

# Antonio Manuel Luque Molina

## Lab report 2 (Week 36)

# Exercise

- Create 2 VMs in the same virtual network with the second VM without any port(public ip) open. Try to access this 2nd Virtual Machine.

We start creating a resource group where we will put the virtual network and the two Virtual Machines:

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

Home > Resource groups >

### Create a resource group

Basics Tags Review + create

**Resource group** - A container that holds related resources for an Azure solution. The resource 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 groups based on what makes the most sense for your organization. [Learn more](#)

**Project details**

Subscription \* IFI-Edu-INF2220

Resource group \* anluq0157Lab2

**Resource details**

Region \* (US) East US

Review + create < Previous Next : Tags >

Review + create < Prev Review + create

## Create a resource group



✓ Validation passed.

Basics Tags **Review + create**

### Basics

Subscription IFI-Edu-INF2220  
Resource group anluq0157Lab2  
Region East US

### Tags

None

Create

< Previous

Next >

[Download a template for automation](#)

Create

Once it is created we will create within this resource group the virtual network:

[Home](#) >



**anluq0157Lab2**

Resource group



Search

+ Create

Manage view

Delete resource group

...

Overview

Activity log

Access control (IAM)

Tags

Resource visualizer

Events

### Settings

Deployments

Security

Deployment stacks

Policies

Properties

Locks

### Cost Management

Cost analysis

Cost alerts (preview)

Budgets

Essentials

Create

[JSON View](#)

Resources

Recommendations

Filter for any field...

+ Add filter

More (2)

Showing 0 to 0 of 0 records.

Show hidden types

No grouping

List view

Name ↑↓

Type ↑↓

Location ↑↓



No resources match your filters

Try changing or clearing your filters.

Create resources

Clear filters

[Feedback](#)

Home > anluq0157Lab2 > Marketplace

Get Started

Service Providers

Management

Private Marketplace

Private Offer Management

My Marketplace

Favorites

Recently created

Private plans

Categories

IT & Management Tools (3328)

Compute (3315)

Security (2448)

Analytics (2161)

Developer Tools (2004)

Web (1718)

Machine Learning (1231)

any scale, anywhere.

Starts at Free

Subscribe

Create

Popular Azure services in your organization

Virtual machine

Microsoft Azure Service

Azure Virtual Machines provide on-demand, high-scale, secure and virtualized infrastructure using either Linux or Windows operating systems.

Create

Virtual network

Microsoft Azure Service

Create a logically isolated section in Microsoft Azure and securely connect it outward.

Create

Virtual network

Popular Marketplace products in your organization

Ubuntu Server 20.04 LTS

Unreal Engine

Is Marketplace helpful?

Home > anluq0157Lab2 > Marketplace > Create virtual network

BasicsSecurityIP addressesTagsReview + 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.](#)

### Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \*

IFI-Edu-INF2220

Resource group \*

anluq0157Lab2

[Create new](#)

### Instance details

Virtual network name \*

VNanluq0157Lab2

Region \*

(Europe) North Europe

[Deploy to an edge zone](#)

Previous

Next

Review + create

[Give feedback](#)

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

anluq0157@uit.no  
UIT OFFICE 365

Home > anluq0157Lab2 > Marketplace > Create virtual network

BasicsSecurityIP addressesTagsReview + create

Configure your virtual network address space with the IPv4 and IPv6 addresses and subnets you need. [Learn more](#)

Define the address space of your virtual network with one or more IPv4 or IPv6 address ranges. Create subnets to segment the virtual network address space into smaller ranges for use by your applications. When you deploy resources into a subnet, Azure assigns the resource an IP address from the subnet. [Learn more](#)

Add IPv4 address space

10.0.0.0/16

10.0.0.0

/16 (65,536 addresses)

10.0.0.0 - 10.0.255.255 (65536 addresses)

+ Add a subnet

Subnets	IP address range	Size	NAT gateway
default	10.0.0.0 - 10.0.0.255	/24 (256 addresses)	-

