

Advance AWS

AWS Project- 3

Student:

Kishore Shinde

Teacher:

Mrs. Vinolin Jeremiah

Course:

Advance AWS Cloud Computing with DevOps
Fundamentals

Institute:

Lets Upgrade

Project 03:

Working with Volumes

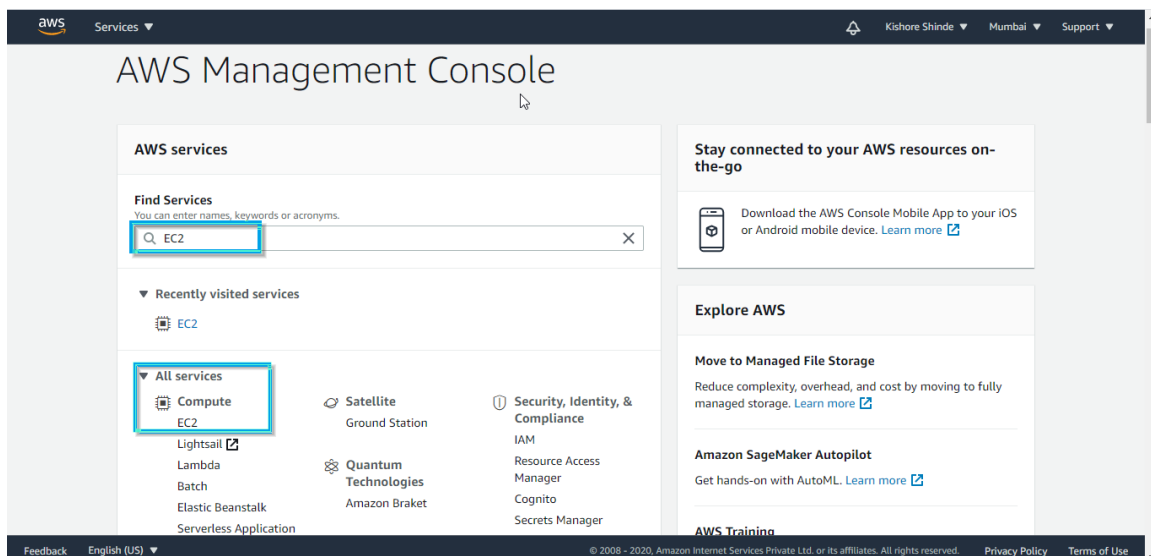
For the above-mentioned project, we will go through the following 8 steps:

- Step A: Create a windows machine
- Step B: Create a volume
- Step C: Attach the volume to the windows machine
- Step D: Bring the volume online
- Step E: Create a new volume
- Step F: Check mounted volume
- Step G: Modify the volume
- Step H: Delete the volume

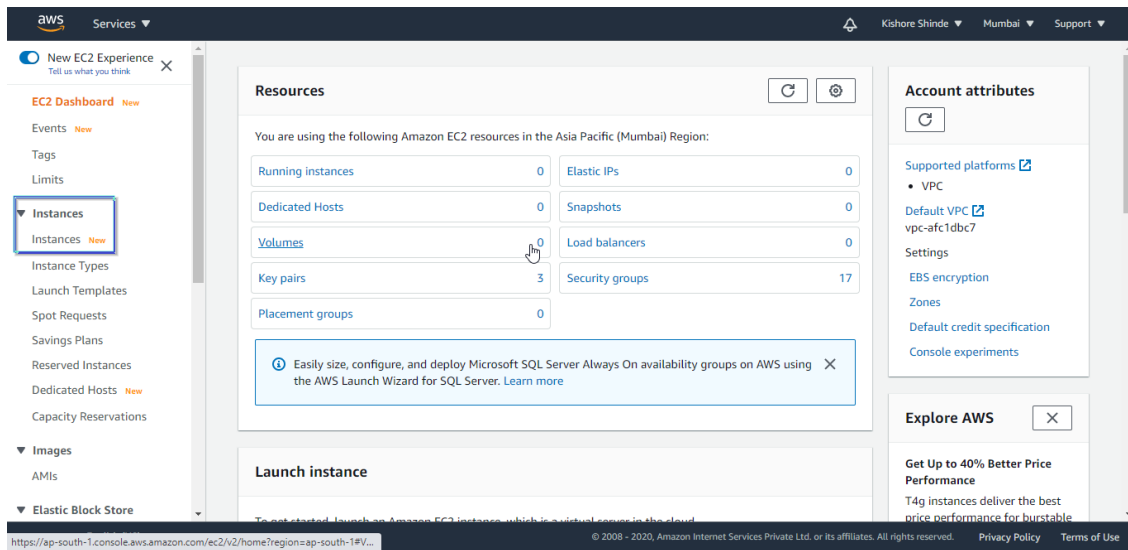
STEP A: Create a Windows Machine

Steps for launching a new windows instance:

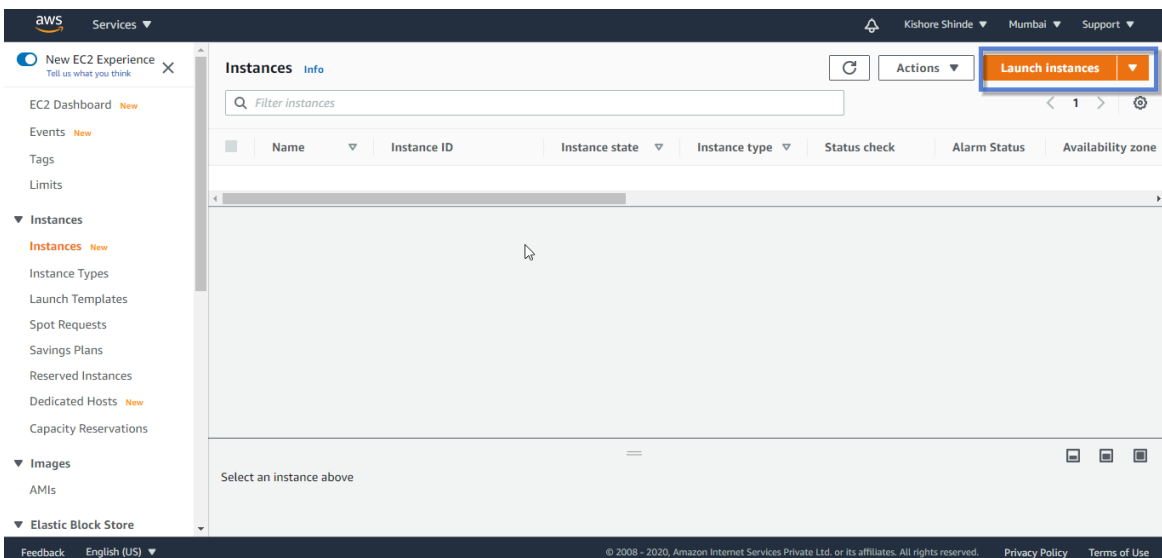
1. From the AWS Management Console, you can either find EC2 service or click on All services ->Compute->EC2



2. Once you are in EC2 console from the EC2 Dashboard on the left, select Instances

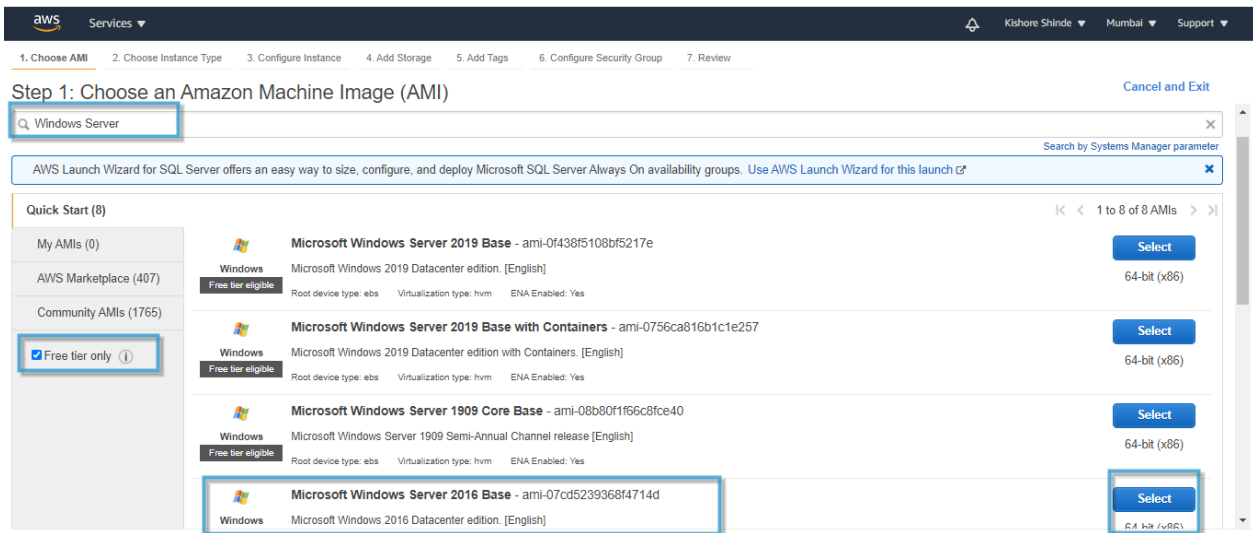


3. From the Instances Dashboard, Select Launch Instance at the right



Once you click on Launch Instance, a wizard will start which has 7 steps for creating the instance.

Step 1: Choose an Amazon Machine Image (AMI)



You can search the AMI e.g. Windows.... or can select the AMI from the list of the AMI's.

Note: Make sure you select the Free Tier only option so only free AMI's will be shown and you will not be charged.

Click on "Select" on the Windows AMI e.g. Microsoft Windows 2016 Base.

Step 2: Choose an Instance Type

Here you can select the Instance type. These are varying combinations of CPU, Memory, Storage and Networking capacity. The default instance type selected is "t2.micro" which is Free tier eligible. Let it be selected otherwise you will be charged for other instance type. You can even see the details of the selected instance type in **Currently Selected**

e.g. : t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

aws Services

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance types Current generation Show/Hide Columns

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

Step 3: Configure Instance Details

Here you can configure the instance that suits your requirement. You can launch multiple instances from the same AMI you can mention it in Number of instances.

In Network you can select the VPC or create new VPC, we will continue with default VPC, select or create new Subnet, we will continue with default subnet. We can select IAM role, we will continue with "None".

aws Services

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances: 1 Launch into Auto Scaling Group

Purchasing option: ☐ Request Spot instances

Network: vpc-afc1dbc7 (default) Create new VPC

Subnet: No preference (default subnet in any Availability Zone) Create new subnet

Auto-assign Public IP: Use subnet setting (Enable)

Placement group: ☐ Add instance to placement group

Capacity Reservation: Open

Domain join directory: No directory Create new directory

IAM role: None Create new IAM role

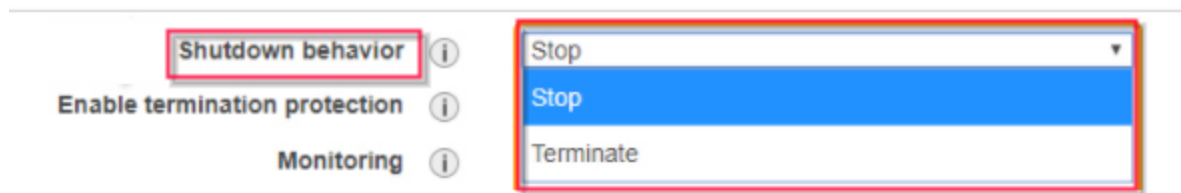
Shutdown behavior: Stop

Stop - Hibernate behavior: ☐ Enable hibernation as an additional stop behavior

Enable termination protection: ☐ Protect against accidental termination

Cancel Previous Review and Launch Next: Add Storage

In the **Shutdown behavior** you can select Stop or Terminate. It is an important option If you select Stop when the instance shuts down it will not be deleted but stopped.



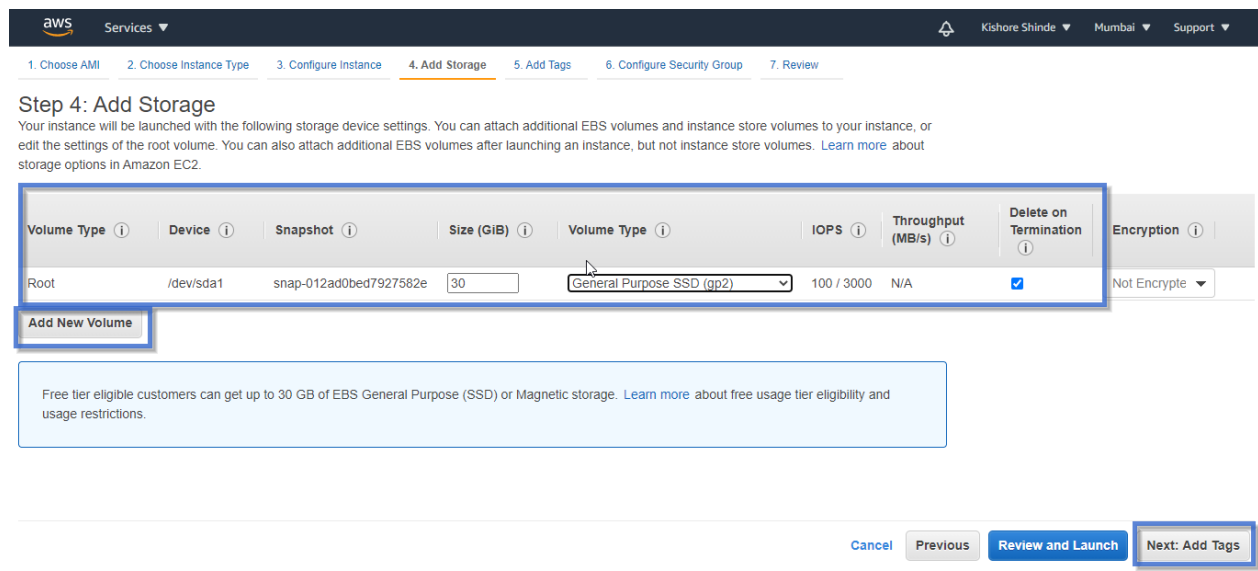
Enable termination protection: If you check it will protect your instance from accidental termination.



