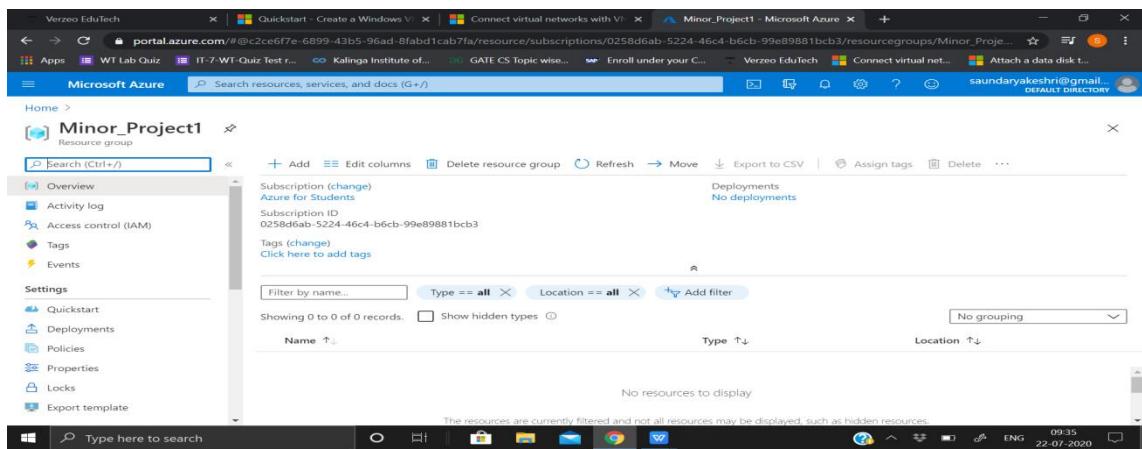


4. Click the **Review + create** button



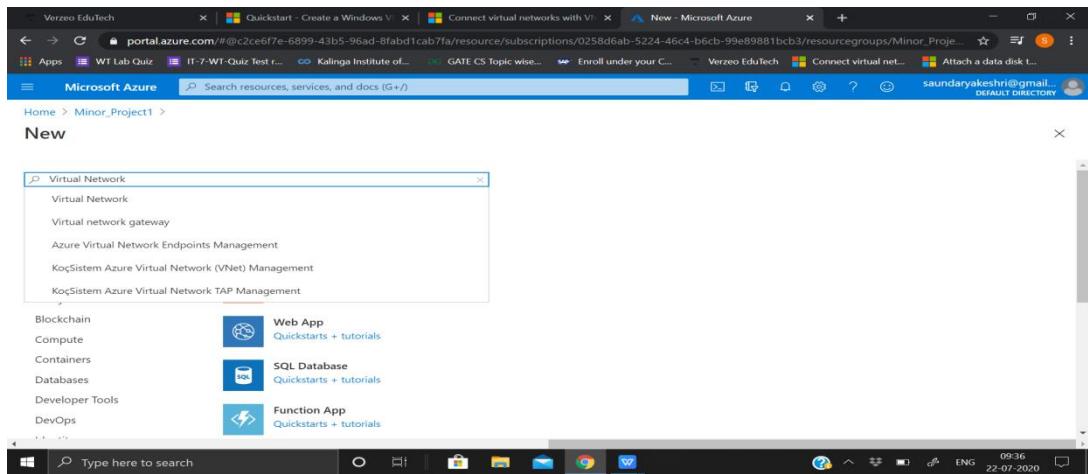
5. After the **Validation is passed** click on **Create**

6. The Resource group named as **Minor_Project1** is created.

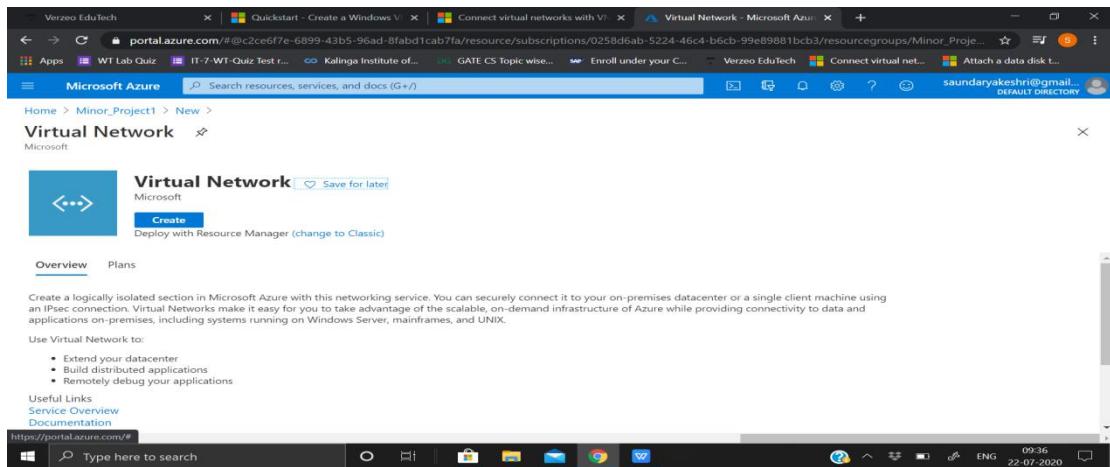


- Creating 2 VNets each containing 2 Subnets

1. From the created Resource group(**Minor_Project1**) click on **+Add**, search for and select Virtual networks.

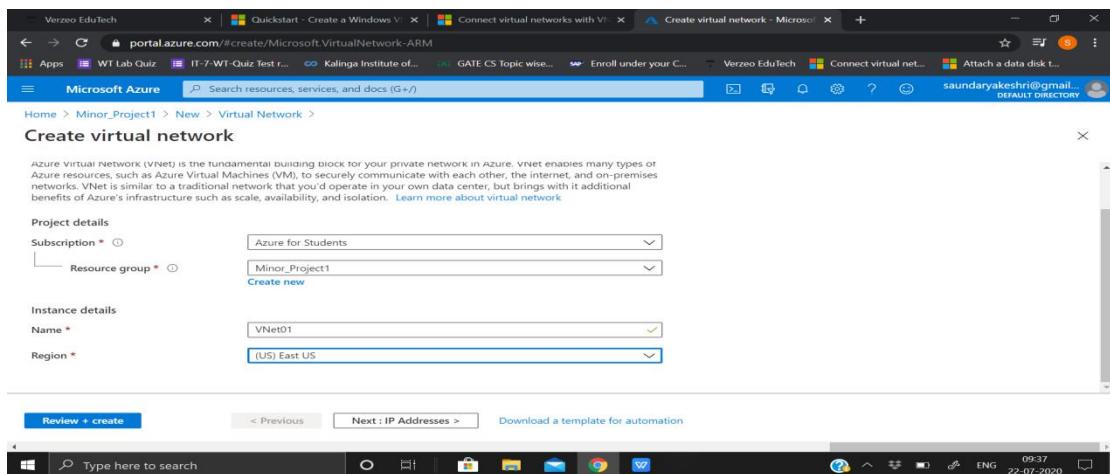


2. And then click on Create.

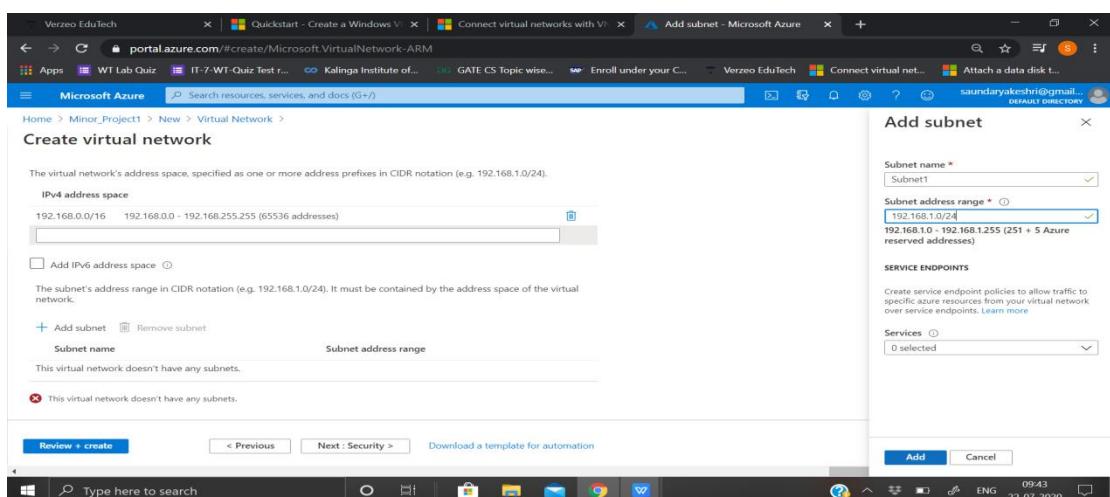


3. We name the first VNet as - **VNet1** with a reserved CIDR block of **192.168.0.0/16** containing 2 subnets

- a. **Subnet1**, using **192.168.1.0/24** as its CIDR block.
- b. **Subnet2**, using **192.168.2.0/24** as its CIDR block.



4. Click on Next: IP Addresses



The screenshot shows the 'Add subnet' step in the 'Create virtual network' wizard. The subnet name is set to 'Subnet1' and the address range is '192.168.1.0/24'. The 'Review + create' button is visible at the bottom.