Delete address space

Home > VNanluq0157Lab2 | Overview

Deployment

Search

Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

### Deployment is in progress

Deployment name : VNanluq0157Lab2  
Subscription : IFI-Edu-INF2220  
Resource group : anluq0157Lab2  
Start time : 9/18/2023, 1:38:41 PM  
Correlation ID : a43f3d82-8012-4300-8ab1-08d047b03c03

Deployment details

Resource	Type	Status
VNanluq0157L...	Virtual network	Created

Give feedback

Tell us about your experience with deployment

Microsoft Defender for Cloud  
Secure your apps and infrastructure  
[Go to Microsoft Defender for Cloud >](#)

Free Microsoft tutorials

Once the virtual network is created we will create the first virtual machine with this network and a public IP:

Home > anluq0157Lab2 >

## Marketplace

Subscribe Create

Get Started

Service Providers

Management

Private Marketplace

Private Offer Management

My Marketplace


Favorites

Recently created

Private plans

Categories

### Popular Azure services in your organization




**Virtual machine**

Microsoft

**Azure Service**

Azure Virtual Machines provide on-demand, high-scale, secure and virtualized infrastructure using either Linux or Windows operating systems.

Create



**Virtual network**

Microsoft

**Azure Service**

Create a logically isolated section in Microsoft Azure and securely connect it outward.

Create

Micro...

Search resources, services, and docs (G+)

anluq0157@uit.no

UIT OFFICE 365

Home > anluq0157Lab2 > Marketplace >

Create a virtual machine

×

Basics

Disks

Networking

Management

Monitoring

Advanced

Tags

Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \*

IFI-Edu-INF2220

Resource group \*

anluq0157Lab2

Create new

Instance details

Virtual machine name \*

VMachine1Lab2

Region \*

(Europe) North Europe

Availability options

No infrastructure redundancy required

Security type

Trusted launch virtual machines

Configure security features

Image \*

Ubuntu Server 20.04 LTS - x64 Gen2

See all images | Configure VM generation

VM architecture

Arm64

Review + create

< Previous

Next : Disks >

Give feedback

Home > anluq0157Lab2 > Marketplace >

Create a virtual machine

×

x64

Run with Azure Spot discount

Size \*

Standard\_D2s\_v3 - 2 vcpus, 8 GiB memory (633,64 NOK/month)

See all sizes

Administrator account

Authentication type

SSH public key

Password

Username \*

VMachine1Lab2

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)

Review + create

< Previous

Next : Disks >

Give feedback

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)

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

Review + create

< Previous

Next : Disks >

Next : Disks >

Give feedback

## Create a virtual machine ...

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

Azure VMs have one operating system disk and a temporary disk for short-term storage. You can attach additional data disks. The size of the VM determines the type of storage you can use and the number of data disks allowed. [Learn more](#)

## VM disk encryption

Azure disk storage encryption automatically encrypts your data stored on Azure managed disks (OS and data disks) at rest by default when persisting it to the cloud.

Encryption at host

☐

Encryption at host is not registered for the selected subscription. [Learn more about enabling this feature](#)

## OS disk

OS disk type \*

Premium SSD (locally-redundant storage)

Delete with VM

☒

Key management

Platform-managed key

Enable Ultra Disk compatibility

☐

Ultra disk is not supported with selected security type.

## Data disks for VMachine1Lab2

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
-----	------	------------	-----------	--------------	----------------

Review + create

&lt; Previous

Next: Networking &gt;

Next: Networking &gt;

[Give feedback](#)

## Create a virtual machine ...

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

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 \*

VNetanluq0157Lab2

[Create new](#)

Subnet \*

default (10.0.0.0/24)

[Manage subnet configuration](#)

Public IP

(new) VMachine1Lab2-ip

[Create new](#)

NIC network security group

☐

None

☒

Basic

☐

Advanced

Public inbound ports \*

☐

None

☒

Allow selected ports

Select inbound ports \*

SSH (22)

**This will allow all IP addresses to access your virtual machine.** This is only.

Review + create

&lt; Previous

Next: Management &gt;

[Give feedback](#)

Home > anluq0157Lab2 > Marketplace >

Create a virtual machine

NIC network security group ⓘ

None

Basic

Advanced

Public inbound ports \* ⓘ

None

Allow selected ports

Select inbound ports \*

SSH (22)

⚠ 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.