Now keep whatever is default don't change anything and click on Next: Add Storage

Step 4: Add Storage

Your Instance will be launched with the following storage device settings. You can also attach additional EBS volumes here. In our case we will first create the instance and then create & attach volume. For now, keep the default Volume Type: Root and size: 30 GiB (only 30 GB is free for free tier for General purpose SSD) and General-Purpose SSD (gp2) as it is. Delete on Termination checkbox will make sure the volume gets deleted as soon as the Instance is terminated. You can even add new EBS volume. Click on Next: Add Tags



Step 5: Add Tags

Tags enable you to categorize your AWS resources in different ways. Each tag is a simple label consisting of customer-defined key and an optional value that can make it easier to manage, search for, and filter resources. For E.g. Key can be Name and Value can be EBS Demo.

aws Services

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver.
A copy of a tag can be applied to volumes, instances or both.
Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key (128 characters maximum)	Value (256 characters maximum)	Instances	Volumes
Name	EBS Demo	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

[Add another tag](#) (Up to 50 tags maximum)

Cancel Previous **Review and Launch** Next: Configure Security Group

You can add the tag or can continue to next step “Configure Security Group”

Step 6: Configure Security Group

A security group is similar to firewall. Here you can set the rules that can control traffic for your instance. For the current instance in the Type select “All Traffic” and in Source select “Anywhere”. It will show you a warning that the source anywhere will allow all IP addresses to access your instance you must select IP Addresses only. Ignore it for now and click on “Review and Launch”.

aws Services

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1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☒ Create a new security group
☐ Select an existing security group

Security group name: launch-wizard-16
 Description: launch-wizard-16 created 2020-10-07T18:07:30.298+05:30

Type	Protocol	Port Range	Source	Description
All traffic	All	0 - 65535	Anywhere 0.0.0.0/0, ::/0	e.g. SSH for Admin Desktop

[Add Rule](#)

Warning
 Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel Previous **Review and Launch**

Step 7: Review

Here you can review all the selection you have done in previous steps and if required can go back and change them. You are able to review the AMI details, Instance Type/Details, Security Groups, Storage & Tags.

Step 7: Review Instance Launch

AMI Details

Microsoft Windows Server 2016 Base - ami-07cd5239368f4714d

Free tier eligible

Microsoft Windows 2016 Datacenter edition. [English]

Root Device Type: ebs Virtualization type: hvm

If you plan to use this AMI for an application that benefits from Microsoft License Mobility, fill out the [License Mobility Form](#). Don't show me this again

Instance Type

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

Security Groups

Security group name: launch-wizard-19

Description: launch-wizard-19 created 2020-10-08T19:37:59.912+05:30

Type	Protocol	Port Range	Source	Description
All traffic	All	All	0.0.0.0/0	
All traffic	All	All	:::0	

Instance Details

Storage

Cancel Previous Launch

Click on Launch once you have reviewed all the details.

Next it will ask you to Select an existing key pair or create a new key pair.

Step 7: Review Instance Launch

AMI Details

Microsoft Windows Server 2016 Base - ami-07cd5239368f4714d

Free tier eligible

Microsoft Windows 2016 Datacenter edition. [English]

Root Device Type: ebs Virtualization type: hvm

If you plan to use this AMI for an application that benefits from Microsoft License Mobility, fill out the [License Mobility Form](#). Don't show me this again

Instance Type

Instance Type	ECUs	vCPUs
t2.micro	Variable	1

Security Groups

Security group name: launch-wizard-19

Description: launch-wizard-19 created 2020-10-08T19:37:59.912+05:30

Type	Protocol	Port Range	Source	Description
All traffic	All	All	0.0.0.0/0	
All traffic	All	All	:::0	

Instance Details

Storage

Cancel Previous Launch

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Choose an existing key pair

Select a key pair

WindowsIIS

☒ I acknowledge that I have access to the selected private key file (WindowsIIS.pem), and that without this file, I won't be able to log into my instance.

Cancel Launch Instances

You can create a new or select an existing key paid. For this instance, we will select “existing key pair”. (WindowsIIS.pem). Select the “I acknowledge...” check box.

Note: Please make sure you have the .pem file, it will be required to connect to the instance otherwise you can't.

Click on Launch Instance.

In the next screen you will be able to see “Your instance is launching”. You will be able to see the instance id that is initiated for launch.

Launch Status

Instance ID

✓ Your instances are now launching
The following instance launches have been initiated: **i-04c9ca6dbbc20fb7f** [View launch log](#)

ℹ Get notified of estimated charges
Create billing alerts to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

How to connect to your instances

Your instances are launching, and it may take a few minutes until they are in the **running** state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

Click **View Instances** to monitor your instances' status. Once your instances are in the **running** state, you can connect to them from the Instances screen. [Find out](#) how to connect to your instances.

▼ Here are some helpful resources to get you started

- How to connect to your Windows instance
- Learn about AWS Free Usage Tier
- Amazon EC2: User Guide
- Amazon EC2: Microsoft Windows Guide
- Amazon EC2: Discussion Forum

While your instances are launching you can also

- Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)
- Create and attach additional EBS volumes (Additional charges may apply)

You can click on the instance id which will take you to Instances Dashboard.

Here you will see the instance created which will be initially showing Instance State as “Pending”. Wait till the Status check shows 2/2 checks and Instance State becomes “Running”.

Instances (1) Info

Filter instances

	Name	Instance ID	Instance state	Instance type	Status check	A..	Availability zone	Public IPv4 DNS
<input type="checkbox"/>	EBS Demo	i-04c9ca6dbbc20fb7f	Running	t2.micro	2/2 checks passed	+	ap-south-1b	ec2-13-232-227-107.ap-south-1.amazonaws.com

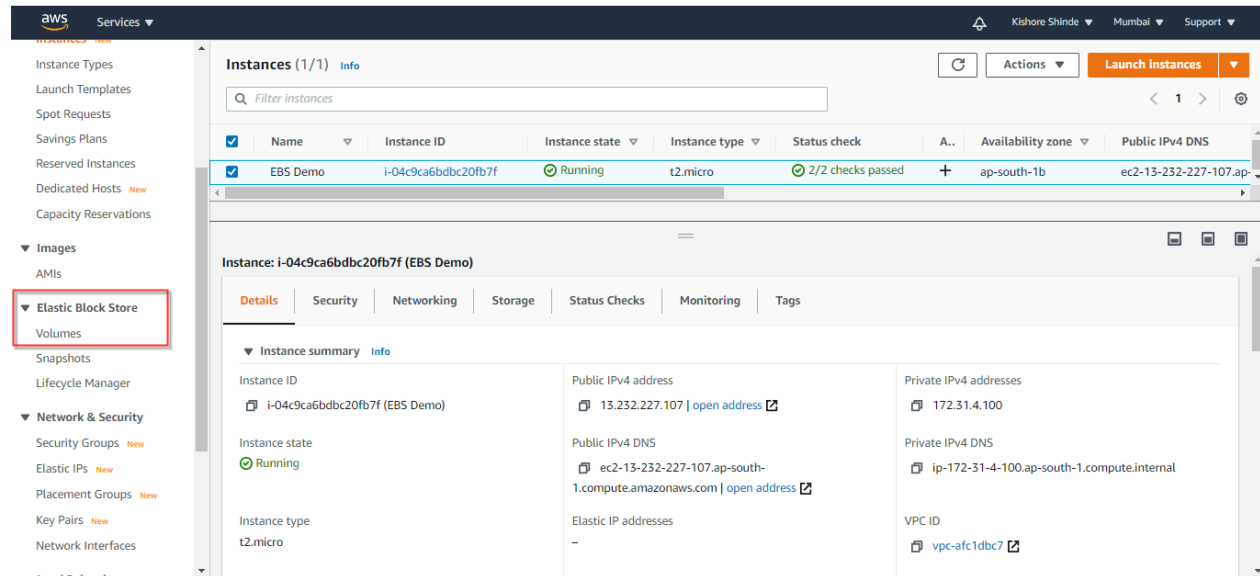
Select an instance above

Now your Windows Instance (Name: EBS Demo) is created.

Note: Make sure you take a note of the Availability Zone, which we will select when we create the EBS volume (It has to be in the same Availability Zone as the Instance)

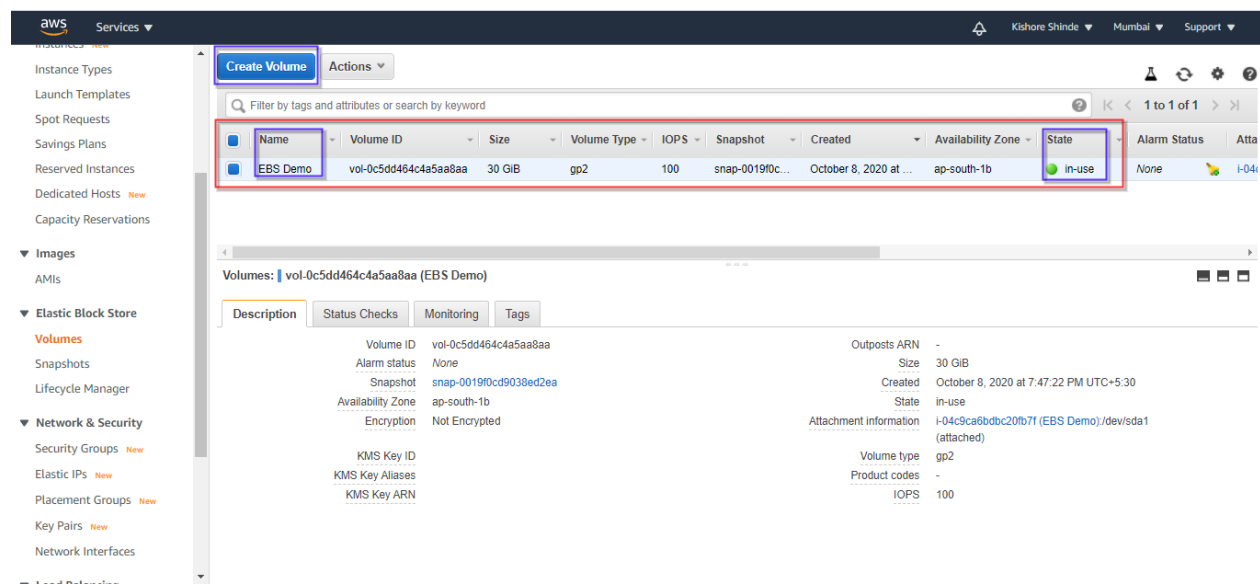
Step B: Creating EBS Volume

Following are the steps for creating EBS Volume :



Select the instance, and on the left under the Elastic Block Store select Volumes (Elastic Block Store->Volumes) as shown in the above screen.

On the next screen you will see the list of volumes.



You can see in the above screen Volume with Name “EBS Demo” is in use. These is the volume that is the root volume of the windows instance that we have created.

Now we will be creating an additional EBS volume.

Click on Create Volume.

The screenshot shows the AWS 'Create Volume' console page. The 'Volume Type' is set to 'General Purpose SSD (gp2)'. The 'Size (GiB)' is set to '4'. The 'IOPS' is '100 / 3000'. The 'Throughput (MB/s)' is 'Not applicable'. The 'Availability Zone*' is set to 'ap-south-1a'. The 'Snapshot ID' is set to 'Filter by attributes'. The 'Encryption' is set to 'ap-south-1a'. The 'Tag' section shows 'Key' and 'Value' fields. The 'Create Volume' button is highlighted with a red box.

In the Create Volume Screen you can select the Volume type let it be “General Purpose SSD (gp2)”. In the Size (GiB) you can specify the required volume size e.g. 4.

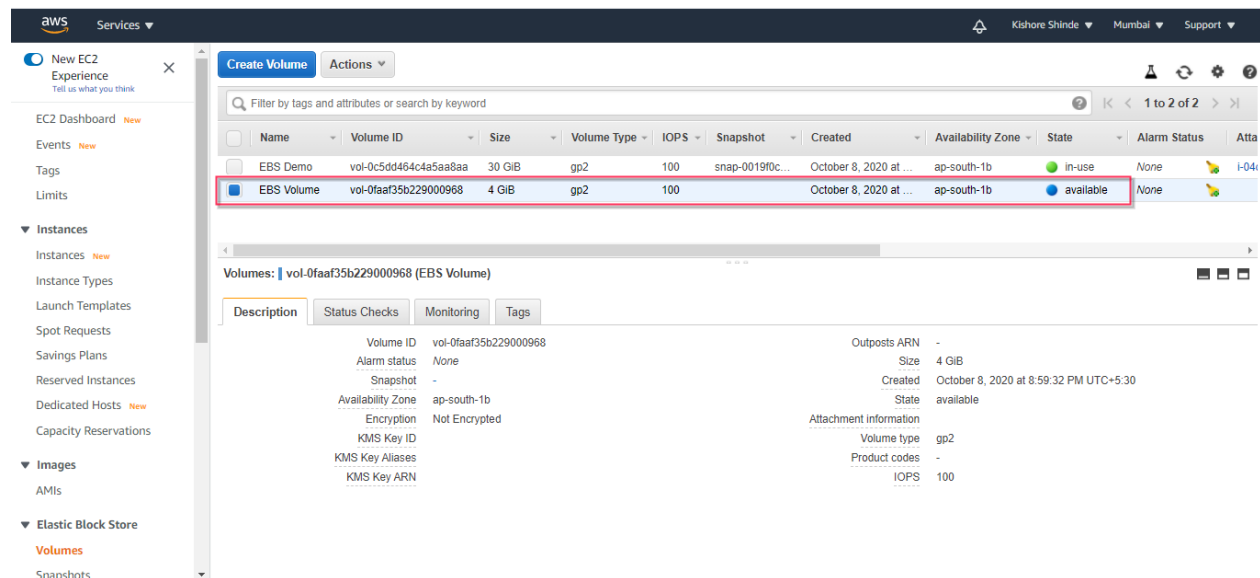
In the Availability Zone make sure you select the same availability zone as your instance in the current scenario it is **ap-south-1b**.

In the Snapshot ID you can also select the Snapshot if have existing snapshot. Now let it be as it is. You can add tag as well. Now click on “Create Volume”

The screenshot shows the AWS 'Create Volume' console page after successful creation. A green message box says 'Volume created successfully' and displays the 'Volume ID' as 'vol-0faaf25b229000968'. The 'Close' button is highlighted with a red box.

You will get in a message “Volume created successfully”. Click on close.

You will see the EBS Volume Dashboard.