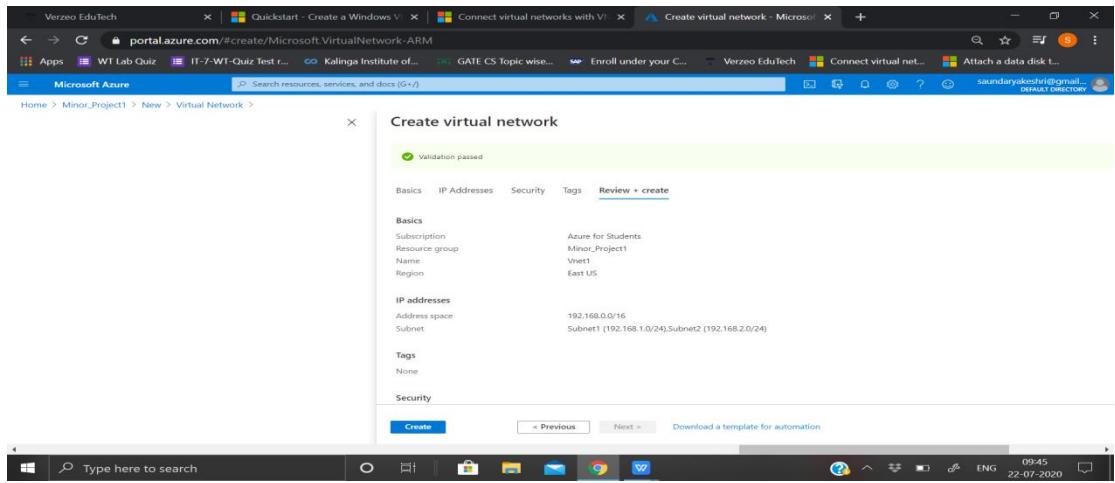
5. After creating the subnets - Subnet1 and Subnet2 click on Next:Security

The screenshot shows the 'Security' tab in the 'Create virtual network' wizard. It shows options for BastionHost (Enabled), DDoS protection (Basic), and Firewall (Enabled). The 'Review + create' button is visible at the bottom.

6. Under Security - no changes, click on Next: Tags

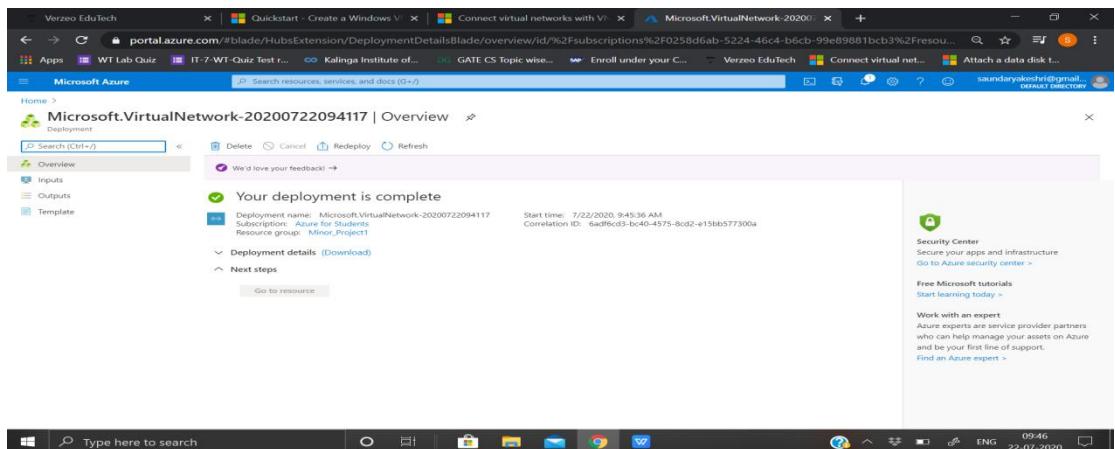
7. Under Tags - no change,click on Next: Next: Review + Create

The screenshot shows the 'Tags' tab in the 'Create virtual network' wizard. It shows a single tag entry 'Name: Value'. The 'Review + create' button is visible at the bottom.

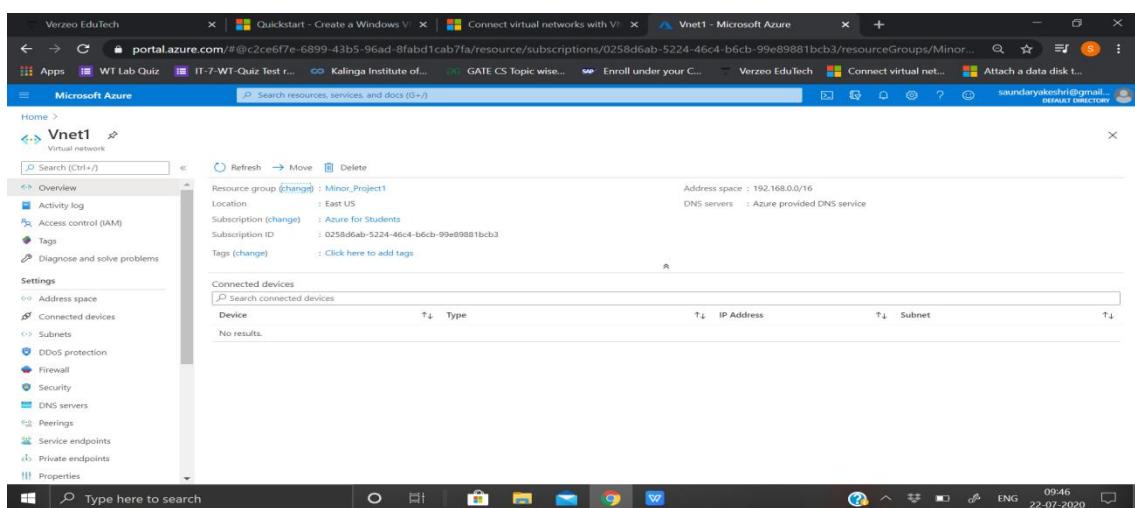


8. After the **Validation is passed** click on **Create**.

9. Wait for deployment to complete.



10. Thus, **Vnet1** is created having 2 subnets - **Subnets1** and **Subnet2**



Vnet1 | Subnets

Name	IPv4	IPv6 (many available)	Delegated to	Security group
Subnet1	192.168.1.0/24 (251 available)	-	-	-
Subnet2	192.168.2.0/24 (251 available)	-	-	-

11. Similarly we create another Vnet and name it - **VNet02** with a reserved CIDR block of **10.0.0.0/20** containing 2 subnets (by repeating the above steps 1- 9)
- Subnet01**, using **10.0.0.0/24** as its CIDR block.
 - Subnet02**, using **10.10.1.0/24** as its CIDR block.

Create virtual network

Basic IP Addresses Security Tags Review + create

Azure Virtual Network (VNet) is the fundamental building block for your private network in Azure. VNet enables many types of Azure resources, such as Azure Virtual Machines (VM), to securely communicate with each other, the internet, and on-premises networks. VNet is similar to a traditional network that you'd operate in your own data center, but brings with it additional benefits of Azure's infrastructure such as scale, availability, and isolation. Learn more about virtual network.

Project details

Subscription * Azure for Students

Resource group * Minor_Project1

Instance details

Name * VNet02

Region * US East (US)

Add subnet

Subnet name * Subnet01

Subnet address range * 10.0.0.0/24

10.0.0.0 - 10.0.0.255 (251 + 5 Azure reserved addresses)

SERVICE ENDPOINTS

Create service endpoint policies to allow traffic to specific azure resources from your virtual network over service endpoints. Learn more

Services * 0 selected

Review + create < Previous Next : IP Addresses > Download a template for automation

Verzeo EduTech | portal.azure.com#create/Microsoft.VirtualNetwork-ARM | Connect virtual networks with V... | Add subnet - Microsoft Azure

Microsoft Azure | Search resources, services, and docs (G+)

Home > Resource groups > Minor_Project1 > New > Virtual Network

Create virtual network

Basics IP Addresses Security Tags Review + create

The virtual network's address space, specified as one or more address prefixes in CIDR notation (e.g. 192.168.1.0/24).

IPv4 address space
10.0.0.0/20 10.0.0.0 - 10.0.15.255 (4096 addresses)

Add IPv6 address space

The subnet's address range in CIDR notation (e.g. 192.168.1.0/24). It must be contained by the address space of the virtual network.

+ Add subnet Remove subnet

Subnet name Subnet address range
 Subnet01 10.0.0.0/24

Subnet02 10.0.1.0/24

Subnet name * Subnet02

Subnet address range * 10.0.1.0/24
10.0.1.0 - 10.0.1.255 (251 + 5 Azure reserved addresses)

SERVICE ENDPOINTS

Create service endpoint policies to allow traffic to specific Azure resources from your virtual network over service endpoints. Learn more

Services 0 selected

Review + create < Previous Next : Security > Download a template for automation

Add Cancel

Type here to search

Windows taskbar: Type here to search, File, Open, Save, Mail, Google, Chrome, Microsoft Edge, File Explorer, Task View, Settings, ENG, 09:50, 22-07-2020

Verzeo EduTech | portal.azure.com#create/Microsoft.VirtualNetwork-ARM | Connect virtual networks with V... | Create virtual network - Microsoft Azure

Microsoft Azure | Search resources, services, and docs (G+)

Home > Resource groups > Minor_Project1 > New > Virtual Network

Create virtual network

Basics IP Addresses Security Tags Review + create

The virtual network's address space, specified as one or more address prefixes in CIDR notation (e.g. 192.168.1.0/24).

IPv4 address space
10.0.0.0/20 10.0.0.0 - 10.0.15.255 (4096 addresses)

Add IPv6 address space

The subnet's address range in CIDR notation (e.g. 192.168.1.0/24). It must be contained by the address space of the virtual network.

