

# **A GUIDE TO CREATING A VIRTUAL MACHINE ON AZURE**

## **What do we need to understand about Microsoft Azure?**

Imagine you have a lot of important data you need to keep safe, like photos, documents, and files. You could keep them all on your computer, but what if something happened to your computer? That is where Azure comes in.

Azure is a big, super-secure digital storage space that is not just on your computer, but it is stored in dedicated buildings filled with banks of computers called servers. These servers are owned and managed by Microsoft.

Now, instead of keeping all your important applications on your own computer, you can store it safely on Azure. This means you can access your application from anywhere with an internet connection, and you do not have to worry about losing it if something happens to your computer.

Azure is more than just a storage. For example, you can use it to build web apps, create virtual machines, run apps, analyze data, and much more.

So, what you need to understand about Azure, is that Azure is a Microsoft public cloud platform that offers a large array of services, which includes platform as a service (PaaS), infrastructure as a service (IaaS) and software as a service (SaaS) that can be used for services such as virtual computing, networking, storage, etc.

***On this note, I will be showing simple but detailed steps on how to create a virtual machine on your Azure portal.***

## Step 1: Create a Resource Group

### What is a Resource Group

A resource group is a logical 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. Generally, add resources that share the same lifecycle to the same resource group so you can easily deploy, update, and delete them as a group.

*Now let us delve in and create a resource group on Microsoft Azure portal.*

1. On your preferred browser, search for <https://portal.azure.com>. ➡ enter your credentials.
2. Once you are on your Azure homepage, search for **Resource groups**, ➡ click on **+Create a new resource group**.
3. Fill in the parameters on the **Basics tab** according to your preference. Select your **Subscription**, give the Resource group a distinguished name, then select Region that suits your organization.

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 \* ⓘ ABCOFCLOUD Subscription 1

Resource group \* ⓘ Sarah-RG 2 ✓

**Resource details**

Region \* ⓘ (US) East US 3

Review + create < Previous Next : Tags >

4. Apply your tags to logically organize your resources by category.

Home > Resource groups >

## Create a resource group ...

Basics Tags Review + create

Apply tags to your Azure resources to logically organize them by categories. A tag consists of a key (name) and a value. Tag names are case-insensitive and tag values are case-sensitive. [Learn more](#)

| Name ⓘ  | Value ⓘ    | Resource       |
|---------|------------|----------------|
| Project | Department | Resource group |
|         |            | Resource group |

Review + create < Previous Next : Review + create >

Home > Resource groups >

## Create a resource group

 Validation passed.

Basics   Tags   Review + create

Basics

|                |                         |
|----------------|-------------------------|
| Subscription   | ABCOFCLOUD Subscription |
| Resource group | Sarah-RG                |
| Region         | East US                 |

Tags

|         |            |
|---------|------------|
| Project | Department |
|---------|------------|

**Create**   < Previous   Next >   [Download a template](#)

5. Click on **Review + Create**, ensure the validation is ticked passed. Proceed to create your resource group.

*Upon creating our logical container (Resource Group), I will be taking you, my dear readers, to the next step on how to create a Virtual network and a brief introduction on what is VN.*