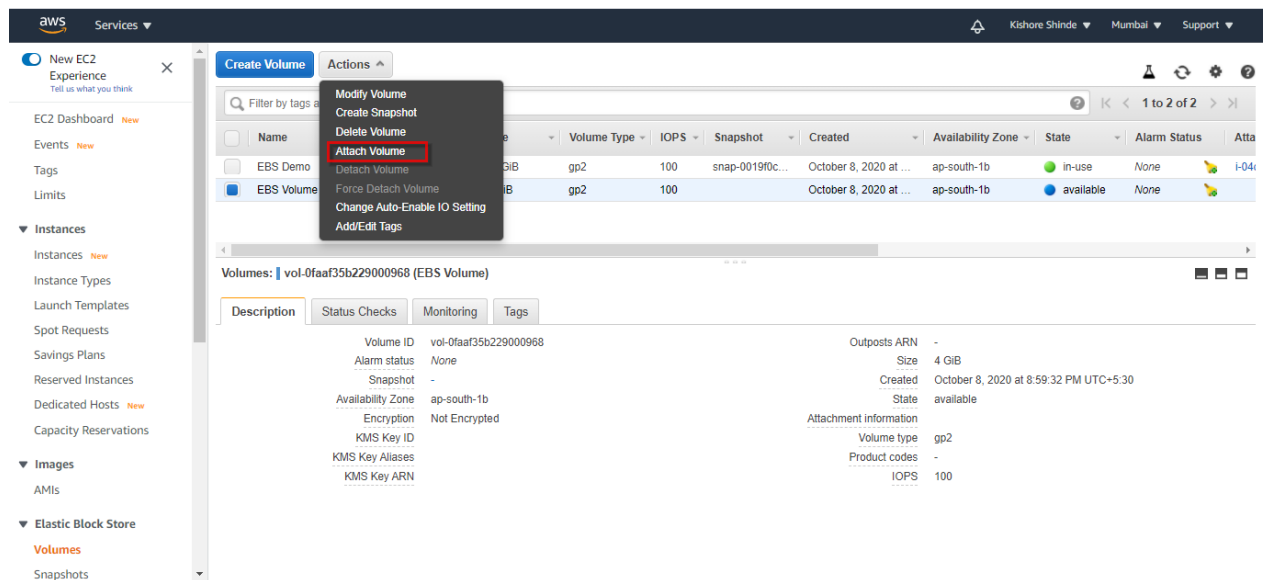


You can see the new volume created. Just change the Name to “EBS Volume”. You can see the size 4 GB that you assigned. The Status for the new volume is “available” which will change to “In-use” once you attach it to instance.

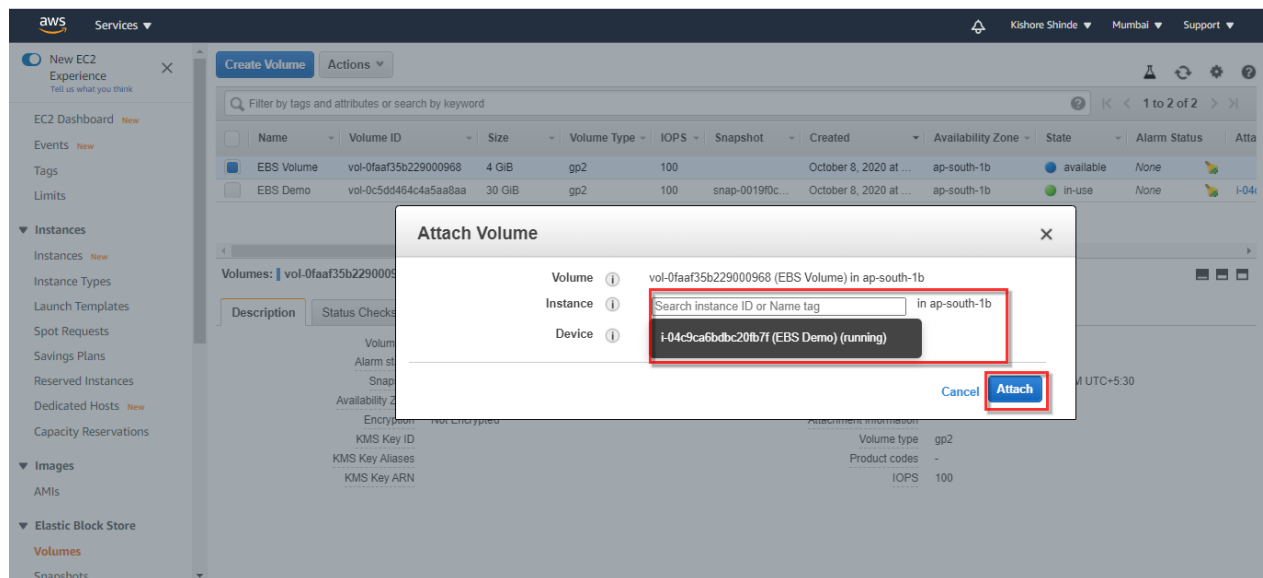
Note: Both the existing “EBS Demo” Root volume and new EBS Volume is in same Availability zone i.e. ap-south-1b

Step C: Attach the Volume to Windows Instance

Select the instance (EBS Volume) -> Click on Action and select Attach Volume.

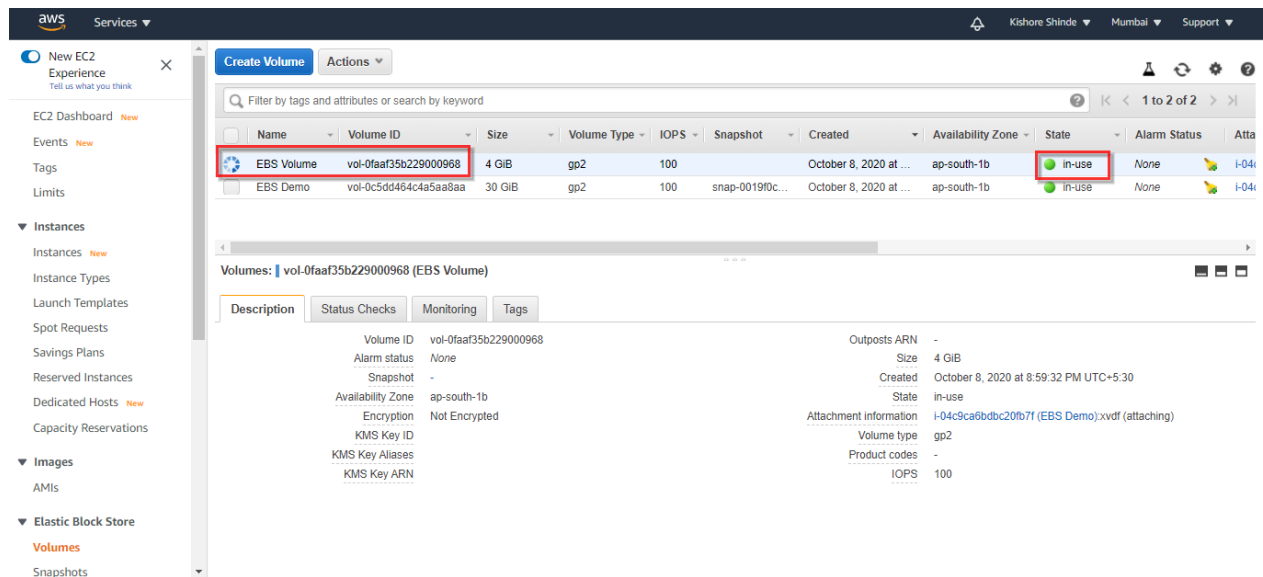


Select the running instance for which the volume as to be attached.



Click on Attach.

You will can see the Attach Volume is in process.

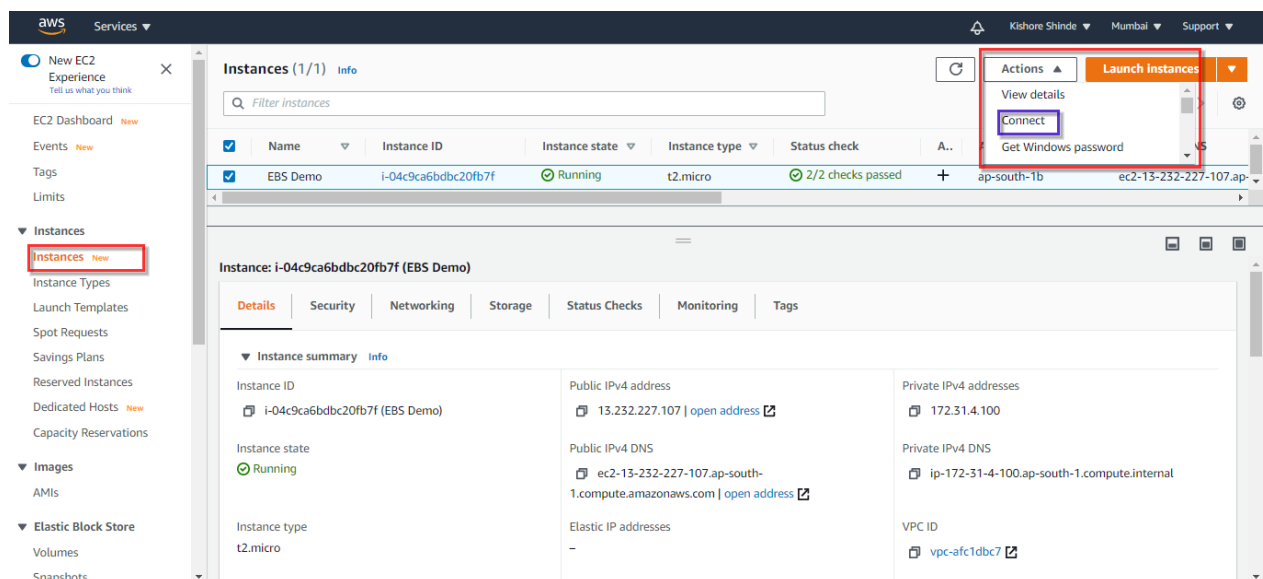


The State is changed from Available -> In-use. So now we have attached the volume to the windows machine/instance.

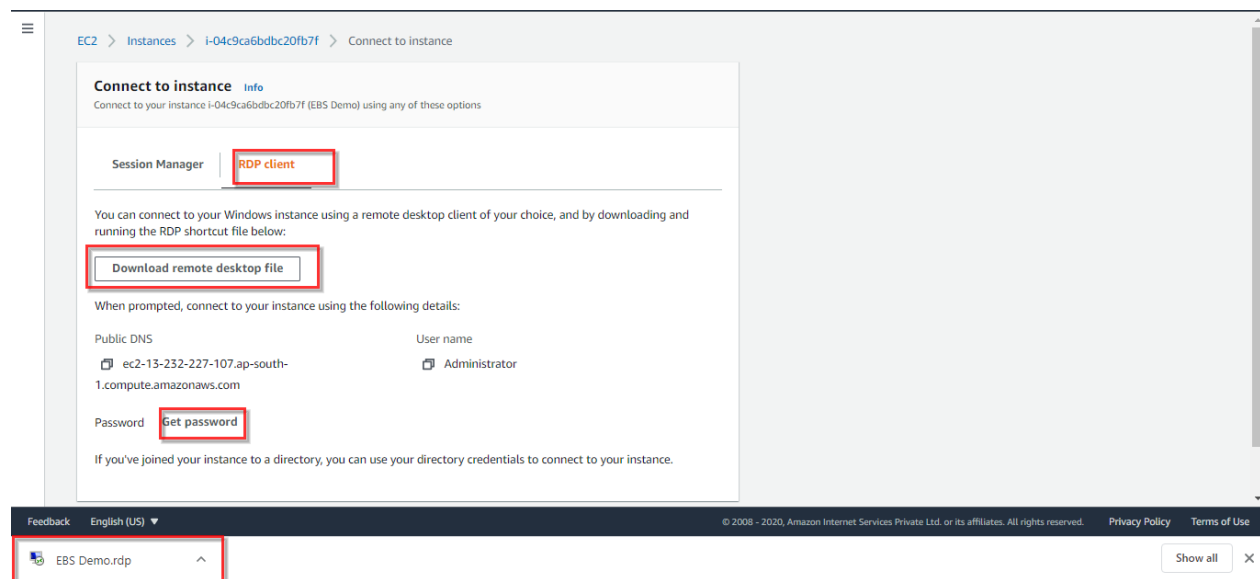
Step D: Bring the Volume Online

To bring the volume online we will need to connect to the windows instance.

Go to Instances. Select the instance to which we have attached volume.

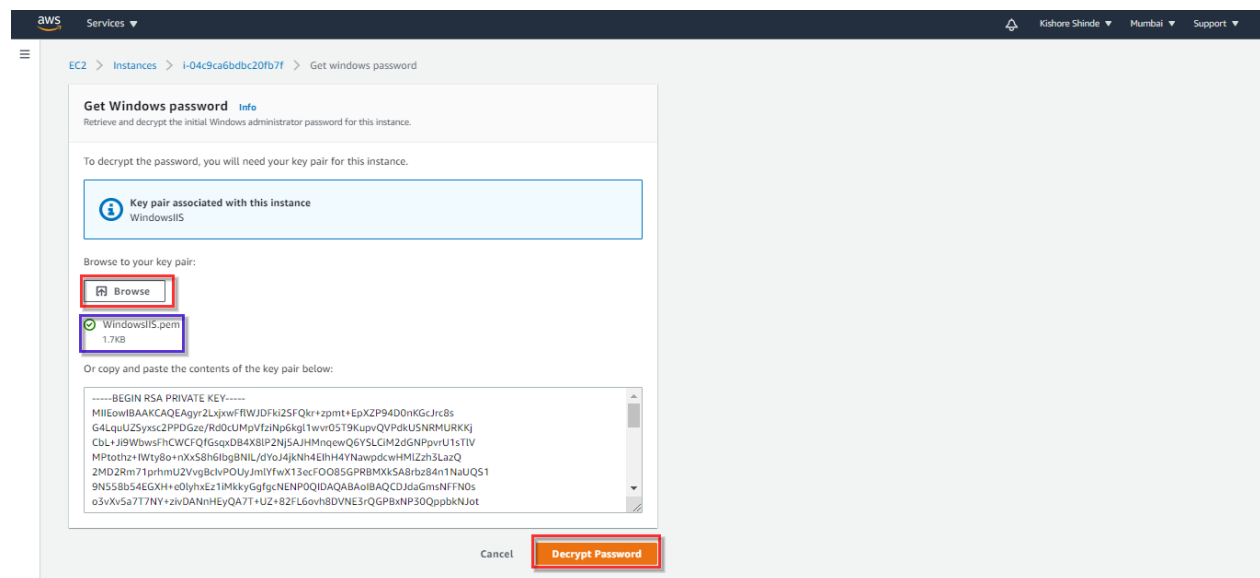


Click on Action and select Connect.