Delete public IP and NIC when VM is deleted ⓘ

☐

Enable accelerated networking ⓘ

☒

Load balancing

You can place this virtual machine in the backend pool of an existing Azure load balancing solution. [Learn more](#) ⓘ

Place this virtual machine behind an existing load balancing solution?

☐

Review + create

< Previous

Next : Management >

[Give feedback](#)

Micr... Search resources, services, and docs (G+)

Home > anluq0157Lab2 > Marketplace >

Create a virtual machine

✓ Validation passed

Basics

Disks

Networking

Management

Monitoring

Advanced

Tags

Review + create

ⓘ Cost given below is an estimate and not the final price. Please use [Pricing calculator](#) ⓘ for all your pricing needs.

Price

1 X Standard D2s v3  
by Microsoft  
[Terms of use](#) | [Privacy policy](#)

Subscription credits apply ⓘ  
**0.8680 NOK/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 offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

Name

Antonio Manuel LUQUE MOLINA

Preferred e-mail address

anluq0157@uit.no

Preferred phone number

+4777644561

Create

< Previous

Next >

[Download a template for automation](#)

[Give feedback](#)

Create

Home >

## CreateVm-canonical.0001-com-ubuntu-server-focal-2-2023...

Deployment

Search

Delete Cancel Redeploy Download Refresh

Overview

Inputs

Outputs

Template

**✓ Your deployment is complete**

Deployment name: CreateVm-canonical.0001-com-ubuntu-server-f...  
Subscription: IFI-Edu-INF2220  
Resource group: anluq0157Lab2  
Start time: 9/18/2023, 1:59:43 PM  
Correlation ID: a7bdd949-6a2e-4f0c-a634-64eddd875576

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](#)

**Cost Management**  
Get notified to stay within your budget and prevent unexpected charges on your bill.

Now the first virtual machine is created, let's go for the second one:

Micr... Search resources, services, and docs (G+/I)

anluq0157@uit.no  
UIT OFFICE 365

Home >

## anluq0157Lab2

Resource group

Search

Create Manage view Delete resource group Refresh

Essentials

Subscription (move) : IFI-Edu-INF2220  
Subscription ID : 98bd7793-68a4-48ab-a4c4-fa36475...  
Deployments : 2 Succeeded  
Location : East US  
Tags (edit) : Add tags

Resources Recommendations

Filter for any field... Add filter More (2)

Showing 1 to 6 of 6 records. Show hidden types  
No grouping List view

Name	Type	Location
VMachine1Lab2	Virtual machine	North Europe
VMachine1Lab2-ip	Public IP address	North Europe
VMachine1Lab2-nsg	Network security group	North Europe
vmachine1lab292	Network Interface	North Europe
VMachine1Lab2_OsDi...	Disk	North Europe

Page 1 of 1



anluq0157@uit.no  
UIT OFFICE 365

Search resources, services, and docs (G+)

Home > anluq0157Lab2 > Marketplace

Create a virtual machine

Basics

Disks

Networking

Management

Monitoring

Advanced

Tags

Review + create

Create a virtual machine that runs Linux or Windows. Select an image from Azure marketplace or use your own customized image. Complete the Basics tab then Review + create to provision a virtual machine with default parameters or review each tab for full customization. [Learn more](#)

Project details

Select the subscription to manage deployed resources and costs. Use resource groups like folders to organize and manage all your resources.