## Step 2: Create a Virtual Network

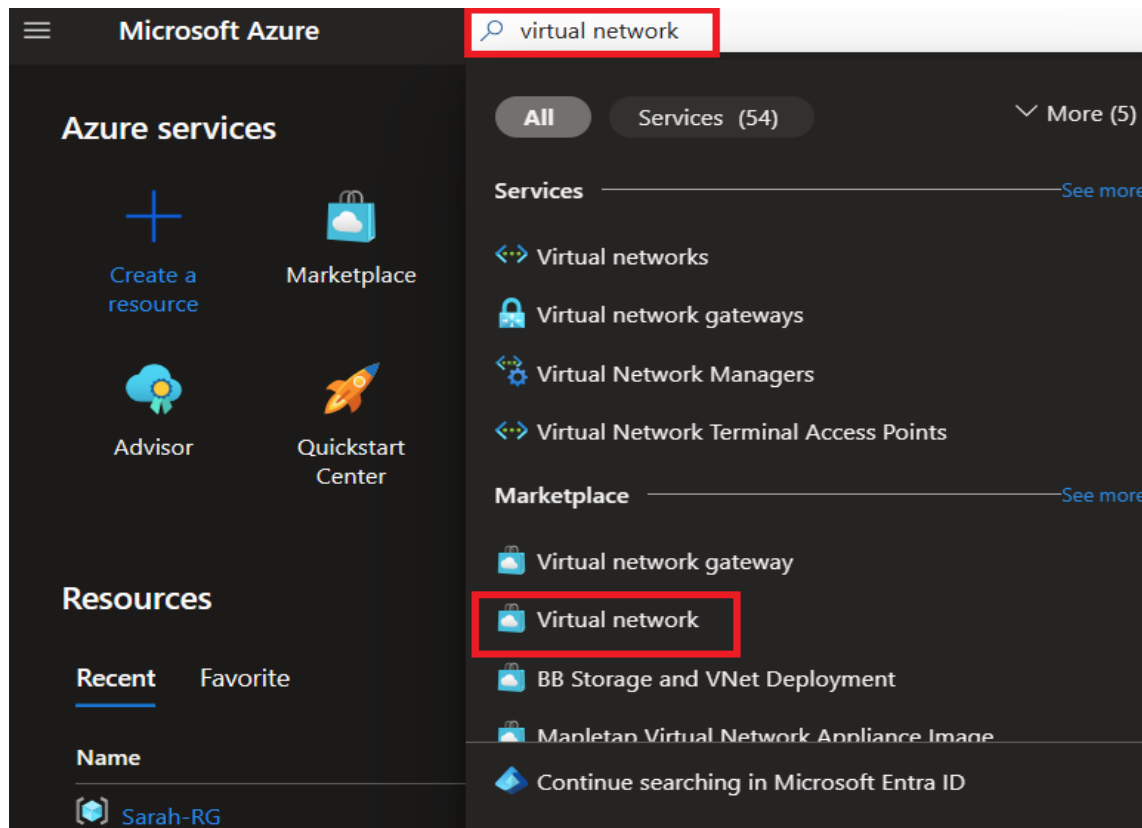
### What is Azure Virtual Network

Azure network is a service that enables several types of Azure resources to securely communicate with each other over the internet, and on-premises networks. A virtual network is like a traditional network that you would operate in your own datacenter.

A virtual network is a way to create a secure and organized environment in the cloud where you can control access to your digital resources, keep everything properly segmented, and connect various parts as needed, ensuring your resources run smoothly and securely.

***Note: having a little understanding on types of networks, classless inter-domain routing (CIDR), subnetting, subnet-mask etc. will enable you to work more effectively on Azure virtual network.***

1. On the Azure portal search box, search for **Virtual network**.
2. Select virtual network under the Marketplace in the search result, ➡ click on **create**.



3. Under the **Basics tab**, choose your preferred subscription you would want to use for this virtual network.
4. A new resource group can simply be created, by clicking on **Create new**, or you could as well click on the drop-down and select an existing resource group of your preference. **"Sarah-RG"** will be selected for this tutorial.
5. Enter a preferred distinguished name for the virtual network. For this tutorial I will be naming the virtual network **"TechbysaraVNET."**
6. A region is the location we would like to put our virtual network, and for this tutorial we will be choose the **East US**.
7. For this tutorial we will leave the Security tab on default and click on Next.

Home > Virtual network >

## Create virtual network

**Basics** Security IP addresses Tags Review + create

### Project details

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

Subscription \* ABCOFCLOUD Subscription

Resource group \* Sarah-RG [Create new](#)

### Instance details

Virtual network name \* TechbysaraVNET

Region \* (US) East US [Deploy to an Azure Extended Zone](#)

[Previous](#) **Next** [Review + create](#)

We will use 192.168.70.0/24 an IPv4 for our address space and for the **Subnets**, we are using 192.168.70/29 for the subnet address range.

**Tip:** the benefit of networking and CIDR is amazing because it promotes more efficient use of IP address space and makes it easier to segment networks into smaller and more manageable subnets. For example, 192.168.70.0/24 is a default class C IP address.

Meaning, the first three octets which are the Network ID are turned on and the last octet which is the Host ID is turned off. Bear in mind that an octet is made of eight bits.

Therefore, the default /24 will give us 256 addresses. Now, that's where CIDR comes into play, by using /29 we can get 32 Ip address range.