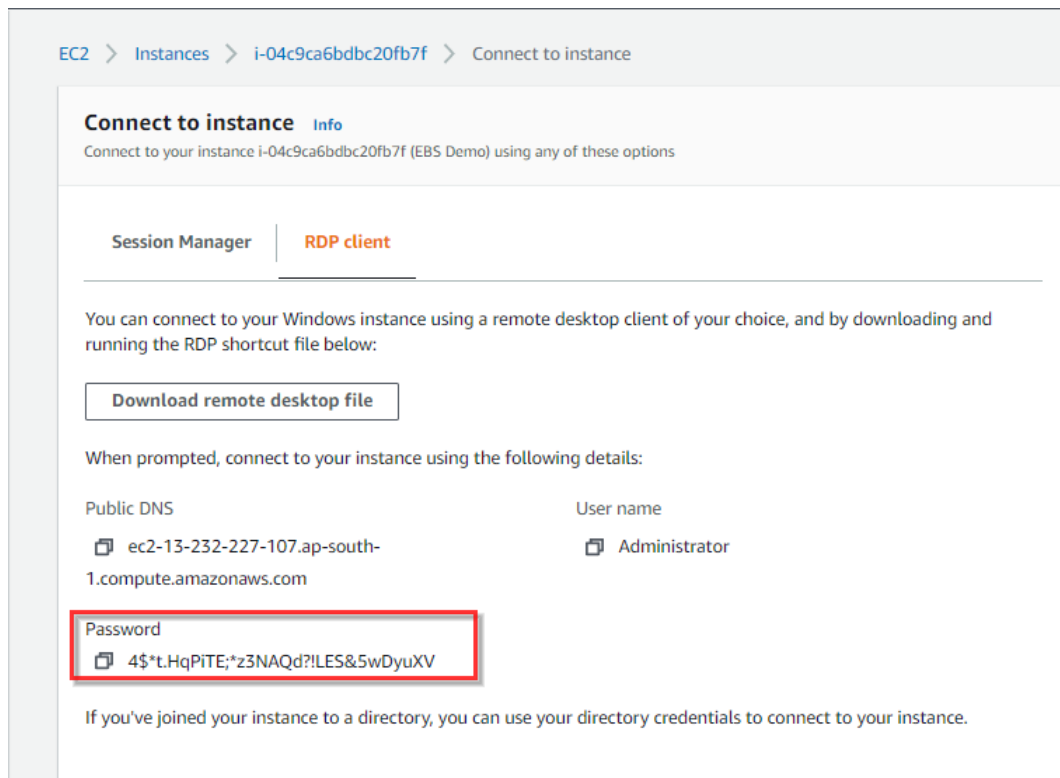
Select RDP client. Now download the remote desktop file. You can see the EBD demo.rdp file downloaded. We will use these to connect to windows instance.

Click on Get Password.



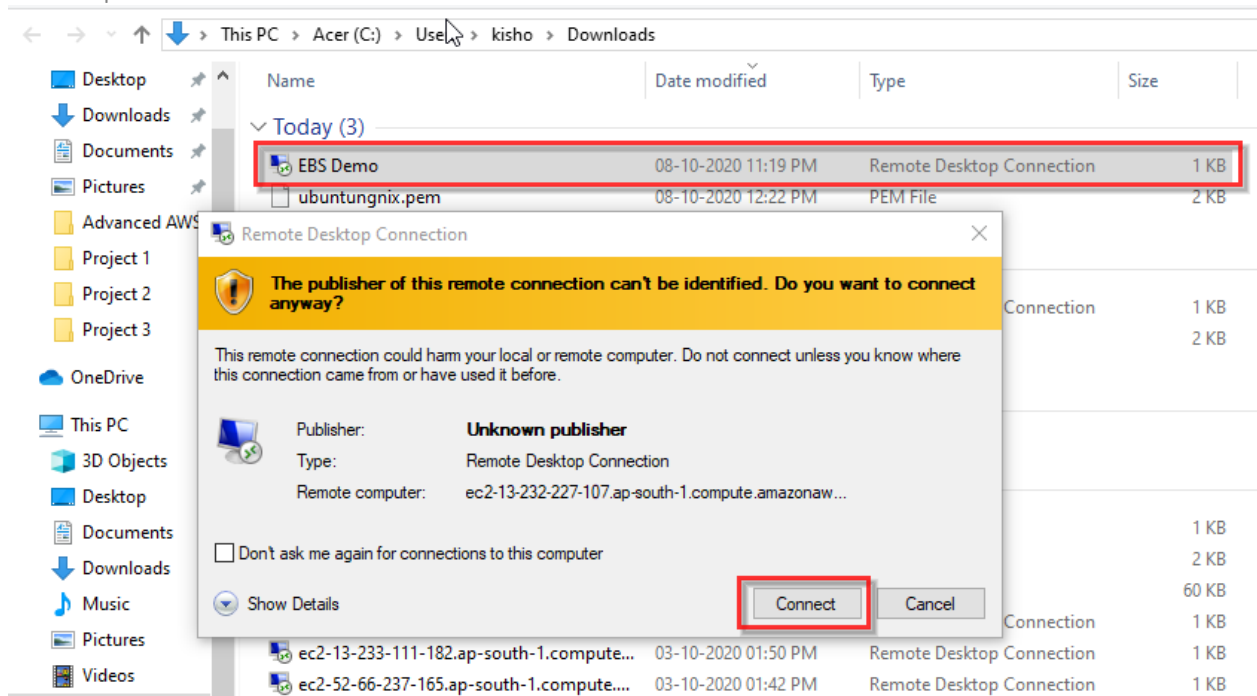
Browse and select the .pem file(e.g. WindowsIIS.pem) we selected at the key pair screen.

Click on Decrypt Password.

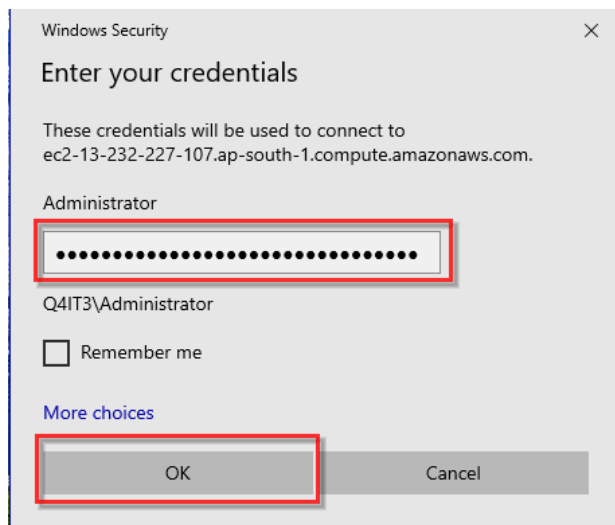


Copy the decrypted password. This will be required when you connect the Instance through RDP client.

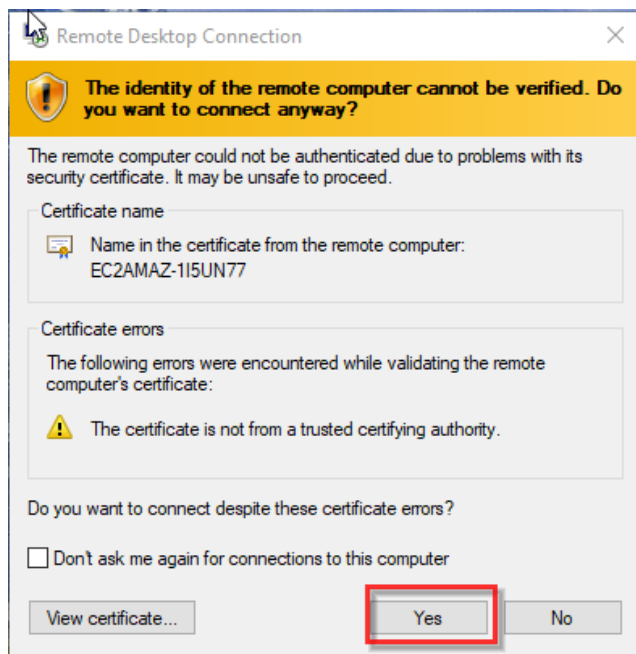
Now Open the downloaded RDP file.



Click on Connect.



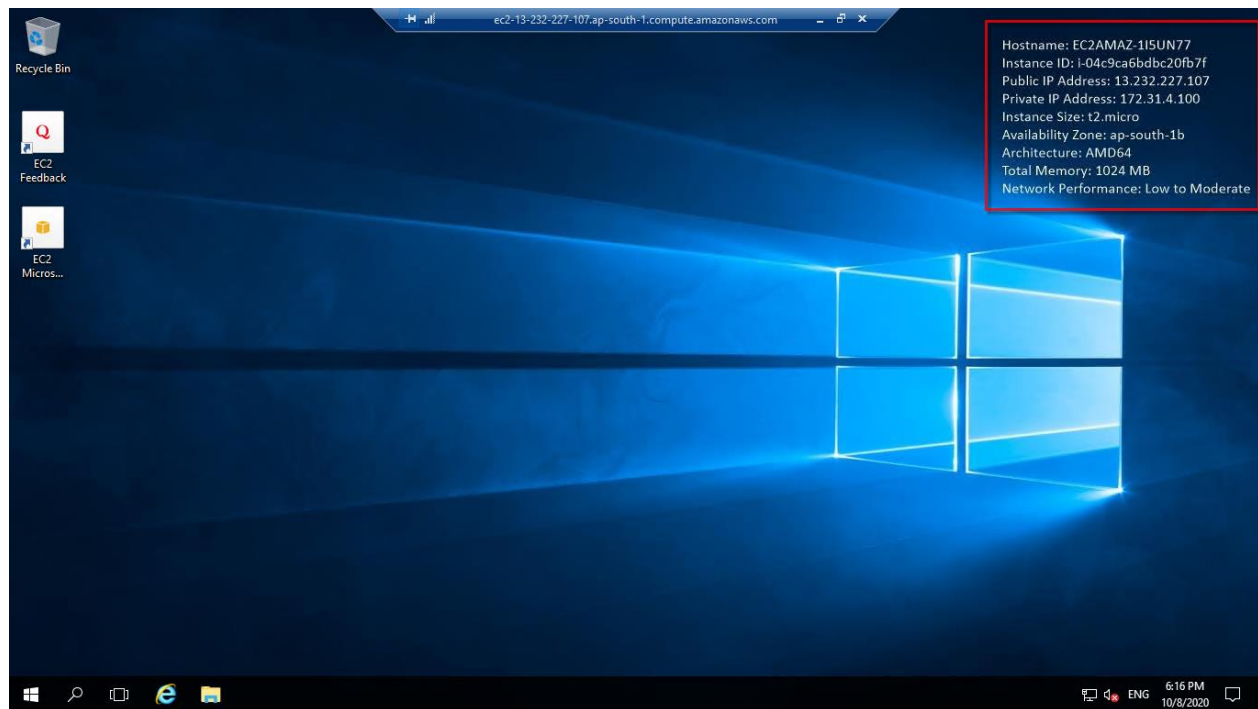
Enter or paste the password copied on the RDP client screen and click OK.



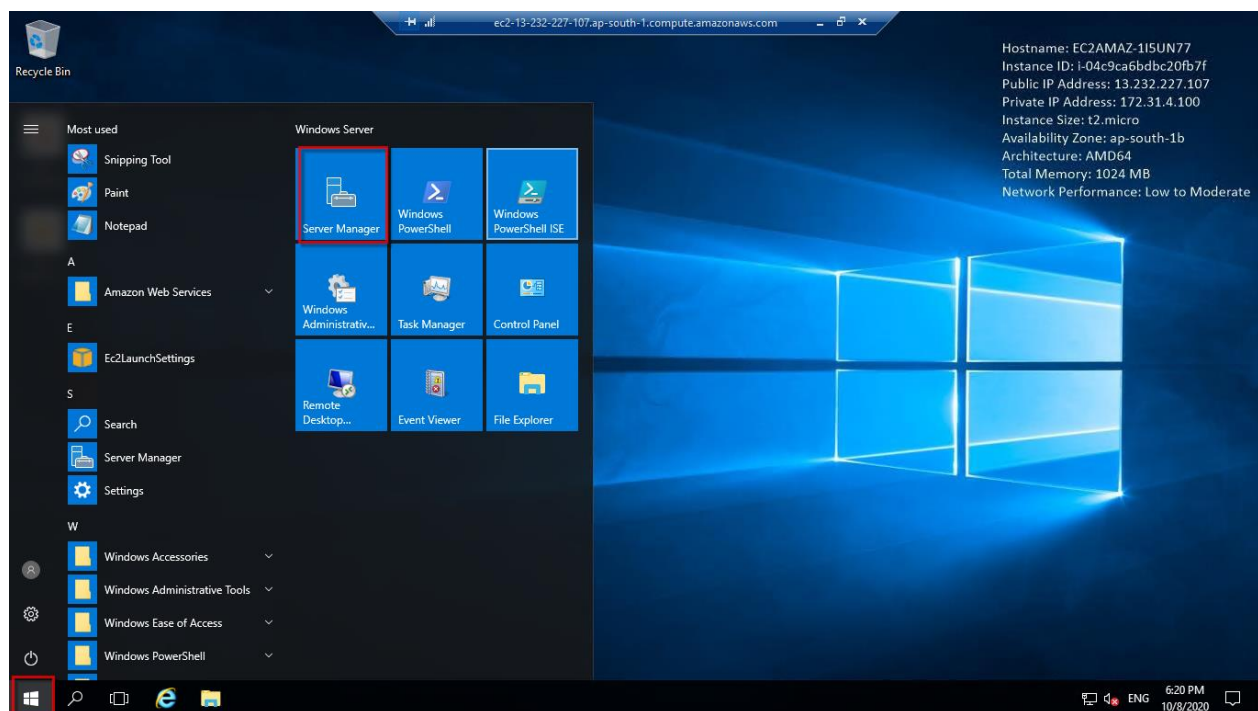
A Security Certificate error will be displayed but Click on Yes.

Now you will be connected to the instance. Wait for the settings to be done.

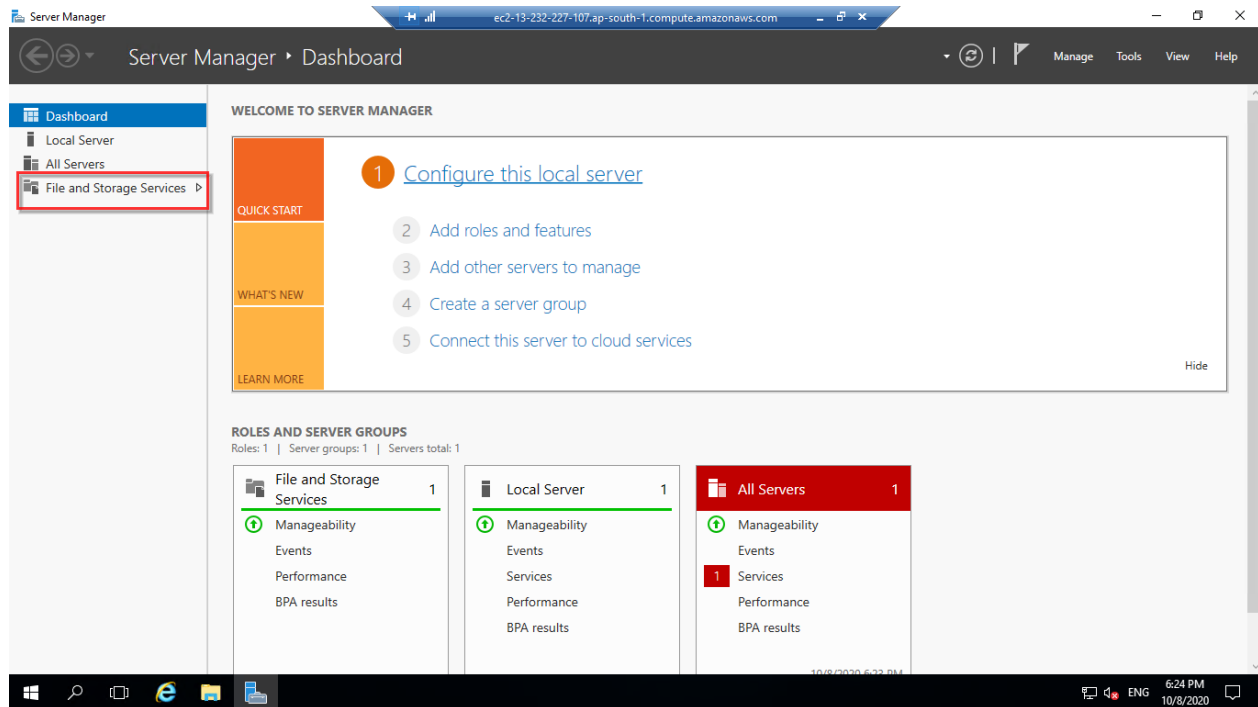
Once settings are done you will be able to see the Windows Server 2016 desktop with Instance details on the right side.