+ Add subnet Remove subnet

Subnet name Subnet address range
 Subnet01 10.0.0.0/24
 Subnet02 10.0.1.0/24

Review + create < Previous Next : Security > Download a template for automation

Type here to search

Windows taskbar: Type here to search, File, Open, Save, Mail, Google, Chrome, Microsoft Edge, File Explorer, Task View, Settings, ENG, 09:50, 22-07-2020

Verzeo EduTech | portal.azure.com#create/Microsoft.VirtualNetwork-ARM | Connect virtual networks with V... | Create virtual network - Microsoft Azure

Microsoft Azure | Search resources, services, and docs (G+)

Home > Resource groups > Minor_Project1 > New > Virtual Network

Create virtual network

Basics IP Addresses Security Tags Review + create

BastionHost Enabled

DDoS protection Standard

Firewall Enabled

Review + create < Previous Next : Tags > Download a template for automation

Type here to search

Windows taskbar: Type here to search, File, Open, Save, Mail, Google, Chrome, Microsoft Edge, File Explorer, Task View, Settings, ENG, 09:50, 22-07-2020

Verzeo EduTech | portal.azure.com/#create/Microsoft.VirtualNetwork-ARM | Connect virtual networks with V... | Create virtual network | Microsoft Azure

Home > Resource groups > Minor_Project1 > New > Virtual Network

Create virtual network

Basics IP Addresses Security Tags Review + create

Tags are name/value pairs that enable you to categorize resources and view consolidated billing by applying the same tag to multiple resources and resource groups. [Learn more about tags](#)

Note that if you create tags and then change resource settings on other tabs, your tags will be automatically updated.

Name: Value:

[Review + create](#) [Next: Review + create](#) Download a template for automation

https://go.microsoft.com/fwlink/?linkid=873112

Type here to search

Verzeo EduTech | portal.azure.com/#create/Microsoft.VirtualNetwork-ARM | Connect virtual networks with V... | Create virtual network | Microsoft Azure

Home > Resource groups > Minor_Project1 > New > Virtual Network

Create virtual group network

Validation passed

Basics IP Addresses Security Tags Review + create

Basics

Subscription: Azure for Students
Resource group: Minor_Project1
Name: VNet02
Region: East US

IP addresses

Address space: 10.0.0.0/20
Subnet: Subnet01 (10.0.0.0/24) Subnet02 (10.0.1.0/24)

Tags

None

Security

[Create](#) [Previous](#) [Next](#) Download a template for automation

Type here to search

Verzeo EduTech | portal.azure.com/#@c2ce6f7e-6899-43b5-96ad-8fabd1cab7fa/resource/subscriptions/0258d6ab-5224-46c4-b6cb-99e89881bcb3/resourceGroups/Minor... | Connect virtual networks with V... | Create virtual network | Microsoft Azure

Home > VNet02 - Microsoft Azure

Virtual networks

Search (Ctrl+F) Refresh Move Delete

Resource group (change): Minor_Project1 Location: East US Address space (change): Azure for Students Subscription ID: 0258d6ab-5224-46c4-b6cb-99e89881bcb3 Tags (change): Click here to add tags

Address space: 10.0.0.0/20 DNS servers: Azure provided DNS service

Connected devices

Device Type IP Address Subnet

No results.

https://portal.azure.com/#@c2ce6f7e-6899-43b5-96ad-8fabd1cab7fa/resource/subscriptions/0258d6ab-5224-46c4-b6cb-99e89881bcb3/resourceGroups/Minor_Project1/providers/Microsoft.Network/virtualNetworks/VNet02/private...

Type here to search

Verzeo EduTech | portal.azure.com/#@c2ce6f7e-6899-43b5-96ad-8fabd1cab7fa/resource/subscriptions/0258d6ab-5224-46c4-b6cb-99e89881bcb3/resourceGroups/Minor... | Connect virtual networks with V... | VNet02 | Subnets - Microsoft Azure | Microsoft Azure

Home > VNet02 | Subnets

Virtual network

Search (Ctrl+F) Overview Activity log Access control (IAM) Tags Diagnose and solve problems

Subnets

+ Subnet + Gateway subnet Refresh

Search subnets

Name	IPv4	IPv6 (many available)	Delegated to	Security group	...
Subnet01	10.0.0.0/24 (251 available)	-	-	-	...
Subnet02	10.0.1.0/24 (251 available)	-	-	-	...

https://portal.azure.com/#@c2ce6f7e-6899-43b5-96ad-8fabd1cab7fa/resource/subscriptions/0258d6ab-5224-46c4-b6cb-99e89881bcb3/resourceGroups/Minor_Project1/providers/Microsoft.Network/virtualNetworks/VNet02/subnets...

Type here to search

12. Thus, **Vnet1** is created having 2 subnets - **Subnets1** and **Subnet2**

-Creating Virtual Machine in each VNet

1. From the All services blade, search for and select **Resource Group**, and select the resource group that we have created (ex. Minor_Project1)

The screenshot shows the Microsoft Azure portal's Resource groups blade. At the top, there are filter options for 'Subscription' (all), 'Location' (all), and 'Add filter'. Below this, a table lists two resource groups:

Name	Subscription	Location
Minor_Project1	Azure for Students	East US
NetworkWatcherRG	Azure for Students	East US

At the bottom of the blade, there are navigation links for 'Page 1 of 1' and a search bar.

The screenshot shows the details of the Minor_Project1 resource group. The left sidebar includes options like Overview, Activity log, Tags, Events, Settings, Cost Management, and Export template. The main pane shows the 'Virtual network' section with two entries:

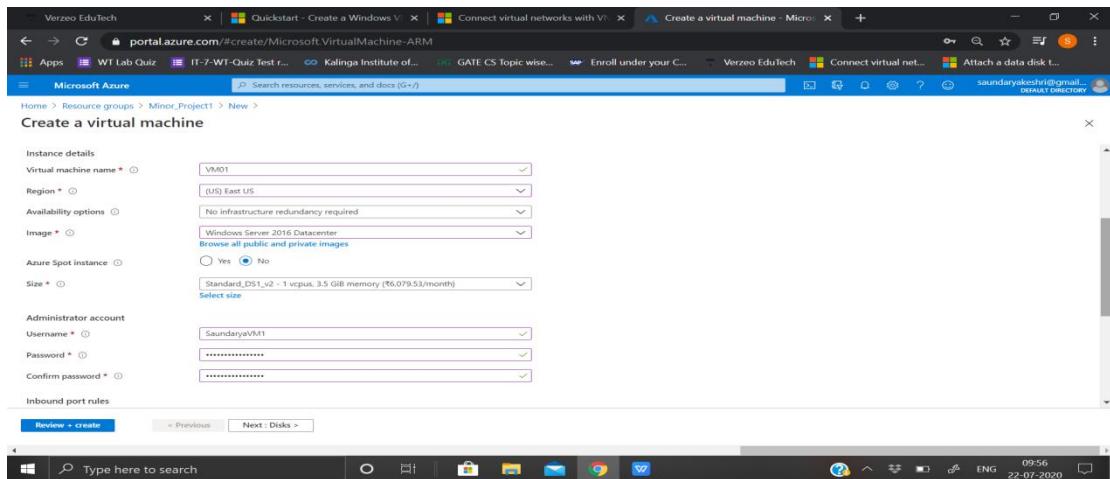
Name	Type	Location
VNet02	Virtual network	East US
VNet1	Virtual network	East US

At the bottom, there are deployment statistics: 'Deployments 2 Succeeded'.

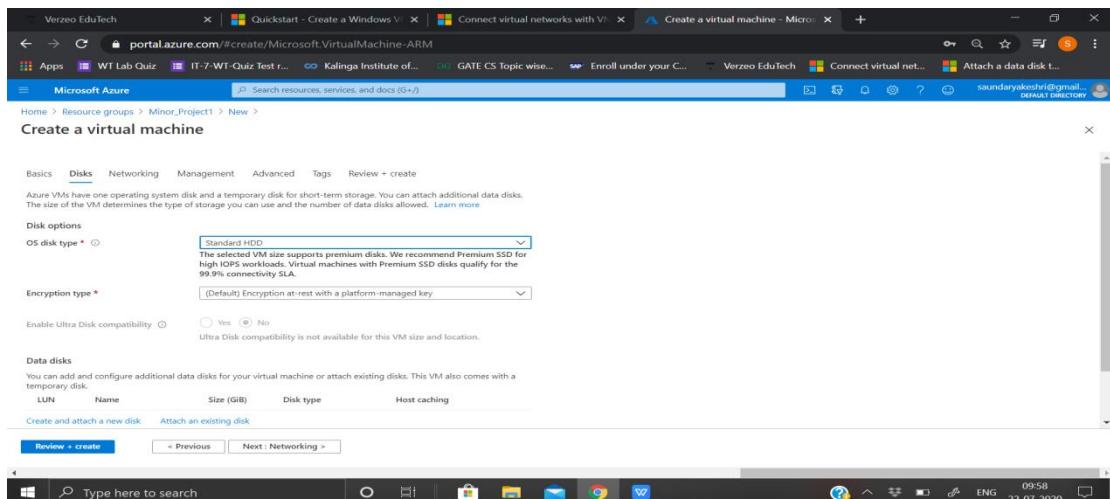
2. To create Virtual Machine VM01 for VNet1. Select **VNet1**
3. Select **Compute**, and select **Virtual Machine**.

The screenshot shows the Microsoft Azure portal's New blade in the Azure Marketplace. The left sidebar lists categories: Get started, Recently created, AI + Machine Learning, Analytics, Blockchain, Compute (selected), Containers, Databases, Developer Tools, DevOps, Identity, Integration, Internet of Things, IT & Management Tools, and Media. The right pane shows the 'Virtual machine' option under the 'Compute' category, which is highlighted with a dashed blue border.