8. On the IP address tab, click on the **Delete address space**.

## Create virtual network

Basics Security **IP addresses** Tags Review + 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 - 10.0.255.255
65,536 addresses

+ Add a subnet

Delete address space
1

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

Address space '10.0.0.0/16 (10.0.0.0 - 10.0.255.255)' overlaps with address space '10.0.0.0/16 (10.0.0.0 - 10.0.255.255)' of virtual network 'VNetAzureandAI'. Virtual networks with overlapping address space cannot be peered. If you intend to peer these virtual networks, change address space '10.0.0.0/16 (10.0.0.0 - 10.0.255.255)'. [Learn more](#)

A NAT gateway is recommended for outbound internet access from subnets. Edit the subnet to add a NAT gateway. [Learn more](#)

Previous Next **Review + create**

- Select IPv4 by clicking on the **Add IPv4 address space**, enter your chosen IP address 192.168.70.0, the address space size /24.
- Select the **+Add a subnet** and enter your preferred Subnet Name. We will create two networks using AI-Subnet and Project-Subnet as our subnet names.
- Upon creating the AI-Subnet first, our starting IP address is 192.168.70.0 then click on **Save**. For Project-Subnet, the starting IP is 192.168.70.40 then click **Add**.



Home > Virtual network >

Create virtual network

BasicsSecurityIP addressesTagsReview + create

Configure your virtual network address space with the IPv4 and IP

Define the address space of your virtual network with one or more virtual network address space into smaller ranges for use by your assigns the resource an IP address from the subnet. [Learn more](#)

Add IPv4 address space

192.168.70.0/24

192.168.70.0 /24

192.168.70.0 - 192.168.70.255 256 addresses

+ Add a subnet

SubnetsIP address range

A NAT gateway is recommended for outbound internet access gateway. [Learn more](#)

PreviousNextReview + createSaveCancel

Edit subnet

Select an address space and configure your subnet. You can customize a default subnet or select from subnet templates if you plan to add select services later. [Learn more](#)

Subnet purposeDefault

NameAI-Subnet

IPv4

Include an IPv4 address space

IPv4 address range192.168.70.0/24

Starting address192.168.70.0

Size/29 (8 addresses)

Subnet address range192.168.70.0 - 192.168.70.7

IPv6

Include an IPv6 address space

Private subnet

Enable private subnet (no default outbound access)

This setting can't be changed after the subnet is created

Home > Virtual network >

Create virtual network

BasicsSecurityIP addressesTagsReview + create

Configure your virtual network address space with the IPv4 and IP

Define the address space of your virtual network with one or more virtual network address space into smaller ranges for use by your assigns the resource an IP address from the subnet. [Learn more](#)

Add IPv4 address space

192.168.70.0/24

192.168.70.0 /24

192.168.70.0 - 192.168.70.255 256 addresses

+ Add a subnet

SubnetsIP address range

A NAT gateway is recommended for outbound internet access gateway. [Learn more](#)

PreviousNextReview + createAddCancel

Add a subnet

Select an address space and configure your subnet. You can customize a default subnet or select from subnet templates if you plan to add select services later. [Learn more](#)

Subnet purposeDefault

NameProject-Subnet

IPv4

Include an IPv4 address space

IPv4 address range192.168.70.0/24

Starting address192.168.70.40

Size/29 (8 addresses)

Subnet address range192.168.70.40 - 192.168.70.47

IPv6

Include an IPv6 address space

Private subnet

Enable private subnet (no default outbound access)

This setting can't be changed after the subnet is created

Once that is completed, click on **Review + Create** and select **Create**.

# Create virtual network ...

Basics Security IP addresses Tags Review + 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 | ▾

^ 192.168.70.0/24

Delete address space

192.168.70.0

/24 ▾

192.168.70.0 - 192.168.70.255

256 addresses

+ Add a subnet

Subnets

IP address range

Size

NAT gateway

AI-Subnet

192.168.70.0 - 192.168.70.7

/29 (8 addresses)

-

Project-Subnet

192.168.70.40 - 192.168.70.47

/29 (8 addresses)

-

A NAT gateway is recommended for outbound internet access from subnets. Edit the subnet to add a NAT