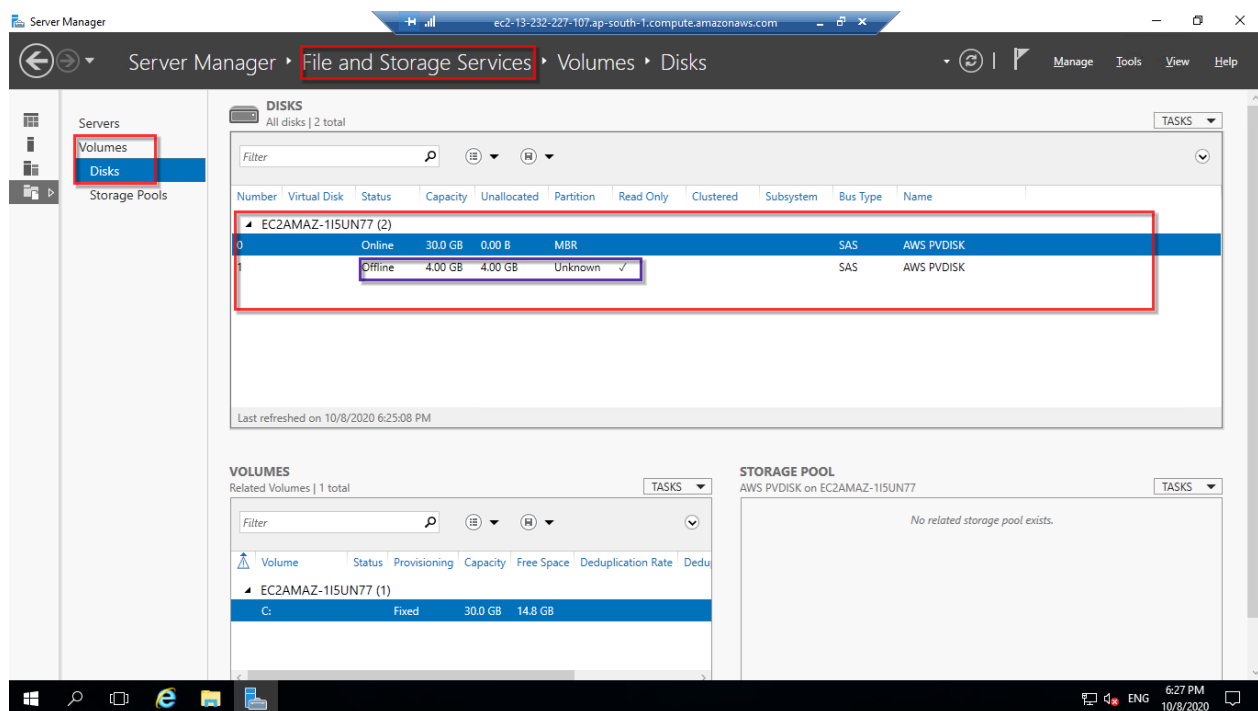
In the windows Instance click on Start and select Server Manager.



You will be able to see the Server Manager Dashboard. Select File and Storage Services.

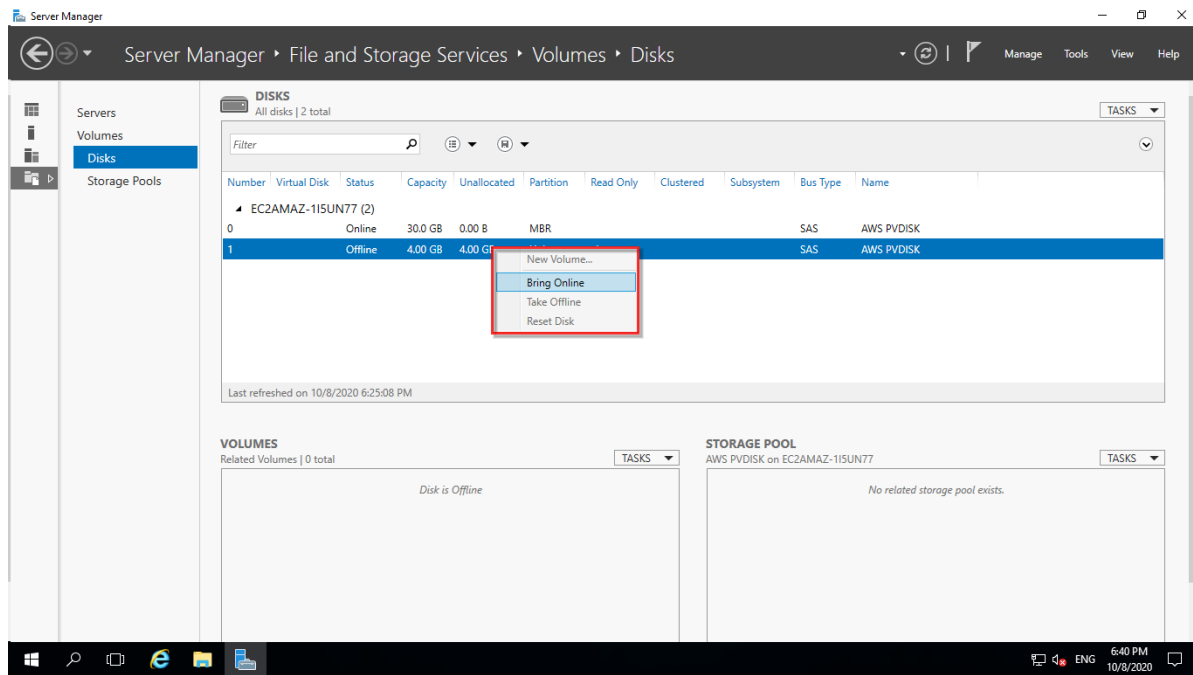


Select the Disks on the left. (Volume -> Disks)

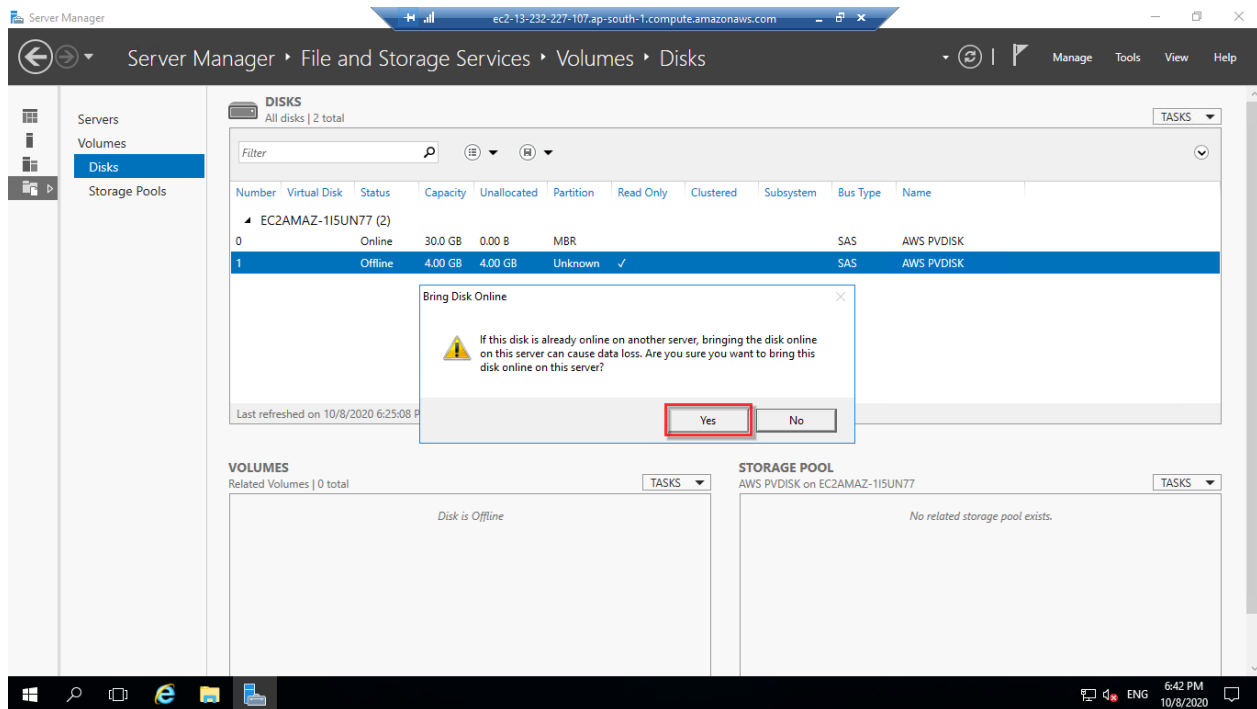


Here we can see both the Root volume (Status: Online) and new EBS volume (4.00 GB) attached (Status: Offline).

Select the new EBS volume. Right click and select Bring Online.

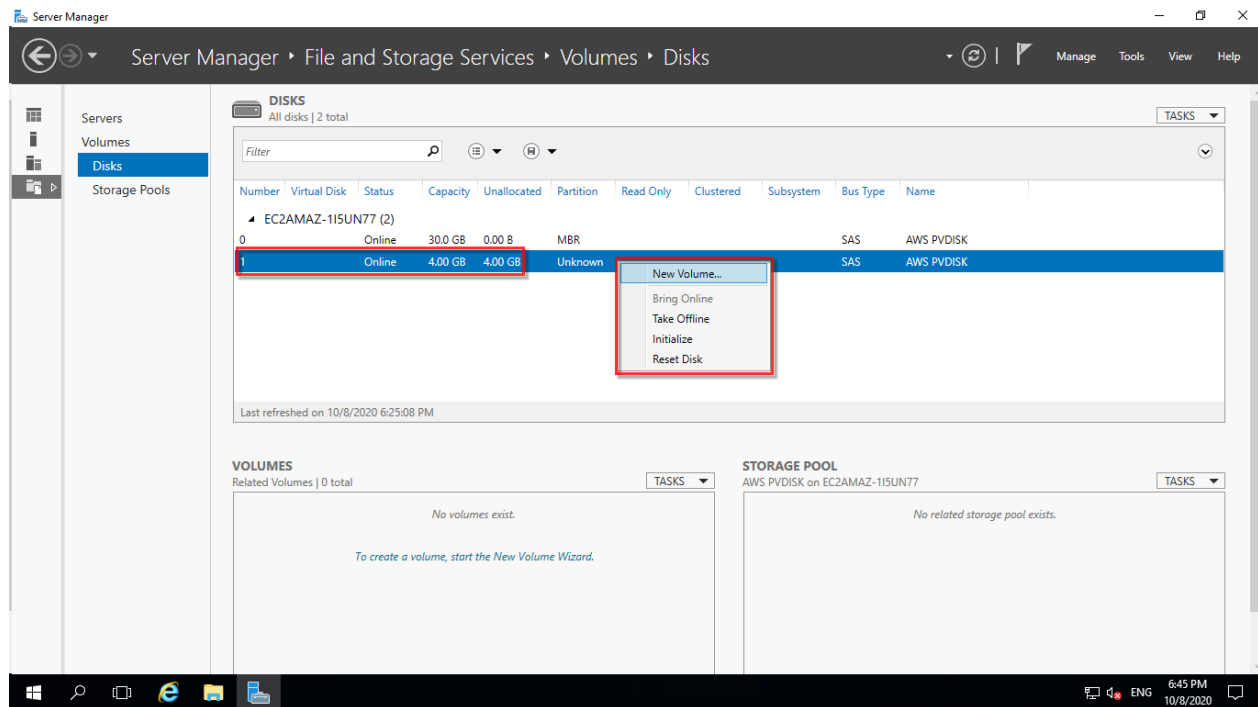


It will prompt you a message box for Yes/No confirmation. Read it and click on Yes.



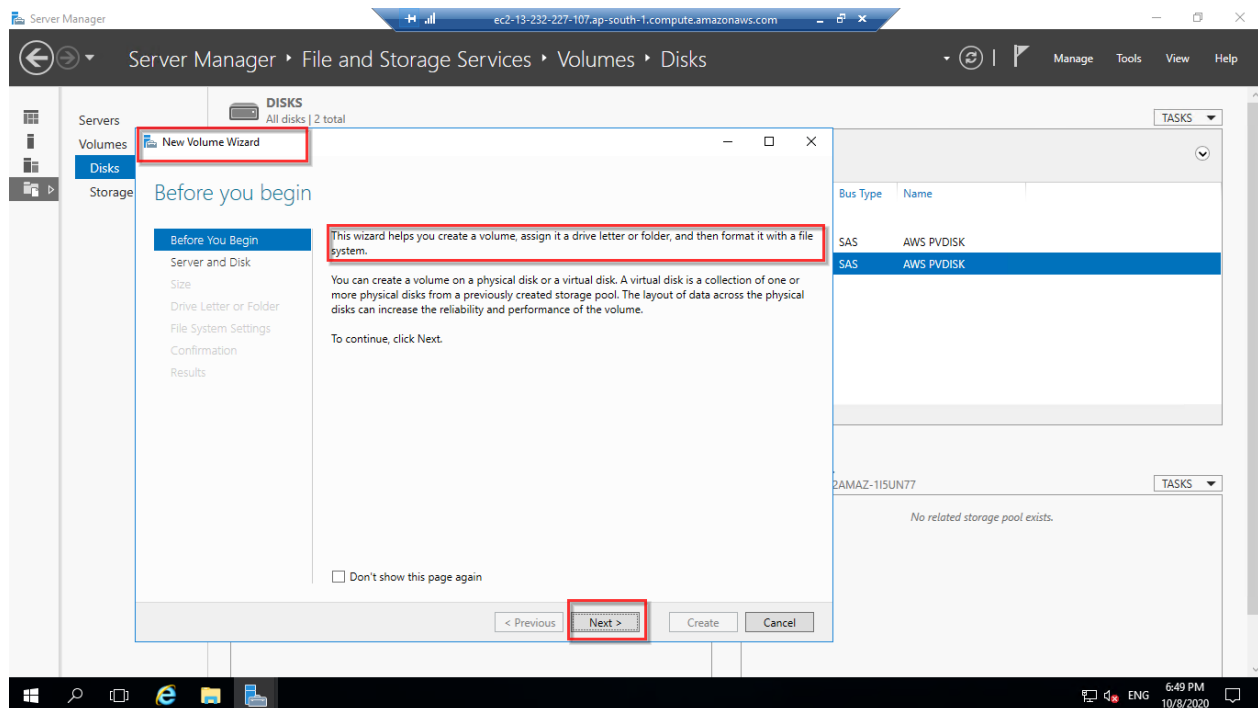
You can see the new EBS volume is online.