4. Enter the following information under Basics, and click on Next: Disks

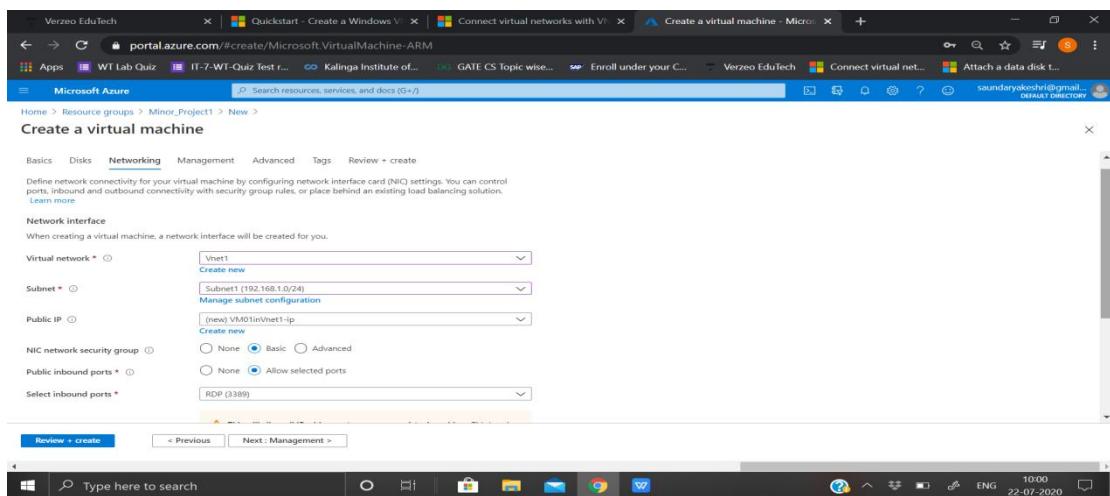


5. Under Disk select OS disk type as Standard HDD, keep the remaining as default and then click on Next: Networking

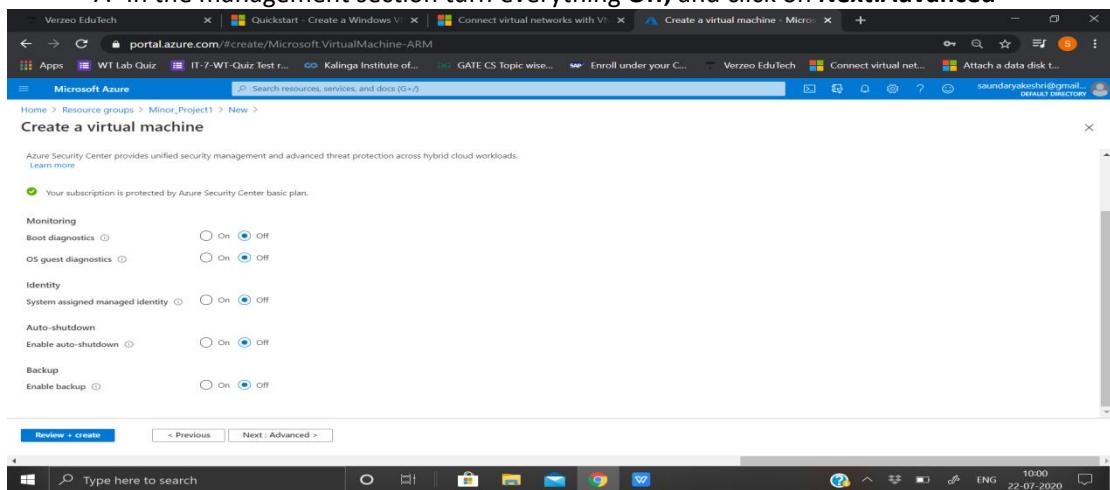


-Assigning Public IP to VM01 in Vnet 1.

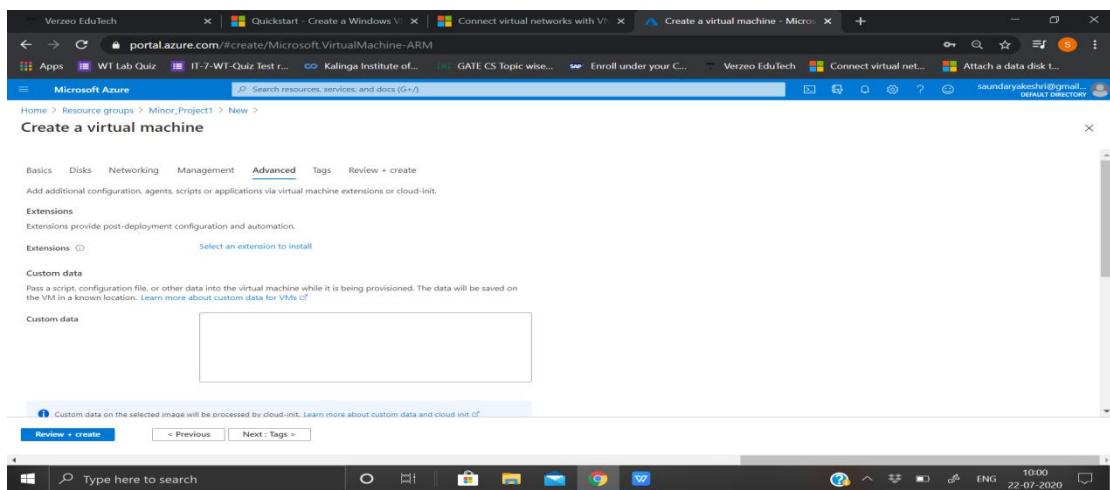
6. Under the the Networking section enter the new public IP - VM01inVnet1-ip and click on Next: Management.



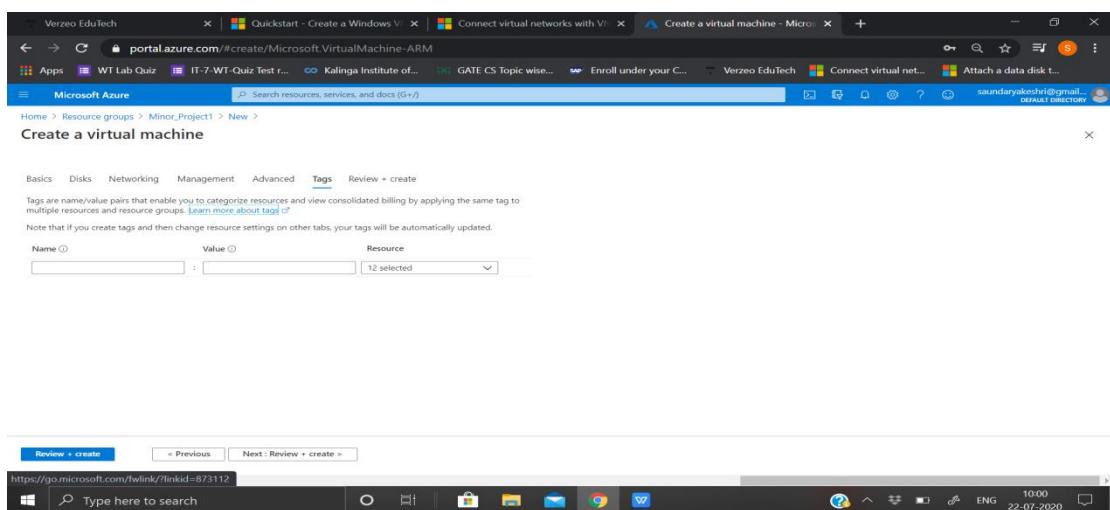
7. In the management section turn everything Off, and click on Next:Advanced