Previous

Next

Review + create

## Step 3: Create a Virtual Machine

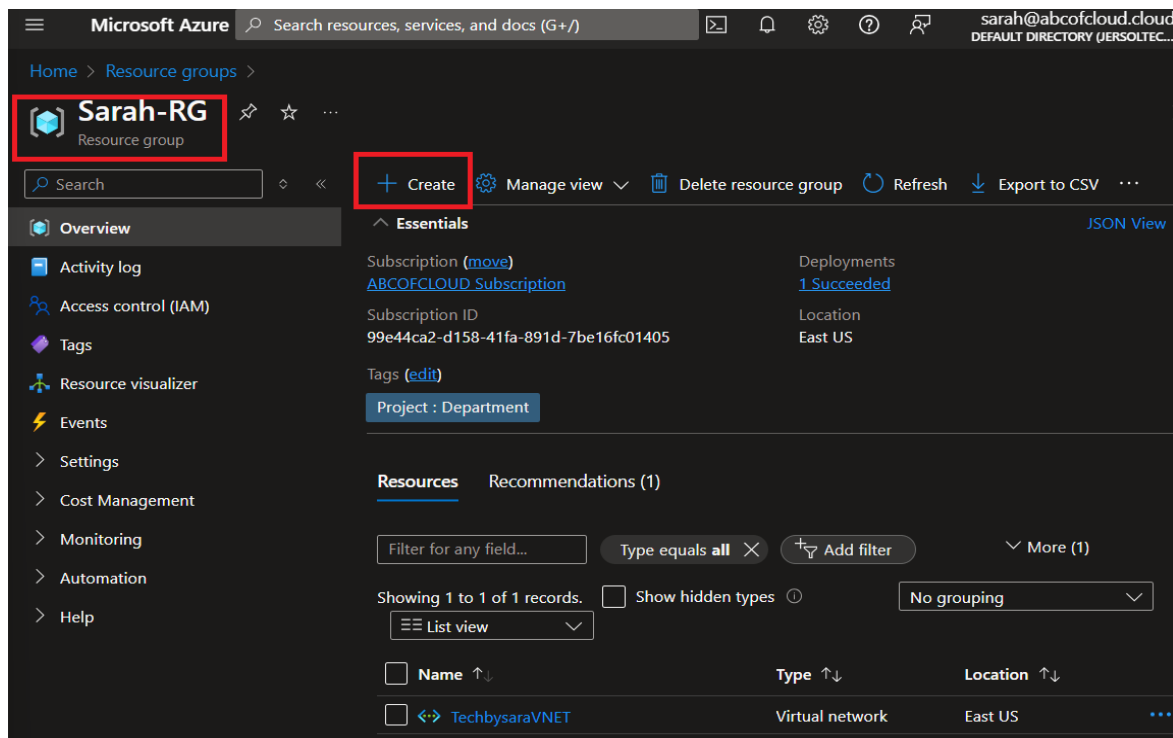
### What is a Virtual Machine (VM)

An Azure virtual machine is a software-based, virtual version of a physical computer that behaves like an actual computer. It gives you the flexibility of virtualization without having to buy and maintain the physical hardware that runs it. However, you still need to maintain the virtual machine by performing tasks, such as configuring, patching, and installing the software that operates on it.

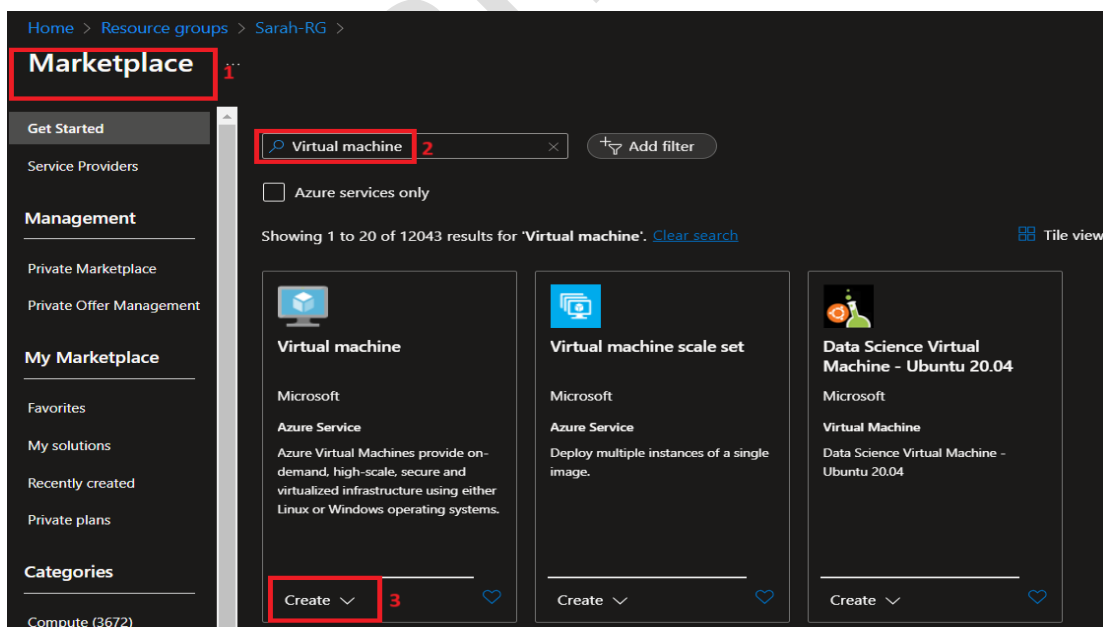
*If you have reached this stage, then you are ready to experience the thrill of creating a virtual computer.*