Subscription \*

IFI-Edu-INF2220

Resource group \*

anluq0157Lab2

Create new

Instance details

Virtual machine name \*

VMachine2Lab2

Region \*

(Europe) North Europe

Availability options

No infrastructure redundancy required

Security type

Trusted launch virtual machines

Configure security features

Image \*

Ubuntu Server 20.04 LTS - x64 Gen2

See all images | Configure VM generation

VM architecture

Arm64

Review + create

< Previous

Next > Disks

Give feedback

☒ x64

Run with Azure Spot discount ☐

Size \* 
[See all sizes](#)

**Administrator account**

Authentication type ☐ SSH public key ☒ Password

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 \*

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

In Public IP we select None:

Home > anluq0157Lab2 > Marketplace >

**Create a virtual machine**

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

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 \* 
[Create new](#)

Subnet \* 
[Manage subnet configuration](#)

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

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

Micr...Search resources, services, and docs (G+)

anluq0157@uit.no  
UIT OFFICE 365

Home > anluq0157Lab2 > Marketplace >

## Create a virtual machine

Public IP

None

Create new

NIC network security group

☐ None

☒ Basic

☐ Advanced

Public inbound ports \*

☐ None

☒ Allow selected ports

Select inbound ports \*

SSH (22)

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.

Delete NIC when VM is deleted

☐

Enable accelerated networking

☐

Load balancing

You can place this virtual machine in the backend pool of an existing Azure load balancing solution. [Learn more](#)

Place this virtual machine behind an existing load balancing solution?

☐

Review + create

< Previous

Next : Management >

Give feedback

Micr...Search resources, services, and docs (G+)

anluq0157@uit.no  
UIT OFFICE 365

Home > anluq0157Lab2 > Marketplace >

## Create a virtual machine

Validation passed

Basics

Disks

Networking

Management

Monitoring

Advanced

Tags

Review + create

Cost given below is an estimate and not the final price. Please use [Pricing calculator](#) for all your pricing needs.

Price

1 X Standard D2s v3  
by Microsoft  
[Terms of use](#) | [Privacy policy](#)

Subscription credits apply

0.8680 NOK/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 offering(s) listed above; (b) authorize Microsoft to bill my current payment method for the fees associated with the offering(s), with the same billing frequency as my Azure subscription; and (c) agree that Microsoft may share my contact, usage and transactional information with the provider(s) of the offering(s) for support, billing and other transactional activities. Microsoft does not provide rights for third-party offerings. See the [Azure Marketplace Terms](#) for additional details.

Name

Antonio Manuel LUQUE MOLINA

Preferred e-mail address

anluq0157@uit.no

Preferred phone number

+4777644561

Create

< Previous

Next >

Download a template for automation

Give feedback

Create

Microsoft AzureSearch resources, services, and docs (G+)

Home >

VMachine2Lab2  
Virtual machine

Search

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

Subscription ID : 98b07793-65b4-48ab-a4c4-fa26475d0772

DNS name : [znmfmsau2rvmuapcewms](#)

Tags (add) : [Add tags](#)

Health state : -

Properties

Monitoring

Capabilities (7)

Recommendations

Tutorials

Virtual machine

Computer name : VMachine2Lab2

Operating system : Linux (Ubuntu 20.04)

Image publisher : canonical

Image offer : 0001-com-ubuntu-server-focal

Image plan : 20\_04-18-gen2

VM generation : V2

VM architecture : x64

Networking

Public IP address : -

Public IP address (IPv4) : -

Private IP address : 10.0.0.5

Private IP address (IPv6) : -

Virtual network/subnet : VMachine0157Lab2/default

DNS name : -

To access the second virtual machine, as it does not have a public IP, we will first have to access the first virtual machine and then execute SSH with the name and private address of the second virtual machine as shown below:

```
VMachine1Lab2@VMachine1Lab2: ~  
login as: VMachine1Lab2  
VMachine1Lab2@98.71.62.204's password:  
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1045-azure x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:       https://ubuntu.com/advantage  
  
System information as of Mon Sep 18 13:20:19 UTC 2023  
  
System load:  0.02          Processes:           110  
Usage of /:   5.2% of 28.89GB Users logged in:       0  
Memory usage: 3%          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.  
  
VMachine1Lab2@VMachine1Lab2:~$
```

```
VMachine1Lab2@VMachine1Lab2:~$ ssh VMachine2Lab2@10.0.0.5  
The authenticity of host '10.0.0.5 (10.0.0.5)' can't be established.  
ECDSA key fingerprint is SHA256:9xaI/4nxm1OZQtbeZIT4K5LwzPT7j6xmD7e1AlGNhsc.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added '10.0.0.5' (ECDSA) to the list of known hosts.  
VMachine2Lab2@10.0.0.5's password:  
Permission denied, please try again.  
VMachine2Lab2@10.0.0.5's password:  
Welcome to Ubuntu 20.04.6 LTS (GNU/Linux 5.15.0-1045-azure x86_64)  
  
* Documentation:  https://help.ubuntu.com  
* Management:    https://landscape.canonical.com  
* Support:       https://ubuntu.com/advantage  
  
System information as of Mon Sep 18 13:22:20 UTC 2023  
  
System load:  0.0          Processes:           110  
Usage of /:   5.2% of 28.89GB Users logged in:       0  
Memory usage: 3%          IPv4 address for eth0: 10.0.0.5  
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.  
  
VMachine2Lab2@VMachine2Lab2:~$
```