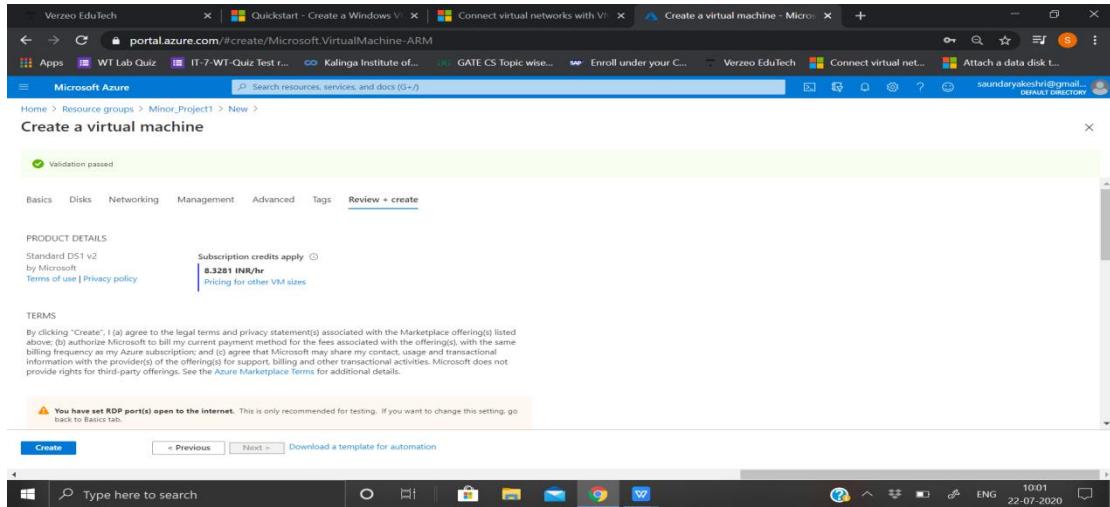
8. Click on Next: Tags



9. Click on Review + Create in the lower left hand corner.

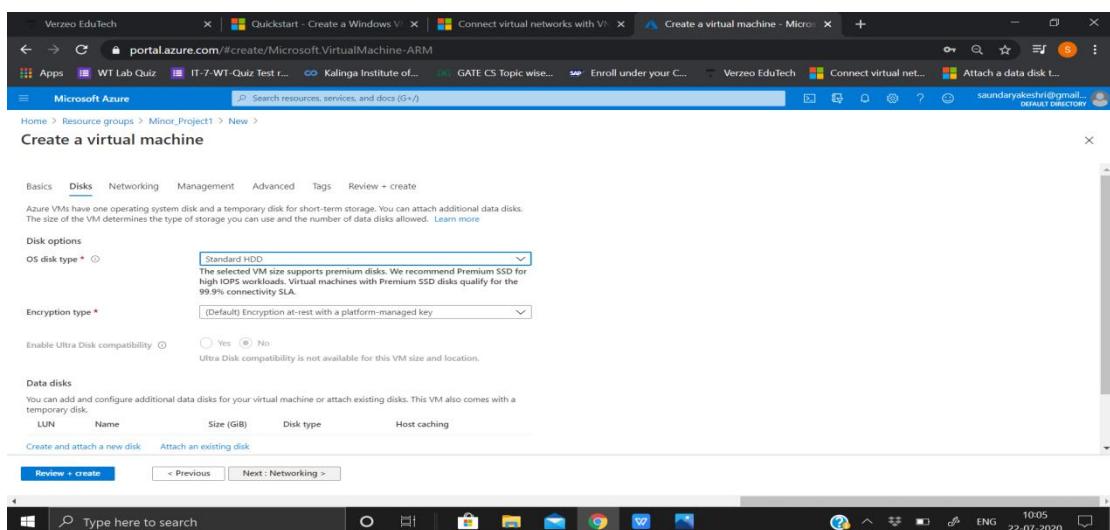
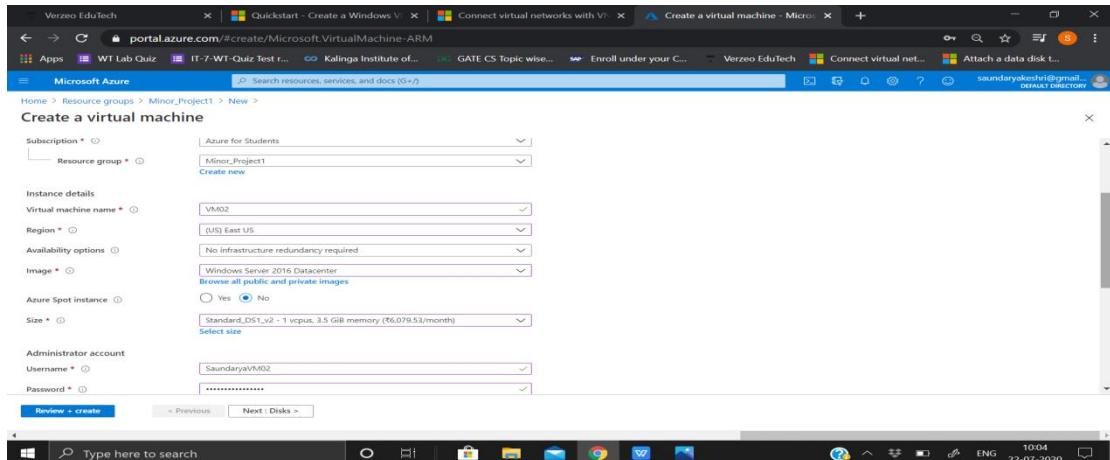


10. After the verification is passed.



11. Click on **Create**. Wait for the VM01 to deploy

12. Similarly create VM02 for VNet02 by repeating the steps (1-11)



Verzeo EduTech | Quickstart - Create a Windows VM | Connect virtual networks with V... | Create a virtual machine - Microsoft Azure

Home > Resource groups > Minor_Project1 > New > Create a virtual machine

Define network connectivity for your virtual machine by configuring network interface card (NIC) settings. You can control ports, inbound and outbound connectivity with security group rules, or place behind an existing load balancing solution. Learn more

Network interface

When creating a virtual machine, a network interface will be created for you.

Virtual network *

Subnet *

Public IP *

NIC network security group None Basic Advanced

Public inbound ports None Allow selected ports

Select inbound ports

⚠️ This will allow all IP addresses to access your virtual machine. This is only recommended for testing. Use the Advanced controls in the Networking tab to create rules to limit inbound traffic to known IP addresses.

Review + create **< Previous** **Next : Management >**

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Home > Resource groups > Minor_Project1 > New > Create a virtual machine

Azure Security Center provides unified security management and advanced threat protection across hybrid cloud workloads. [Learn more](#)

Monitoring

Boot diagnostics On Off

OS guest diagnostics On Off

Identity

System assigned managed identity On Off

Auto-shutdown

Enable auto-shutdown On Off

Backup

Enable backup On Off

Review + create **< Previous** **Next : Advanced >**

Verzeo EduTech | Quickstart - Create a Windows VM | Connect virtual networks with V... | Create a virtual machine - Microsoft Azure

Home > Resource groups > Minor_Project1 > New > Create a virtual machine

Advanced

Add additional configuration, agents, scripts or applications via virtual machine extensions or cloud-init.

Extensions

Extensions provide post-deployment configuration and automation.

Extensions

Custom data

Pass a script, configuration file, or other data into the virtual machine while it is being provisioned. The data will be saved on the VM in a known location. [Learn more about custom data for VMs](#).

Custom data

Custom data on the selected image will be processed by cloud-init. [Learn more about custom data and cloud-init](#).

Review + create **< Previous** **Next : Tags >**

Verzeo EduTech | Quickstart - Create a Windows VM | Connect virtual networks with V... | Create a virtual machine - Microsoft Azure

Home > Resource groups > Minor_Project1 > New > Create a virtual machine

Tags

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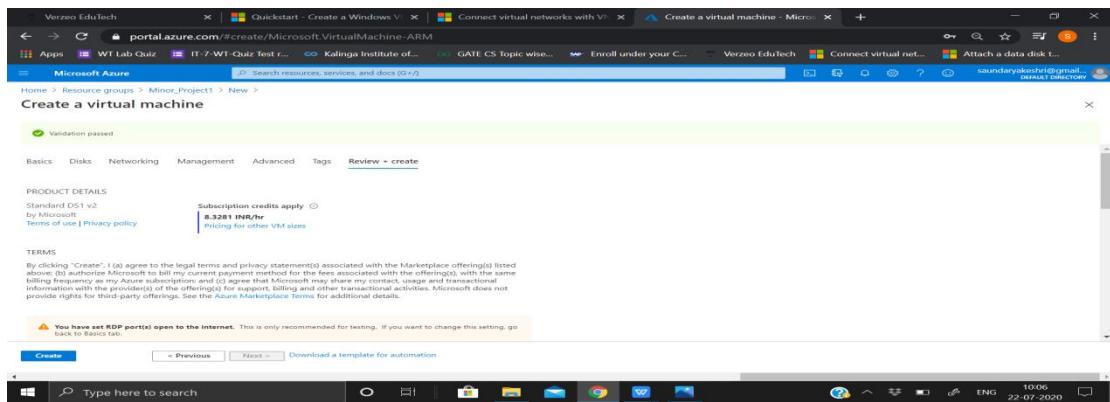
Note that if you create tags and then change resource settings on other tabs, your tags will be automatically updated.

Name	Value	Resource
<input type="text"/>	<input type="text"/>	<input type="button" value="12 selected"/>

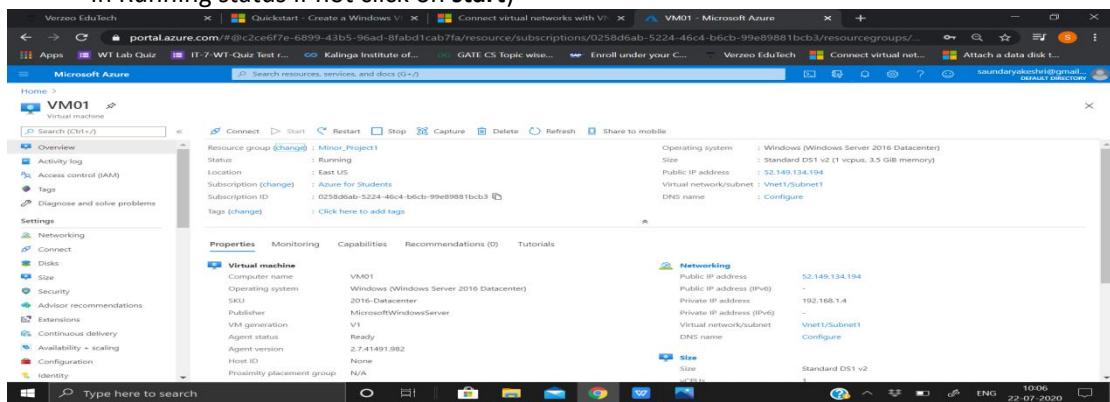
Review + create **< Previous** **Next : Review + create >**