Do you know you can equally create resources from your Resource group by simply clicking on the +Create tab? Well, that is correct, and we will be creating our VM using this process.

1. On your Azure portal <https://portal.azure.com>. Click on the menu icon and select Resource group.
2. Click on the Resource group you have created. I will be clicking on *Sarah-RG* ➡ click on +Create.



- Once you select the **+Create** it takes you directly to the Marketplace. Then on the search bar, we will search for a Virtual machine and click on **Create**, ➡ create virtual page opens.



4. We will choose our preferred Subscription.
5. Resource group, on the dropdown icon we select **Sarah-RG**.
6. Virtual machine name, we are naming our machine **Techbysara-VM**.
7. Region, East US.
8. Security type, we are selecting the Trusted launch virtual machines.
9. Image: Windows Server 2019 Datacenter - x64 Gen2

Microsoft Azure

Home > Resource groups > Sarah-RG > 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 \*

Resource group \*  [Create new](#)

**Instance details**

Virtual machine name \*

Region \*

Availability options

Security type  [Configure security features](#)

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

VM architecture ☐ Arm64 ☒ x64

Arm64 is not supported with the selected image.

10. Size, we will be selecting Standard\_B2ms - 2 vcpus, 8 GiB memory. This will support the workload we want to run.

### **Administrator account:**

11. Username: We will select our preferred username, **Techbysara**.

12. Password: Provide a strong secured password with at least 12 characters long that meets the [defined complexity requirements](#).

### ***Inbound port rules:***

13. Public inbound ports: Allow selected ports, to allow traffic from the public internet.

14. Select inbound ports: RDP (3389).

15. Click on Next ➡ Disks and leave the Disk tab on default, then Click ➡ Networking.

The screenshot shows the 'Create a virtual machine' page in the Microsoft Azure portal. The breadcrumb trail is 'Home > Resource groups > Sarah-RG > Marketplace >'. The page title is 'Create a virtual machine'. A message states 'Arm64 is not supported with the selected image.' Below this, there are checkboxes for 'Run with Azure Spot discount' (unchecked) and 'Enable Hibernation' (unchecked). The 'Size' dropdown is set to 'Standard\_B2ms - 2 vcpus, 8 GiB memory (US\$60.74/month)'. The 'Administrator account' section has 'Username' set to 'Techbysara', and both 'Password' and 'Confirm password' are masked with dots. The 'Inbound port rules' section is highlighted with red boxes. It shows 'Public inbound ports' set to 'Allow selected ports' (selected) and 'Select inbound ports' set to 'RDP (3389)'. A blue information box states: 'All traffic from the internet will be blocked by default. You will be able to change inbound port rules in the VM > Networking page.' The 'Licensing' section at the bottom has 'Would you like to use an existing Windows Server license?' unchecked. At the bottom of the page, there are three buttons: '< Previous', 'Next: Disks >' (highlighted with a red box), and 'Review + create'.

## Networking tab: Network interface

16. Virtual network, we are selecting our preferred VN TechbysaraVNET.
17. Subnet: since we created two subnets, we will be selecting Project-Subnet (192.168.70.40/27).
18. Public IP: A public Ip will be assigned to our VM. (new) Techbysara-VM-Ip.
19. NIC network security group: Basic.
20. Public inbound ports: Allow selected ports.
21. Select inbound ports: RDP (3389).
22. Click on Review + Create to validate and then click on Create.