Here we can see that we have gained access and can now do what we need to do.

Now that we have met our objectives, we will delete the entire resource group so as not to accumulate unnecessary expenses:

The top screenshot shows the Microsoft Azure portal interface for the resource group 'anluq0157Lab2'. The left sidebar contains navigation links for Overview, Activity log, Access control (IAM), Tags, Resource visualizer, Events, Settings, Deployments, Security, Deployment stacks, Policies, Properties, Locks, Cost Management, and Monitoring. The main content area displays the 'Essentials' section with details about the subscription, location, and tags. A 'Delete resource group' button is visible in the top right corner of the Essentials section.

The bottom screenshot shows the 'Delete a resource group' confirmation dialog. It states: 'The following resource group and all its dependent resources will be permanently deleted.' The resource group to be deleted is 'anluq0157Lab2'. It lists 10 dependent resources to be deleted:

Name	Resource type
VMachine1Lab2	Virtual machine
VMachine1Lab2-ip	Public IP address
VMachine1Lab2-nsg	Network security group
vmachine1lab292	Network interface
VMachine1Lab2_OsDisk_1_e6d1ac12c11949d5	Disk
VMachine2Lab2	Virtual machine
VMachine2Lab2-nsg	Network security group
vmachine2lab2270	Network interface
VMachine2Lab2_OsDisk_1_3bac990893744f2a	Disk

Below the list, there is a checkbox labeled 'Apply force delete for selected Virtual machines and Virtual machine scale sets' which is checked. A confirmation field is present with the text 'Enter resource group name to confirm deletion \*' and the value 'anluq0157Lab2'. At the bottom, there are 'Delete' and 'Cancel' buttons.

Now regarding this questions:

- What is an Azure Virtual Network?
- How to create Azure VNet?
- How to provision a VM using the created VNet?
- What is the need of private IP address?

I will give an answer:

- Azure Virtual Network is a network in the Microsoft Azure cloud that allows you to securely connect and isolate Azure resources, like virtual machines (VMs), from the internet and other VNets. It provides a private network space, enabling communication between Azure resources

within the same VNet or across different VNets, while allowing control over network security and routing.

- In order to create an Azure VNet:

- In Azure Portal, go to "Create a resource" or if you have a resource group go there.
- Search for "Virtual network" and click "Create."
- Fill in details like name, address space, and subnets (if this is necessary).
- Configure DNS settings, security, and other options (if this is necessary).
- Click "Create" to create the VNet.

- Provisioning a VM using the created VNet:

- When creating a VM in Azure, during the setup process:
- Choose the existing VNet you created earlier.
- Select a subnet (could be the default one or other that you create) within that VNet for the VM.
- This VM will be part of the VNet and can communicate with other resources in the same VNet.

- Need for Private IP Address:

- Private IP addresses are essential for:
- Security: They keep resources hidden from the public internet.
- Isolation: They help isolate resources within a private network (VNet), reducing exposure to external threats.
- Internal Communication: Private IPs enable Azure resources to communicate with each other within a VNet or across peered VNets while keeping traffic within the Azure backbone.
- Compliance: They help meet regulatory and compliance requirements by keeping sensitive data on private networks.