https://go.microsoft.com/fwlink/?linkid=873112

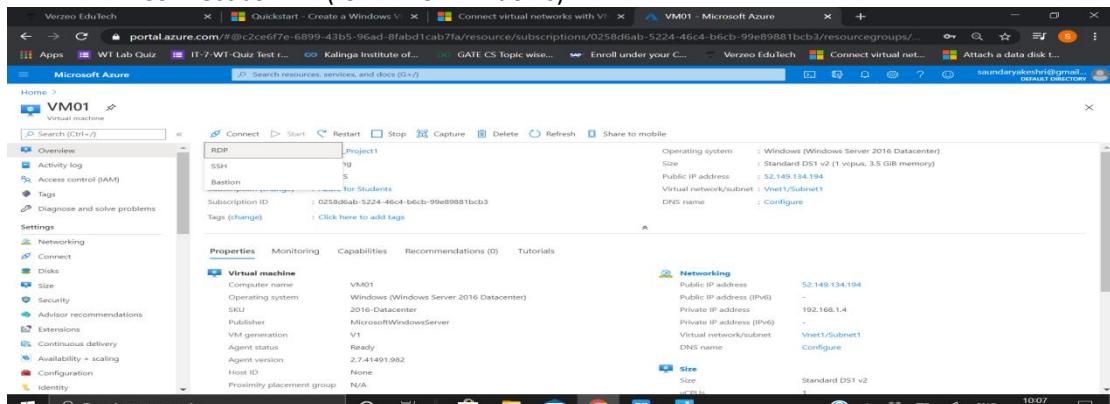
Type here to search



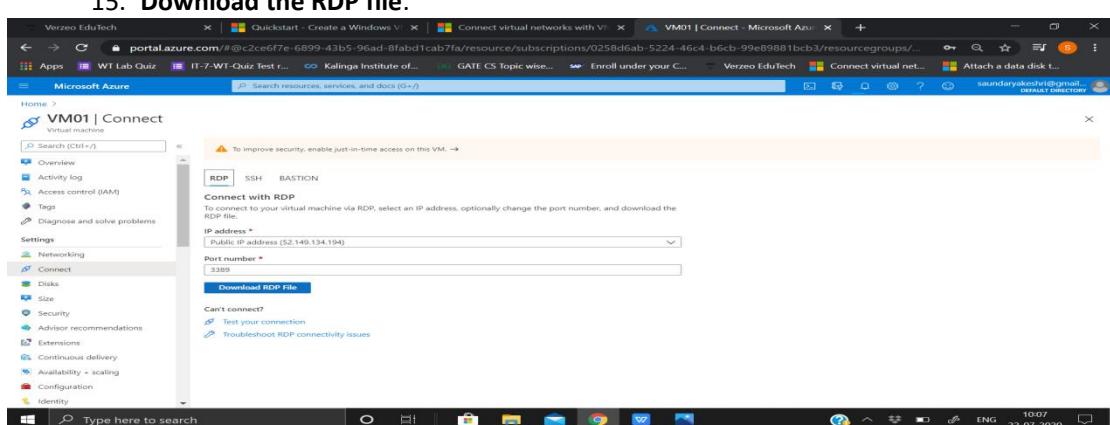
13. After the deployment is done for the VM click on connect (Ensure that the VMs are in Running status if not click on start)



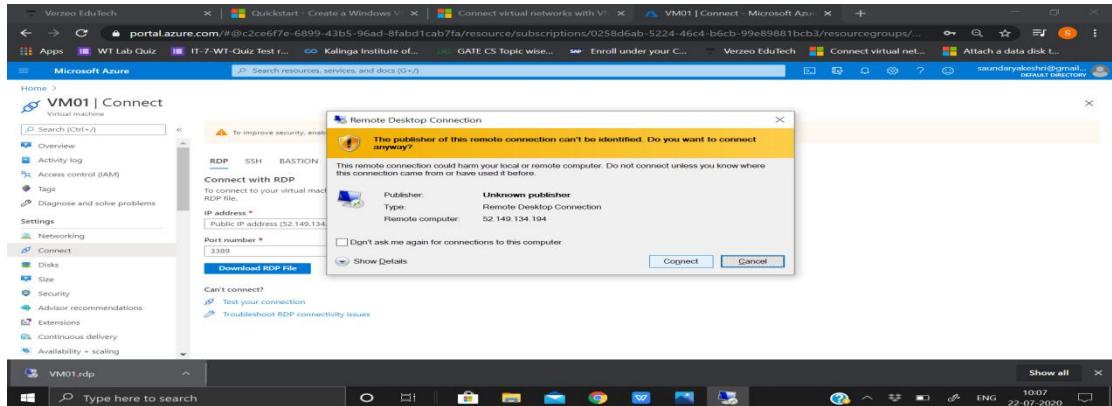
14. Connect as RDP (for VM of Windows)



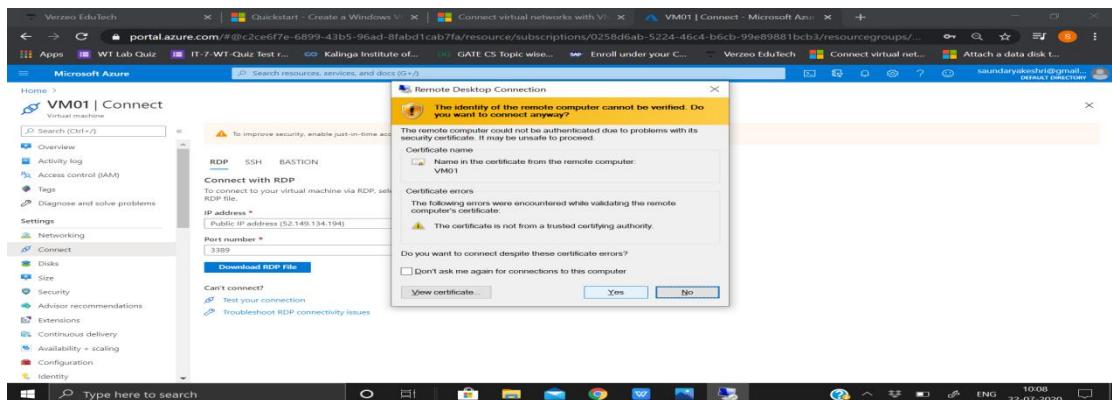
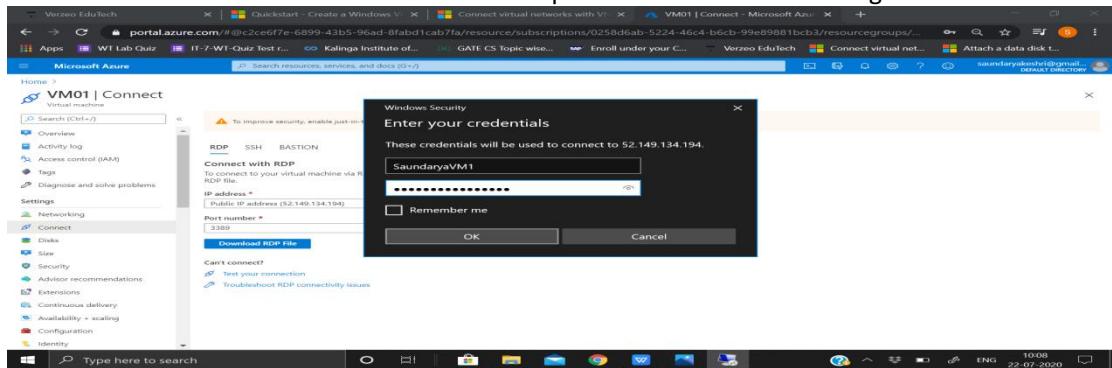
15. Download the RDP file.



16. Click on the downloaded RDP file and click on Connect.



17. Enter the Username and Password specified earlier while creating VM01.



18. Select Yes and proceed. We now enter to our created virtual Machine(VM01)



Virtual Machine - VM01

19. Repeat the steps (13 -18) for VM02

VM02 - Microsoft Azure

Properties

- Computer name: VM02
- Operating system: Windows (Windows Server 2016 Datacenter)
- Publisher: MicrosoftWindowsServer
- VM generation: V1
- Agent status: Ready
- Agent version: 2.7.1491.982
- Host ID: None
- Proximity placement group: N/A

Networking

- Public IP address: 104.211.22.232
- Private IP address (IPv4): 10.0.0.4
- Virtual network/subnet: VNet02/Subnet01
- DNS name: Configure

Size

- Standard D51 v2

VM02 | Connect

RDP

To connect to your virtual machine via RDP, select an IP address, optionally change the port number, and download the RDP file.

IP address *: Public IP address (104.211.22.232)

Port number *: 3389

Download RDP File

Can't connect?

- Test your connection
- Troubleshoot RDP connectivity issues

VM02 | Connect

RDP

To connect to your virtual machine via RDP file.

IP address *: Public IP address (104.211.22.232)

Port number *: 3389

Download RDP File

Can't connect?

- Test your connection
- Troubleshoot RDP connectivity issues

Remote Desktop Connection

This remote connection could harm your local or remote computer. Do not connect unless you know where this connection came from or have used it before.

Publisher: Unknown publisher

Type: Remote Desktop Connection

Remote computer: 104.211.22.232

Don't ask me again for connections to this computer

Show Details

Connect **Cancel**

VM02 | Connect

RDP

To connect to your virtual machine via RDP file.

IP address *: Public IP address (104.211.22.232)

Port number *: 3389

Download RDP File

Can't connect?

- Test your connection
- Troubleshoot RDP connectivity issues

Windows Security

Enter your credentials

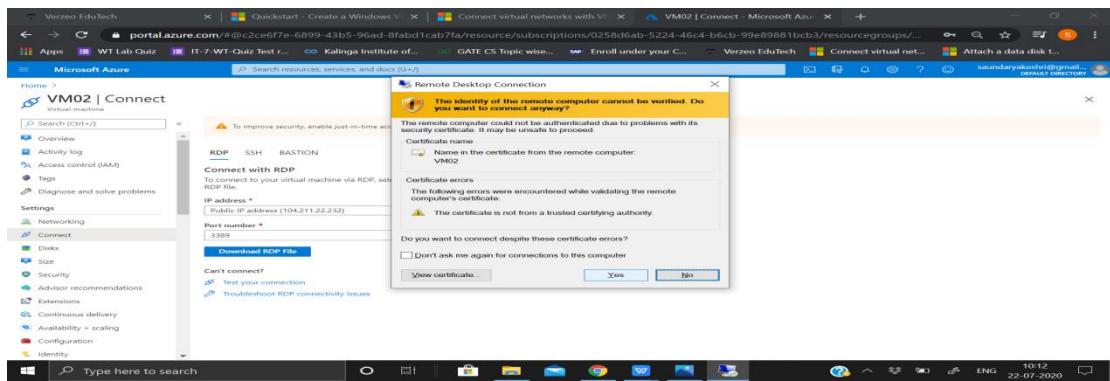
These credentials will be used to connect to 104.211.22.232.