Microsoft Azure

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

[Home](#) > [Resource groups](#) > [Sarah-RG](#) > [Marketplace](#) >

## Create a virtual machine

BasicsDisksNetworkingManagementMonitoringAdvancedTagsReview + 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 \*

TechbysaraVNET

Create new

Subnet \*

Project-Subnet (192.168.70.40/29)

Manage subnet configuration

Public IP \*

(new) Techbysara-VM-ip

Create new

NIC network security group

☐ None

☒ Basic

☐ Advanced

Public inbound ports \*

☐ None

☒ Allow selected ports

Select inbound ports \*

RDP (3389)

 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

☐

The selected VM size does not support accelerated networking.

### Load balancing

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

Load balancing options

☒ None

☐ ...

< Previous

Next : Management >

Review + create

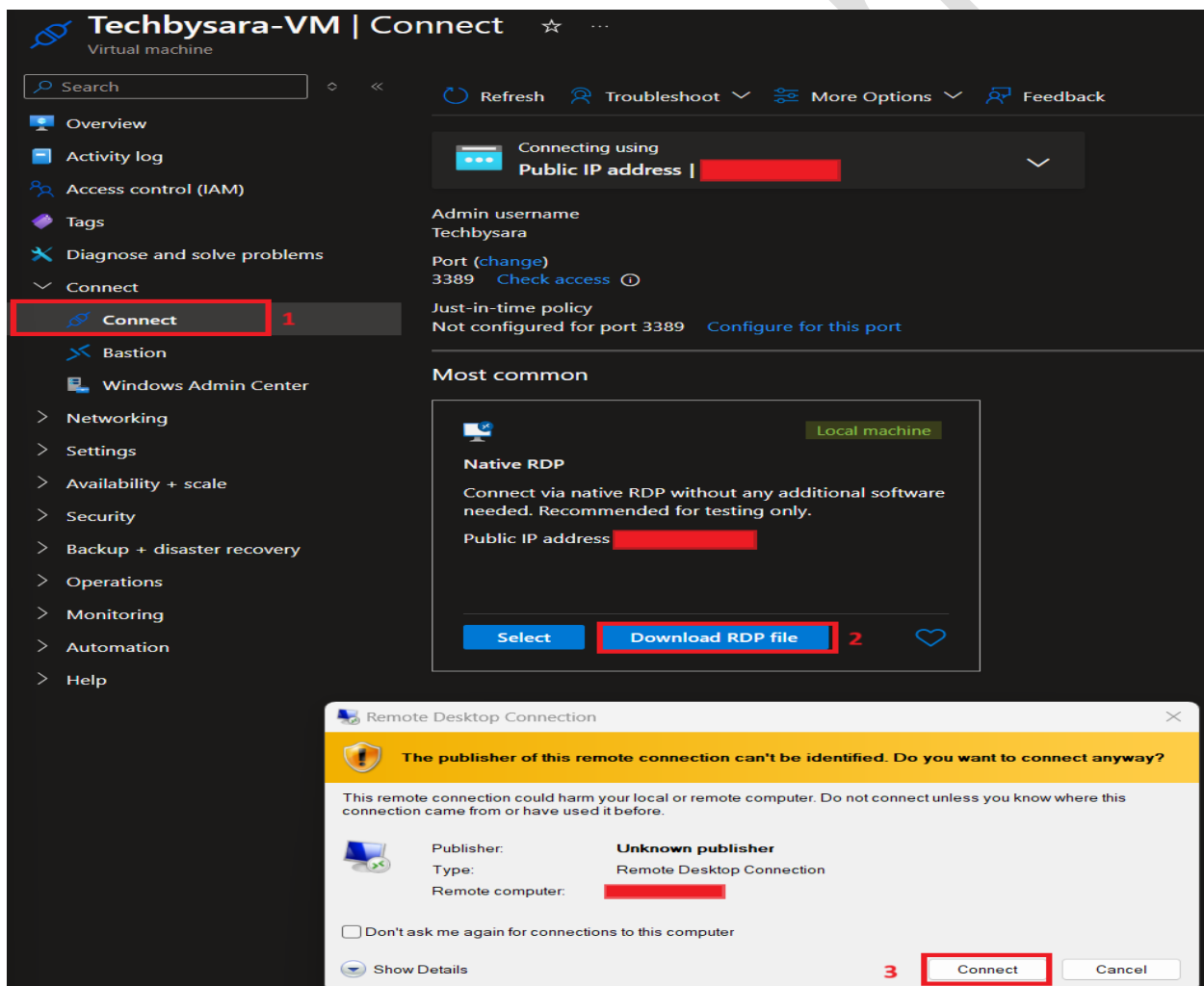
Sit back, relax as deployment is in progress. Next Your deployment is complete.