Step E: Create New Volume

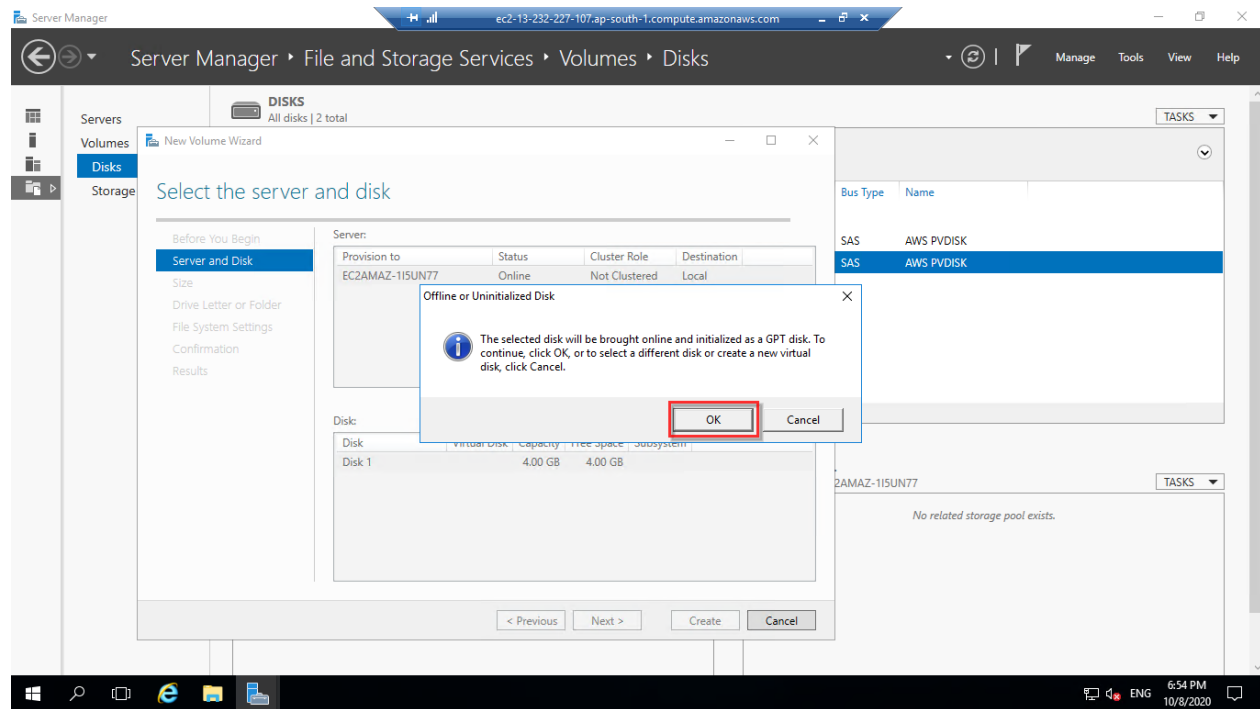


Again, right click on the new EBS Volume and select **New Volume**.

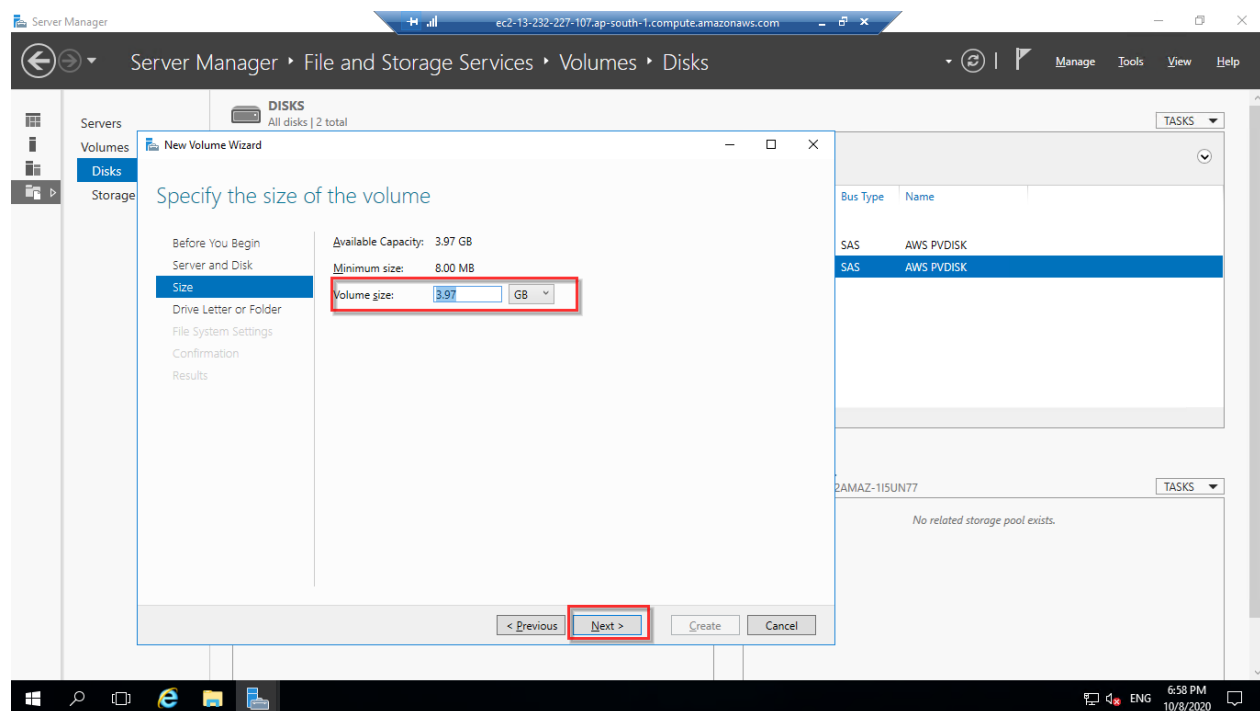
A New Volume Wizard will be started.



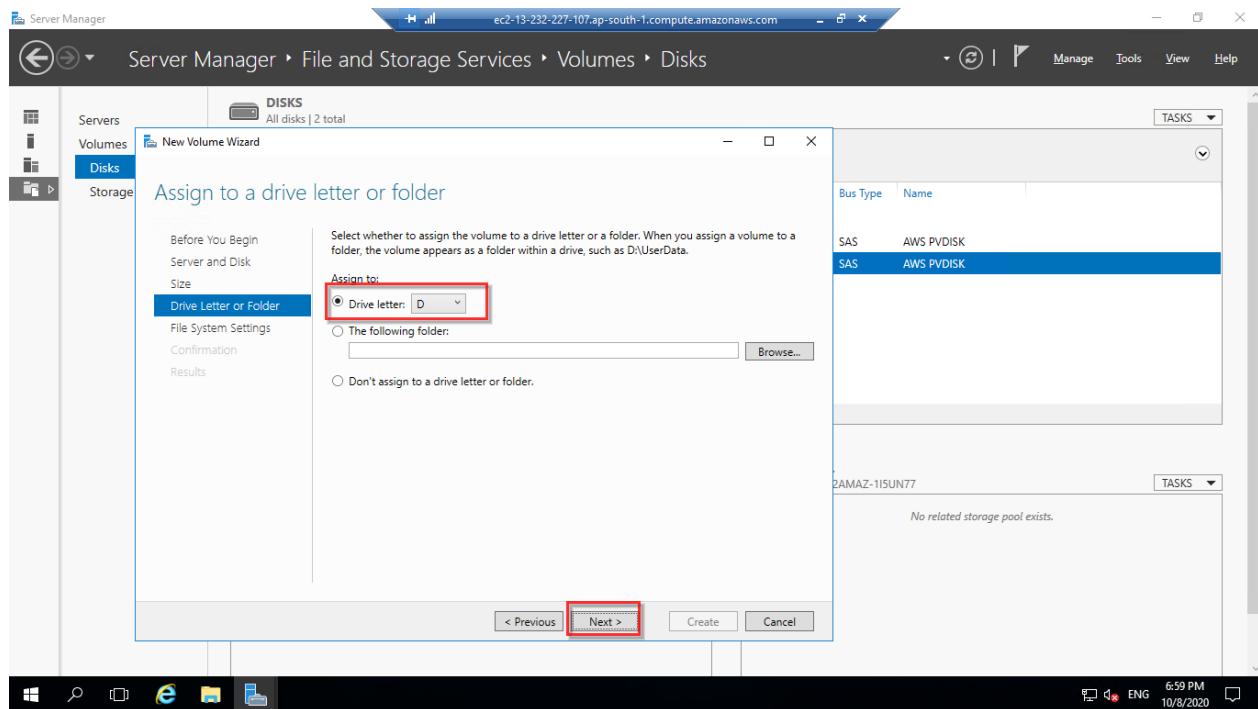
This wizard helps you create a volume, assign it a drive letter or folder and then format it with file system. Keep on clicking next and complete the wizard.



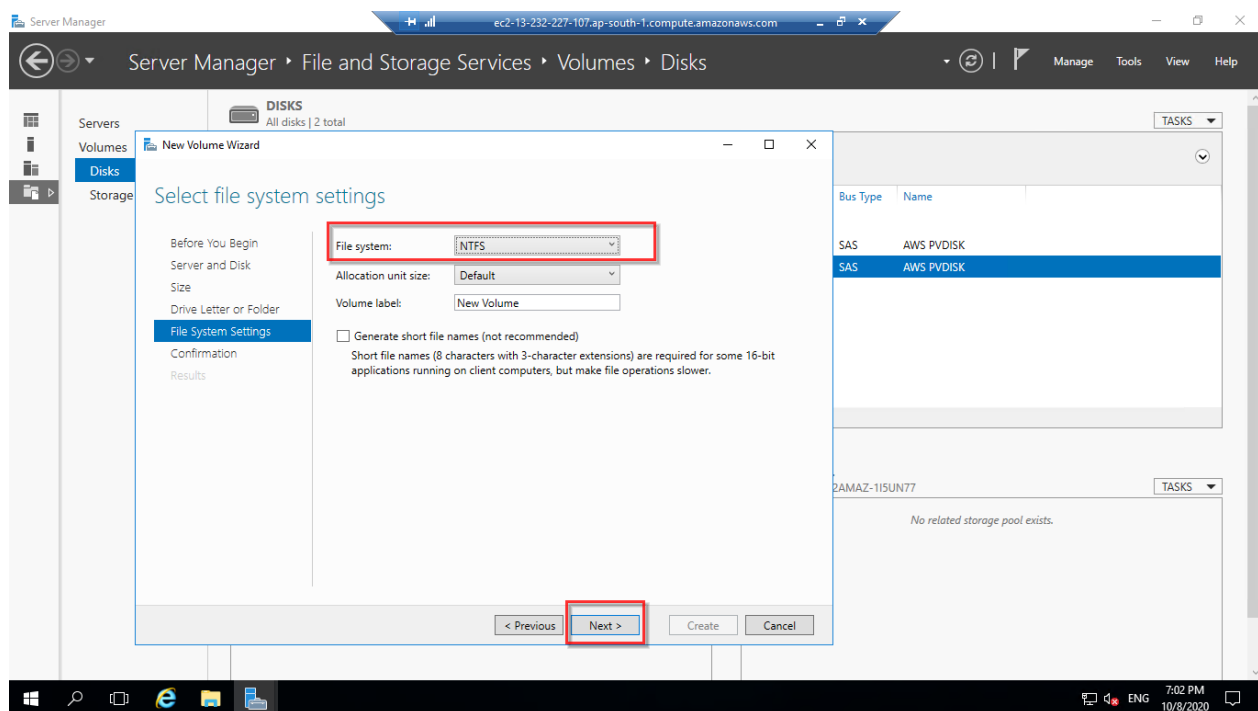
When prompted for Office or Uninitiated Disk click on Ok.



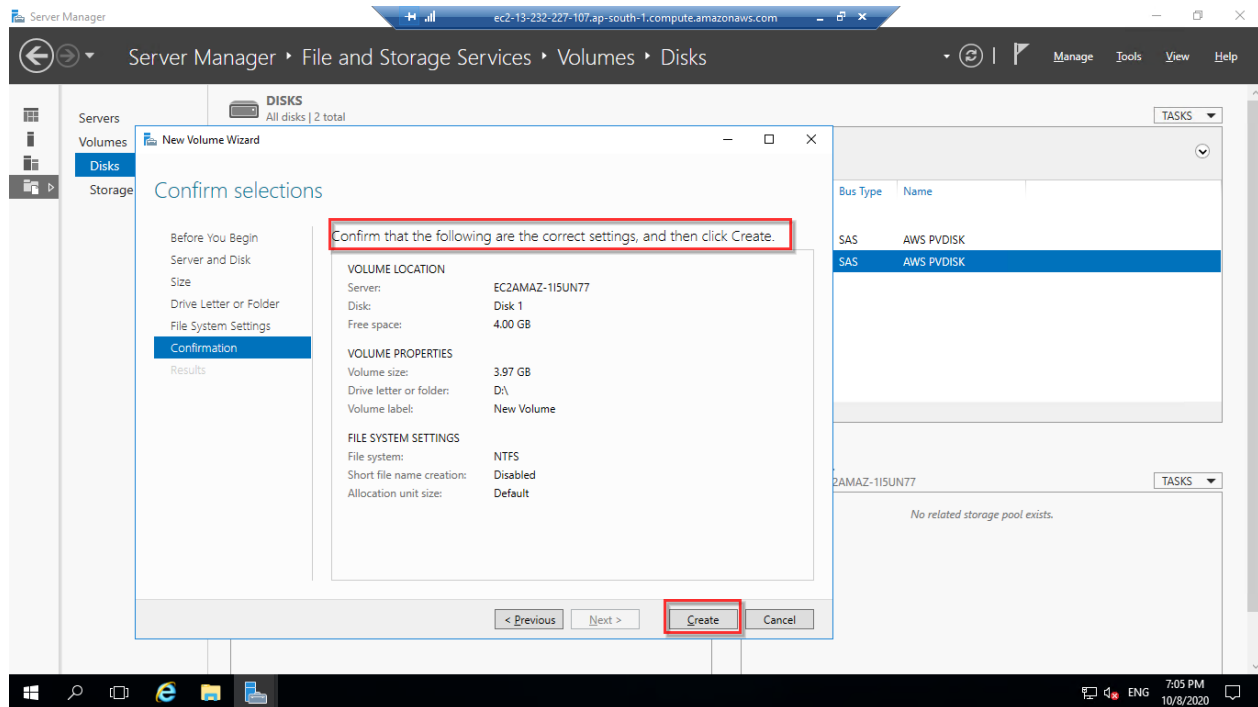
Let the Size be default. Click on next.