User name:

Password:

Remember me

OK **Cancel**



Virtual Machine VM02

-Peer VNet1 and VNet02

1. Go to **VNet1** (In the search box type VNet1)
2. Select Peering.

Device	Type	IP Address	Subnet
vm01442	Network interface	192.168.1.4	Subnet1

3. Click on **+Add**

Name	Peering status	Peer	Gateway transit
	No results.		

4. Enter or select the following information, accept the default for remaining settings and then click on **OK**

5. The peering status must be **connected**, if not refresh the browser

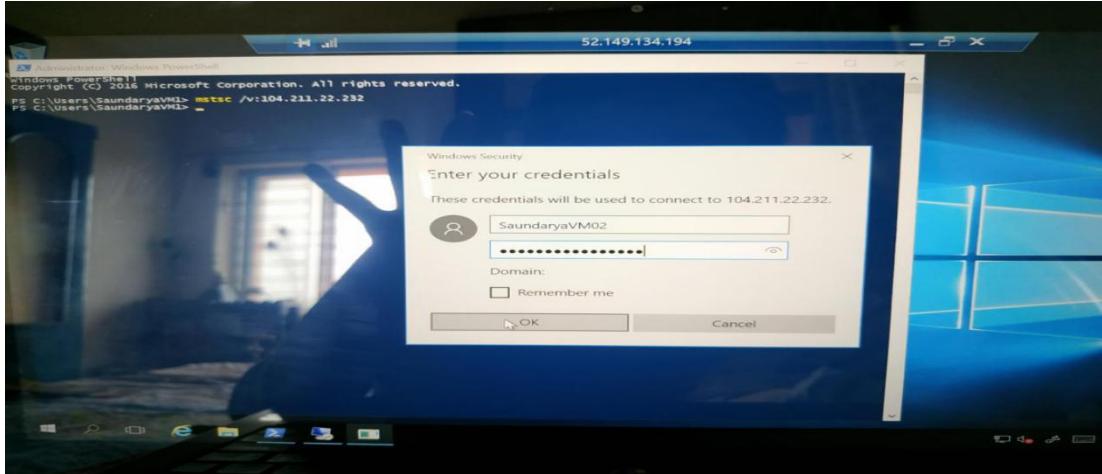
- Login to Vm01 and if peering is successful login to VM02 in Vnet2

1. Login to VM01 using the username and password as mentioned while creating VM01



Virtual Machine - VM01

2. In the search option search for **Powershell** and press **enter**
3. Use the following code to login to VM02 from VM01



4. We have successfully logged in to **VM02** in **VNet02** from **VM01** in **VNet1**. Thus we have Successfully peered VNet1 with VNet02

-Create a data disk and attach to VM01

1. Search for Virtual Machines in the search box and select **VM01** under virtual machine.

A screenshot of the Microsoft Azure portal showing the details for a virtual machine named "VM01". The main pane displays the VM's properties, including its operating system (Windows Server 2016 Datacenter), size (Standard D51 v2), and networking information (Public IP address: 52.149.134.194, Private IP address: 192.168.1.4). On the left, a navigation menu lists options like Overview, Activity log, Access control (IAM), Tags, and Diagnose and solve problems. Below the main pane, there are tabs for Properties, Monitoring, Capabilities, Recommendations (0), and Tutorials. The status bar at the bottom shows the date and time as 11:03, 22-07-2020.

2. Select disks under VM01

VM01 - Microsoft Azure

VM01

Overview

Activity log

Access control (IAM)

Tags

Diagnose and solve problems

Settings

Networking

Connect

Disks

Size

Security

Advisor recommendations

Extensions

Continuous delivery

Availability + scaling

Configuration

Properties

Virtual machine

Computer name: VM01
Operating system: Windows (Windows Server 2016 Datacenter)
SKU: 2016-Datacenter
Publisher: MicrosoftWindowsServer
VM generation: V1
Agent status: Ready
Agent version: 2.7.14191.982
Host ID: None

Networking

Public IP address: 52.149.134.194
Public IP address (IPv6):
Private IP address: 192.168.1.4
Private IP address (IPv6):
Virtual network/subnet: VNet/Subnet1
DNS name: Configure

Size

Standard DS1 v2

11:03 22-07-2020

3. Fill the details, and select size as **standard HDD**, accept the default for remaining settings and then click on **Create**.

Size	Disk tier	Provisioned IOPS	Provisioned throughput	Max burst IOPS	Max burst throughput
32 GB	S4	500	60	-	-
64 GB	S6	500	60	-	-
128 GB	S10	500	60	-	-
256 GB	S15	500	60	-	-
512 GB	S20	500	60	-	-
1024 GB	S30	500	60	-	-
2048 GB	S40	500	60	-	-
4096 GB	S50	500	60	-	-
8192 GB	S60	1300	300	-	-
16384 GB	S70	2000	500	-	-
32767 GB	S80	2000	500	-	-

OK

11:13 22-07-2020

4. Wait for validation to pass

VM01 | Disks

Notifications

- Successfully updated virtual machine disks
- Successfully created disk
- Added virtual network peering
- Deployment succeeded

Data disks

LUN	Name	Size	Storage account
0	DataDiskVM1	1024 GB	Standard HDD

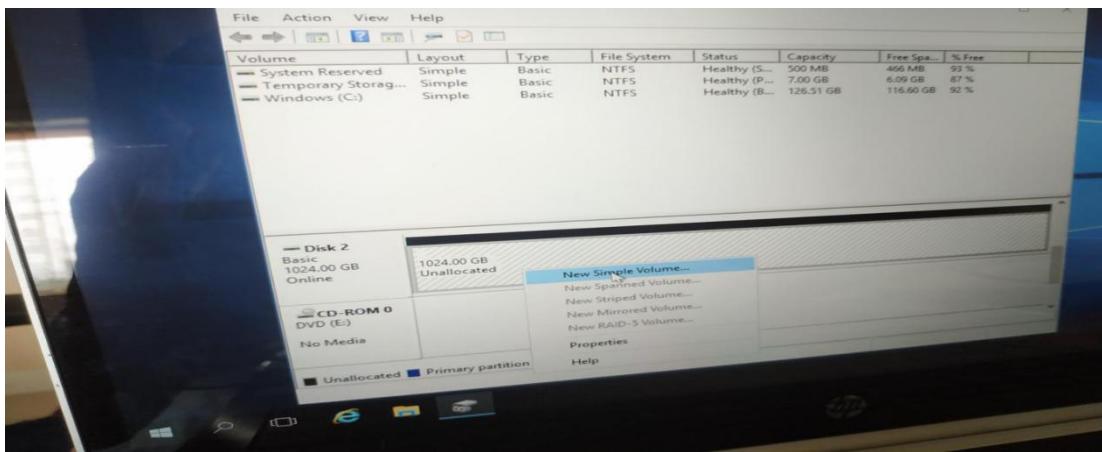
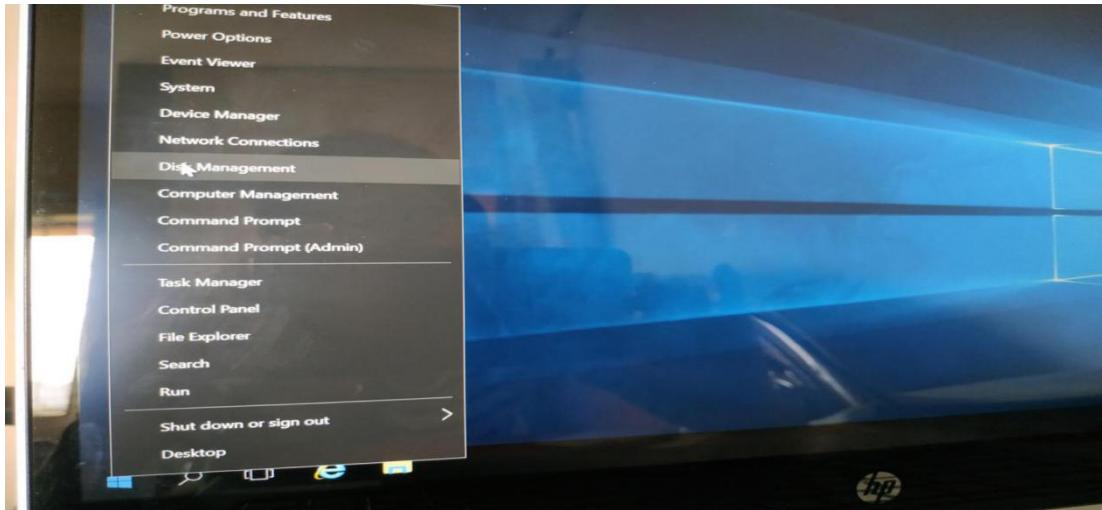
+ Add data disk