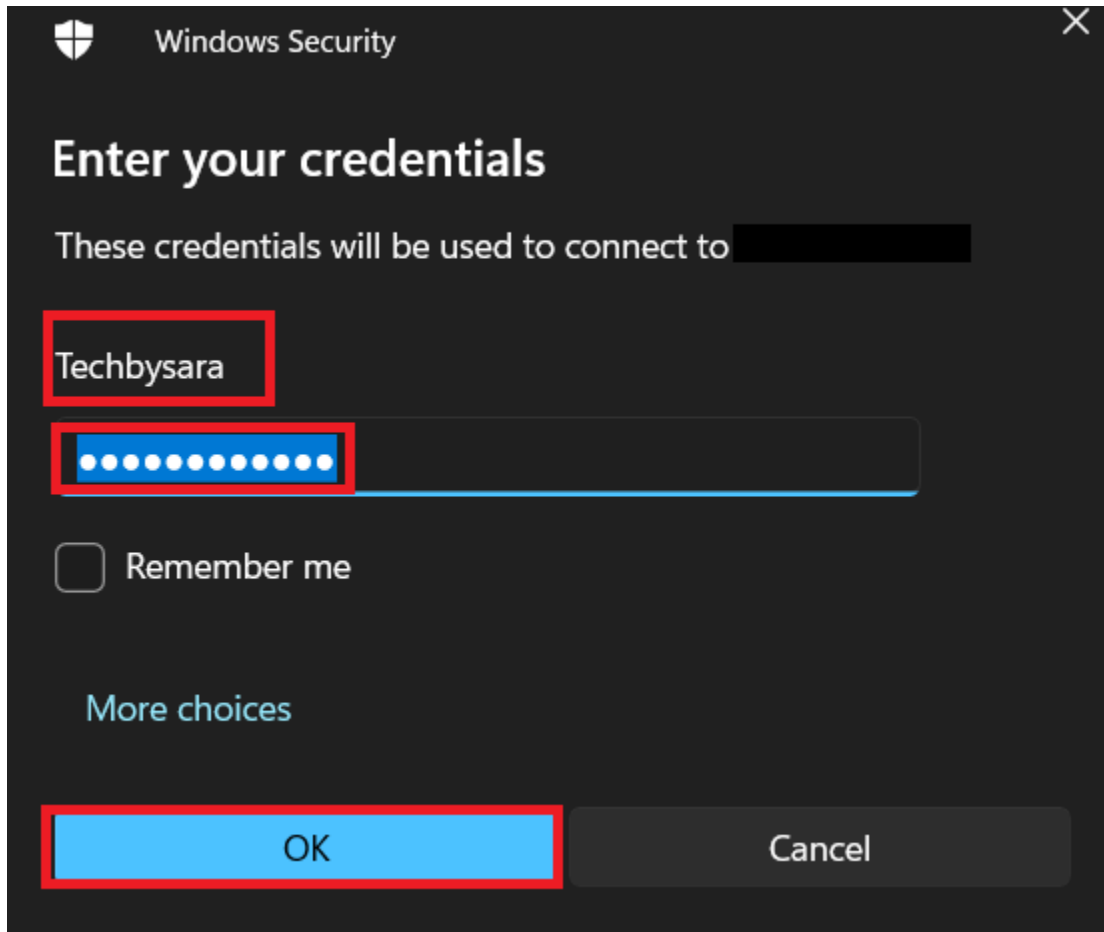
## Test run the Virtual Machine

After successfully creating our VM, we are going to assess the virtual machine to ensure everything runs smoothly.

1. Search for Techbysara-VM, using the search box in the Azure portal.
2. Click Connect on the page, then select Public IP address.
3. Select Download RDP file.
4. Open the download RDP file and click on connect when prompted.



5. Enter the username and password you specified when creating your virtual machine.



6. Click **Yes** and connect when the warning certificate pops up.

Welcome to your very own Azure virtual machine. Explore and enjoy the experience of building your VM.