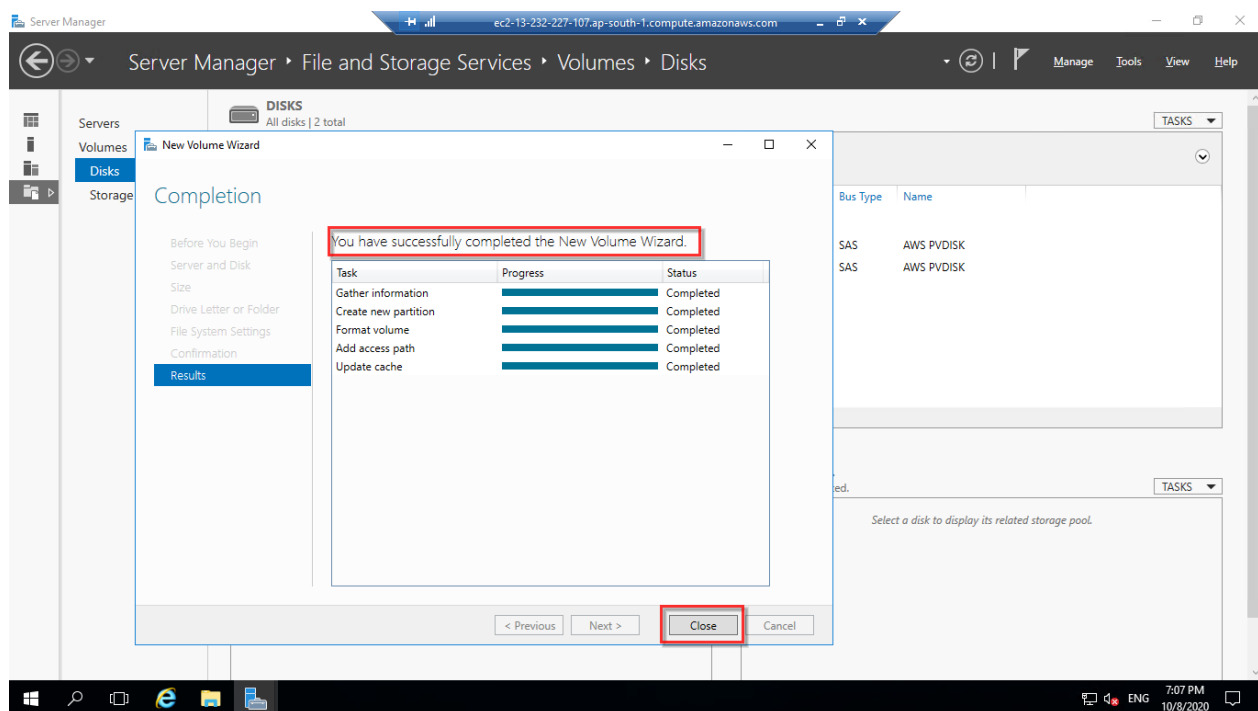
Let the Drive Letter "D" be default. Click on next.



Let the File System be default: **NTFS** and click on Next.



Confirm the setting and click on **Create**.

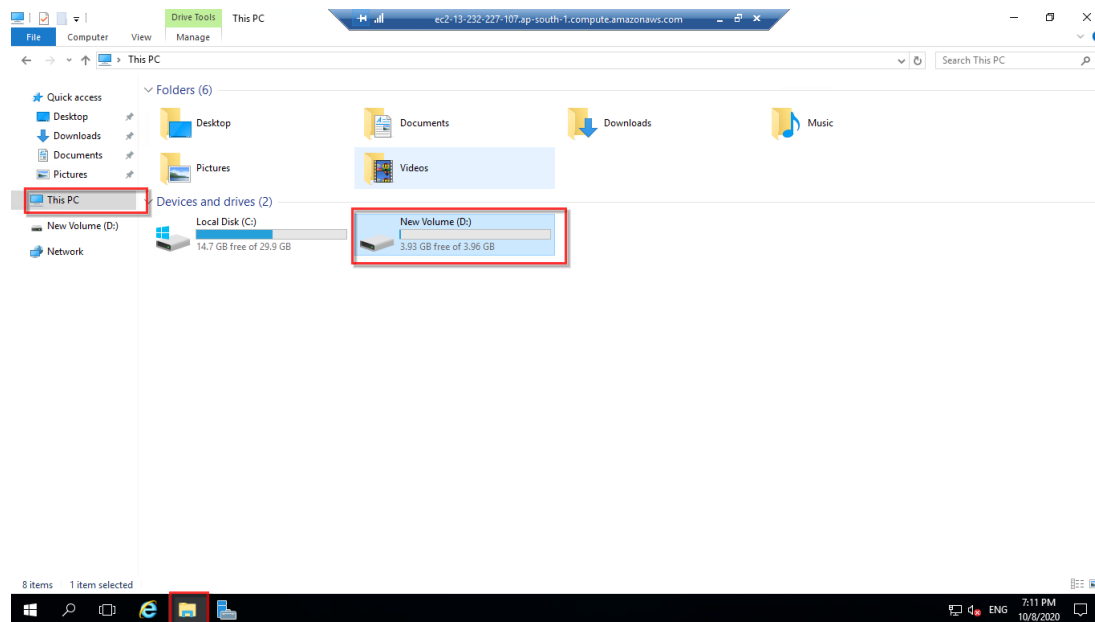


Once all the Task are successfully completed click on **Close**.

Your new volume is created.

Step F: Check mounted volume

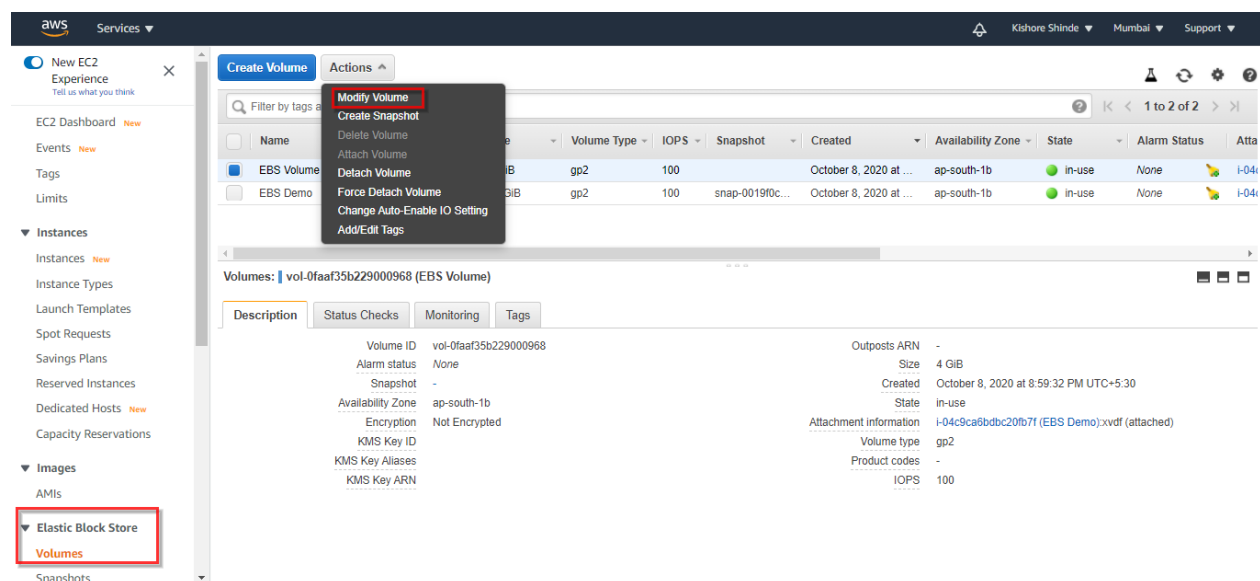
Now go to File Explorer on your windows server. Click on **This PC**. You will be able to see the C Drive the root/base volume and new EBS volume (D drive) is successfully mounted.



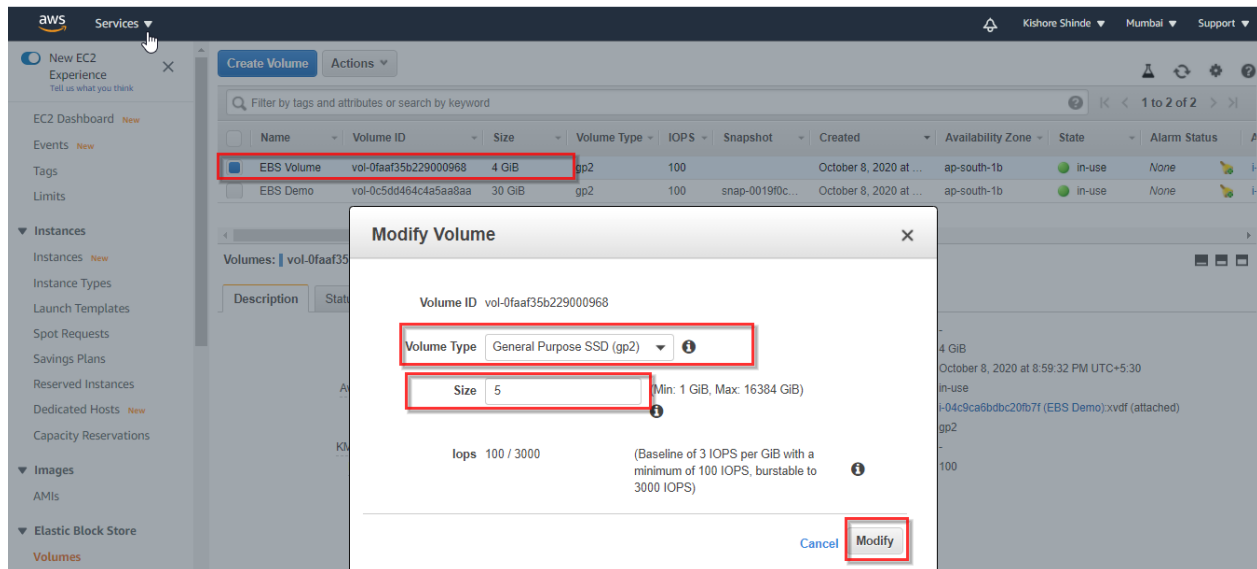
Now you will be able to use this drive.

Step G: Modify Volume

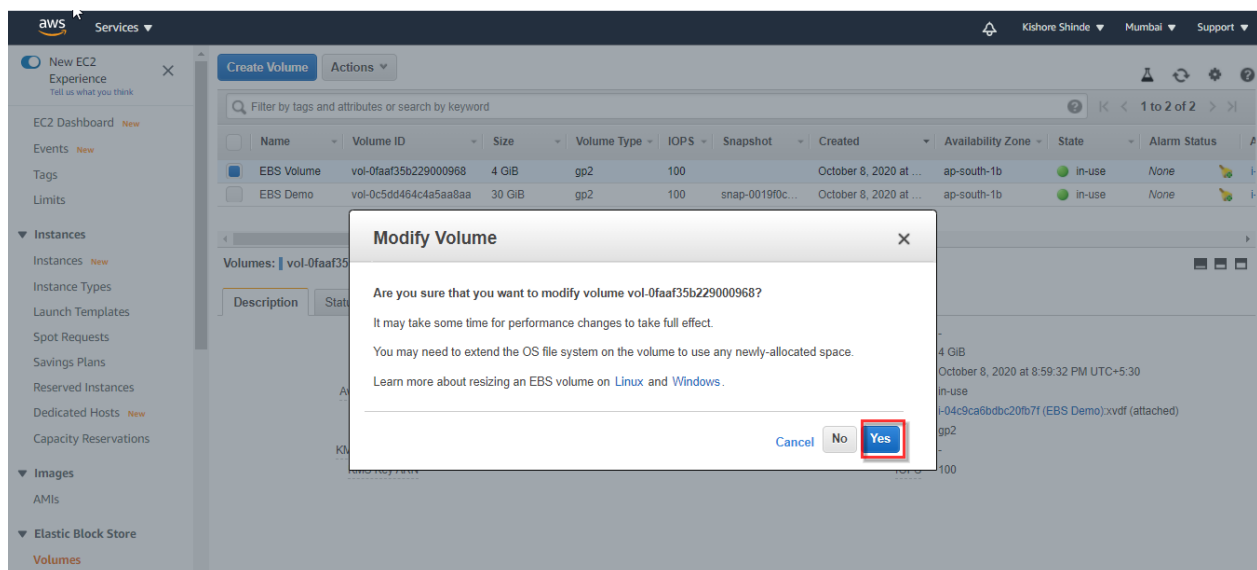
Go to Volumes. Select the EBS volume you want to modify and click on Action, select **Modify Volume**.



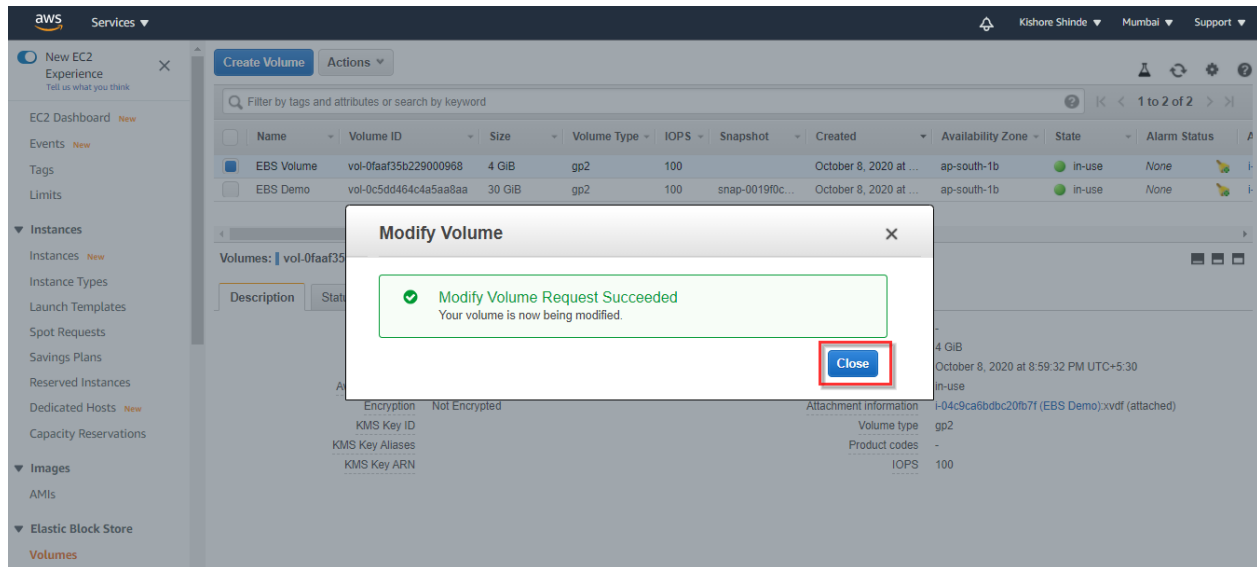
You can change the Volume Type General Purpose SSD to Provisioned as per your requirements. Now let it be default. Change the size from 4 to 5 GB and click on Modify.