11:15 22-07-2020

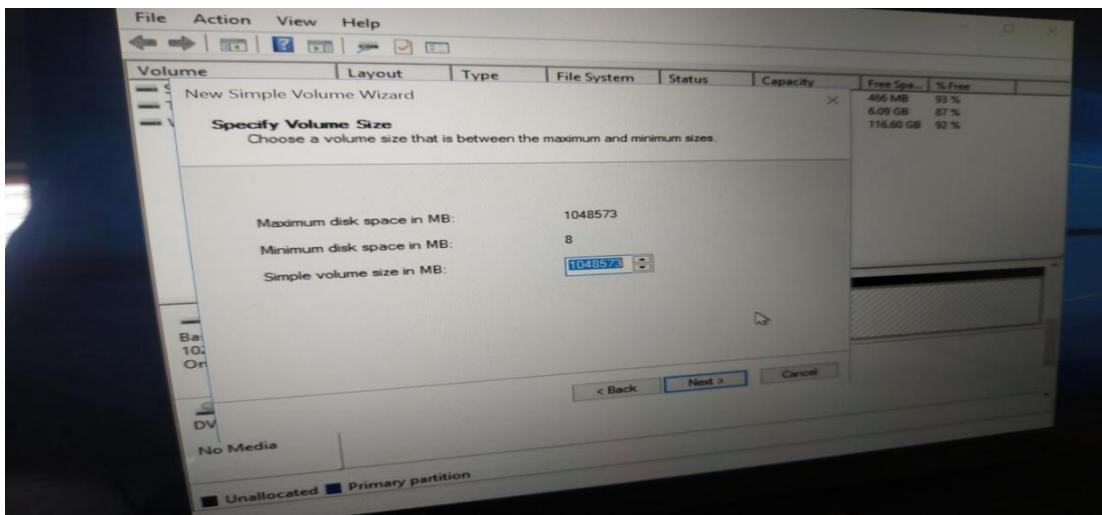
DataDiskVM1 created

-Logon to VM01 and initialize the disk

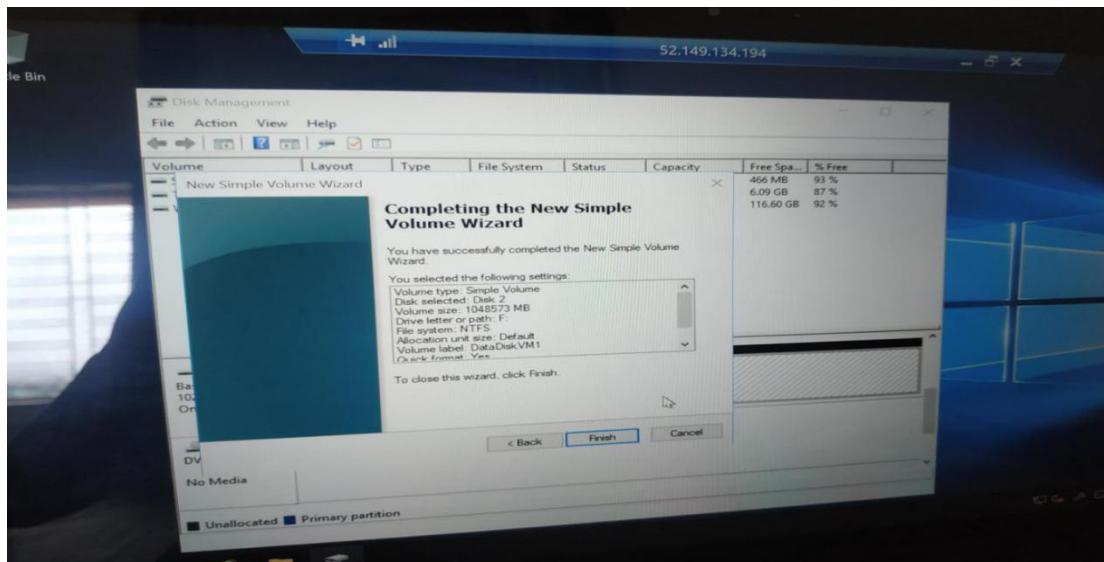
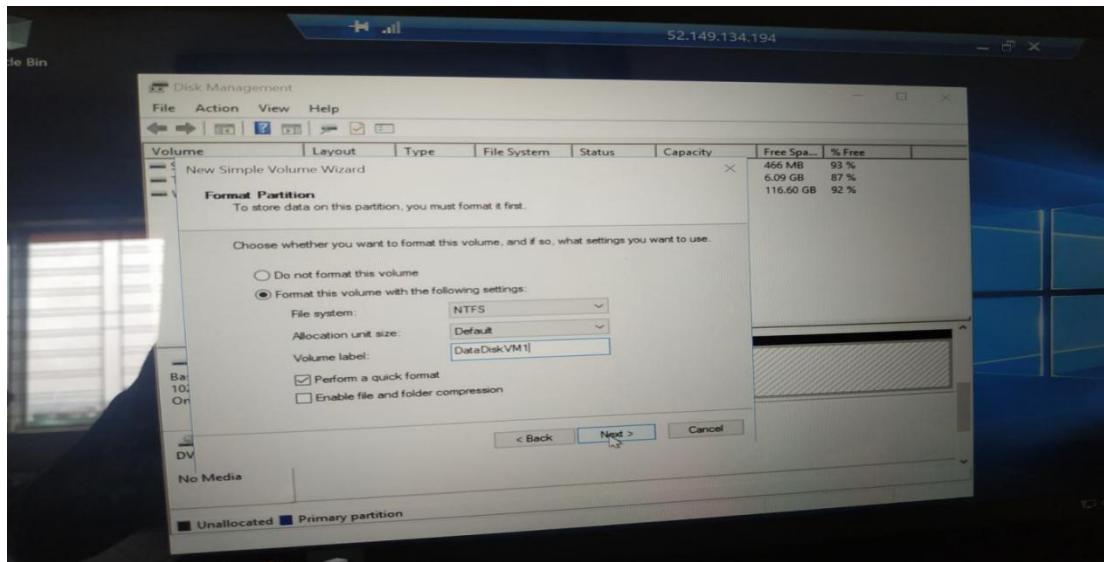
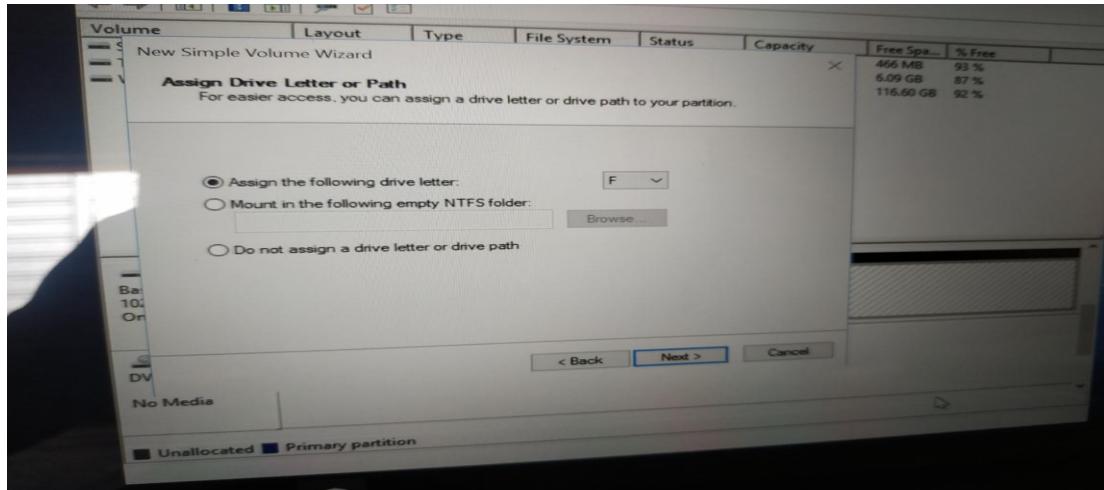
1. Login to **VM01**.
2. Right click on the windows icon and select **Disk Management**



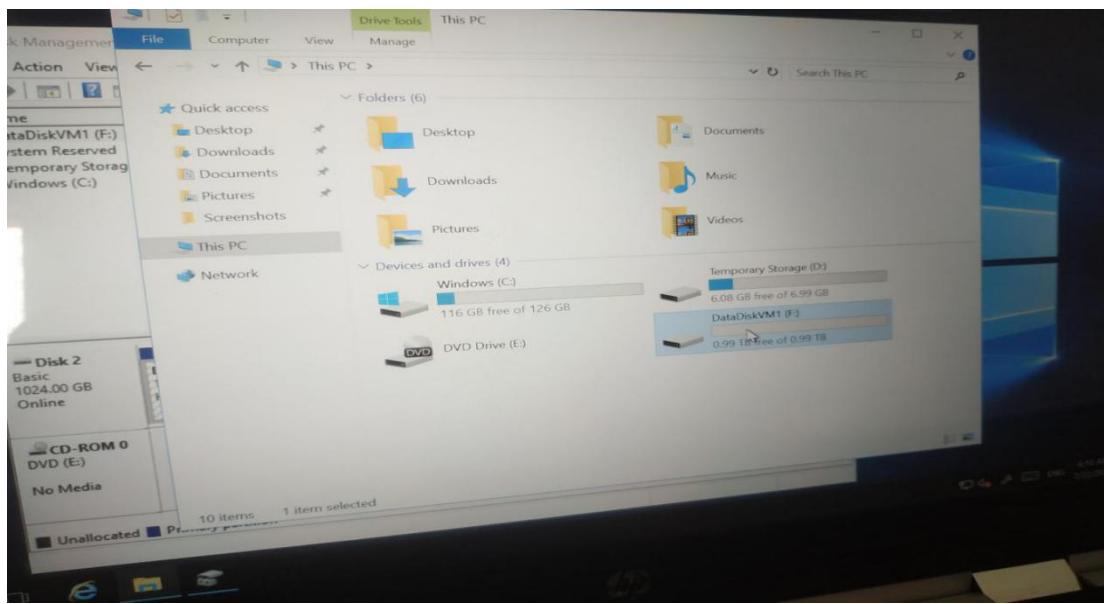
3. Select size



4. Fill or select the required details and accept the default for remaining settings.



5. Click on **Finish**. *The data disk is initialized now.*



*****END*****