It will ask you for a confirmation.

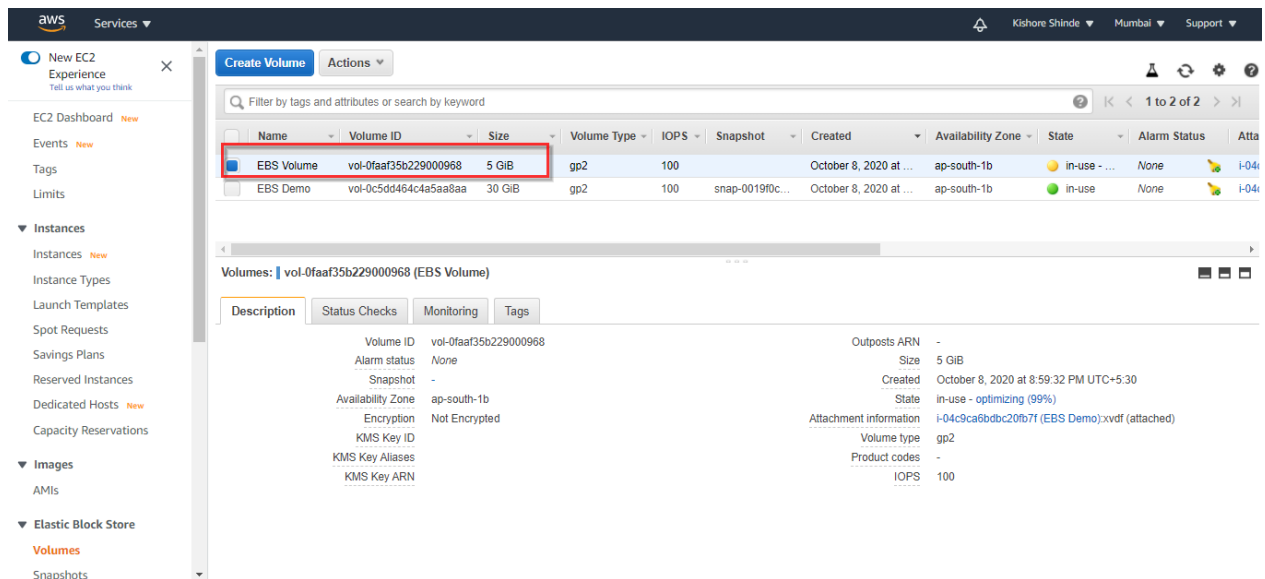


Click on Yes.



You will get the **Modify Volume Request Succeeded** message. Click on **Close**.

Now you will be able to see the Volume modified changes.

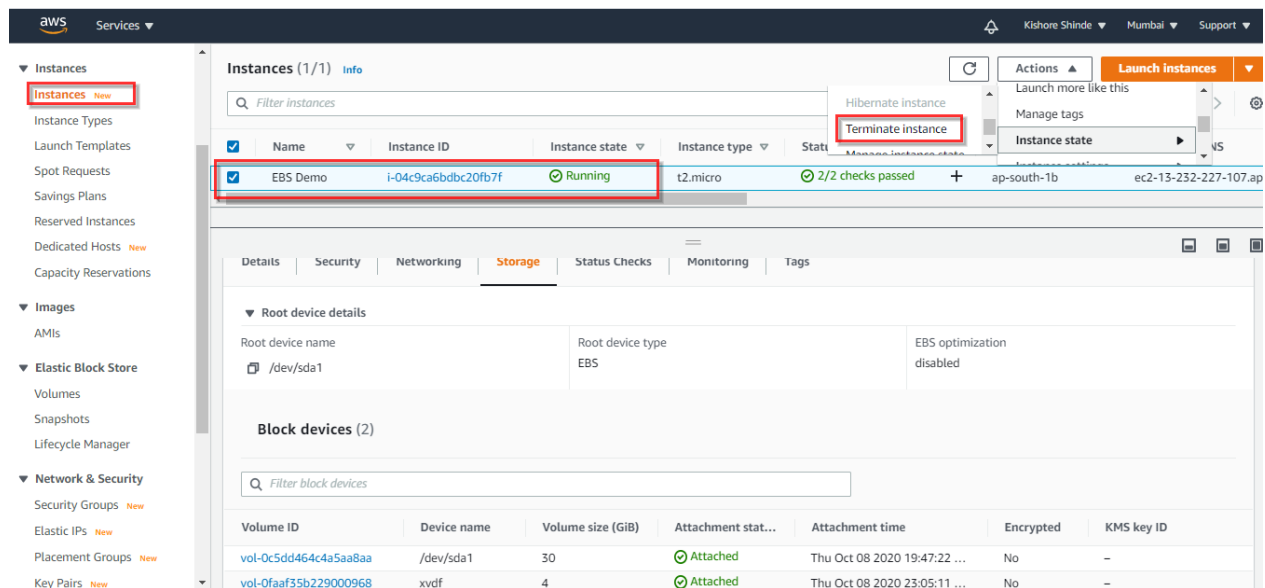


Note: Click on **Refresh** if you are not able to see the changes.

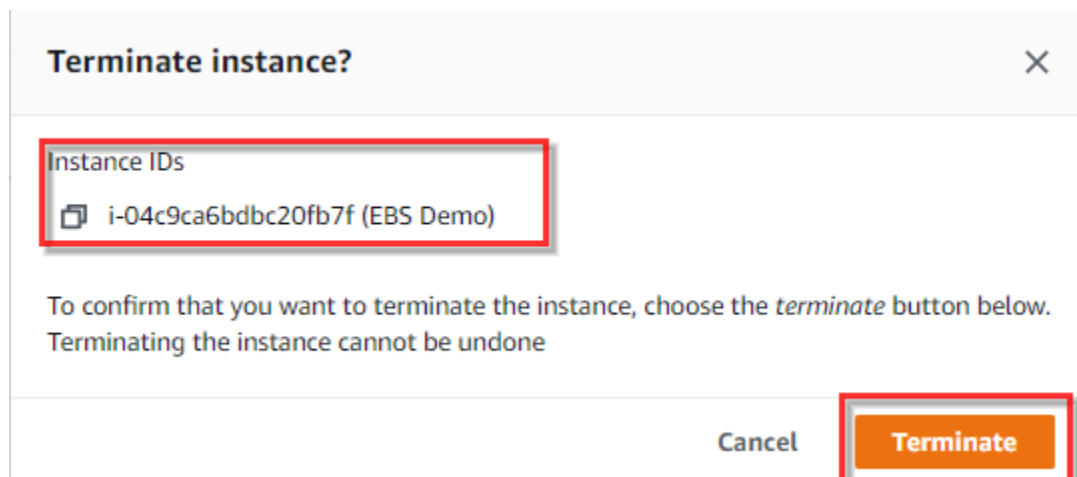
Step H: Deleting the Volume

For deleting the volume, you must first stop the running instance.

Go to **Instances**.

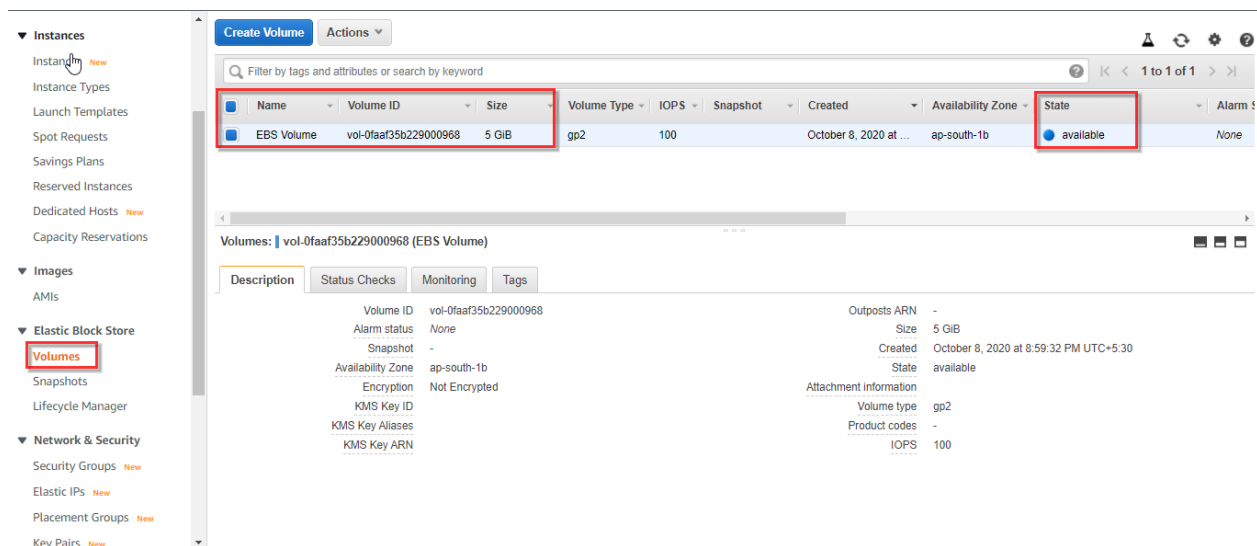


Select the instance you have to delete in this example EBS Demo. Click on Actions and select Instance State-> Terminate Instance.



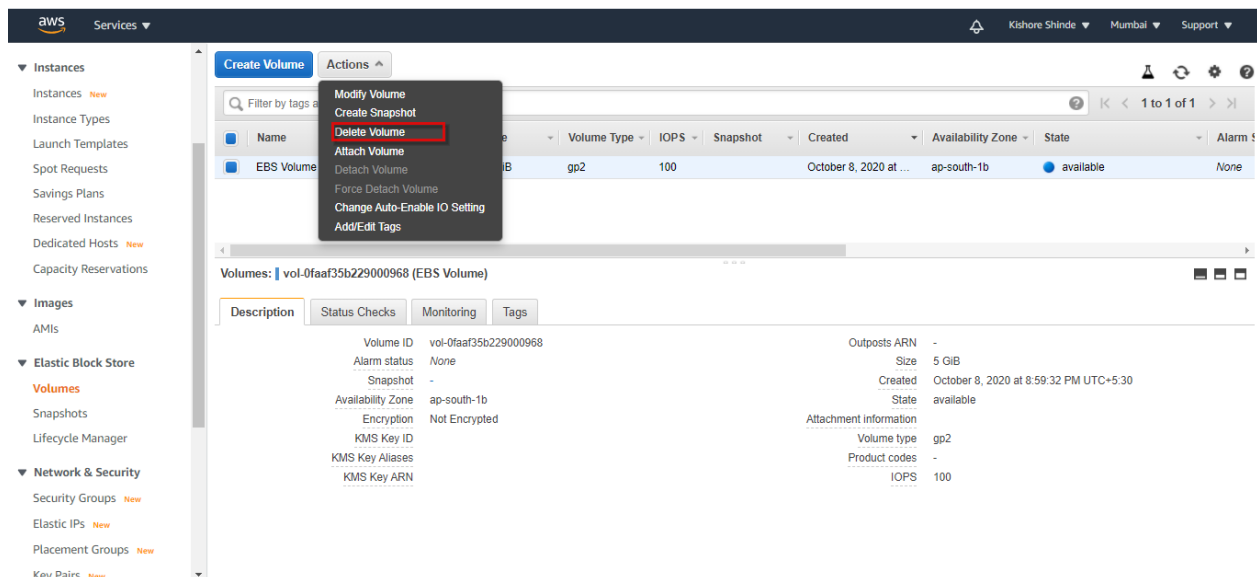
Click on Terminate.

Once the instance is terminated click on Volumes.

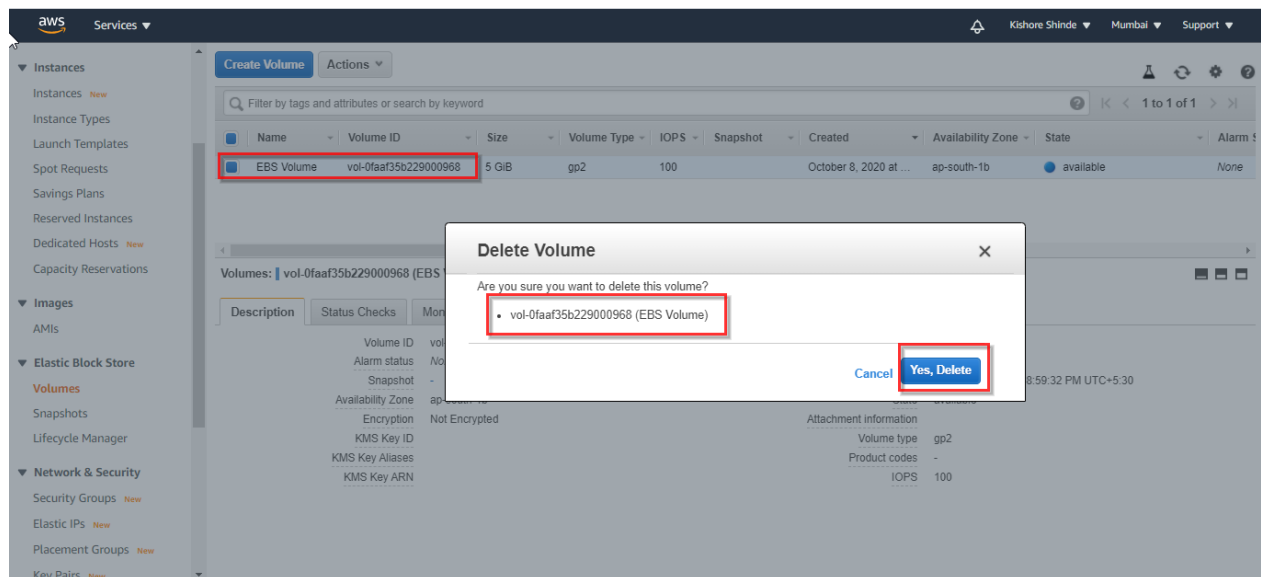


You will be able to see the Root/Base Volume is deleted and the new EBD Volume mounted status is **available**.

Now for deleting it select the volume.



Click on Actions and select Delete Volume.



It will ask for Confirmation. Click on **Yes, Delete**.

Your EBS Volume will be deleted.

Project 3 is completed.