

# EBS Snapshot, AMI, Data Life cycle Manager

## Scenario 1: Simulate Backups with EBS Snapshots and AMIs

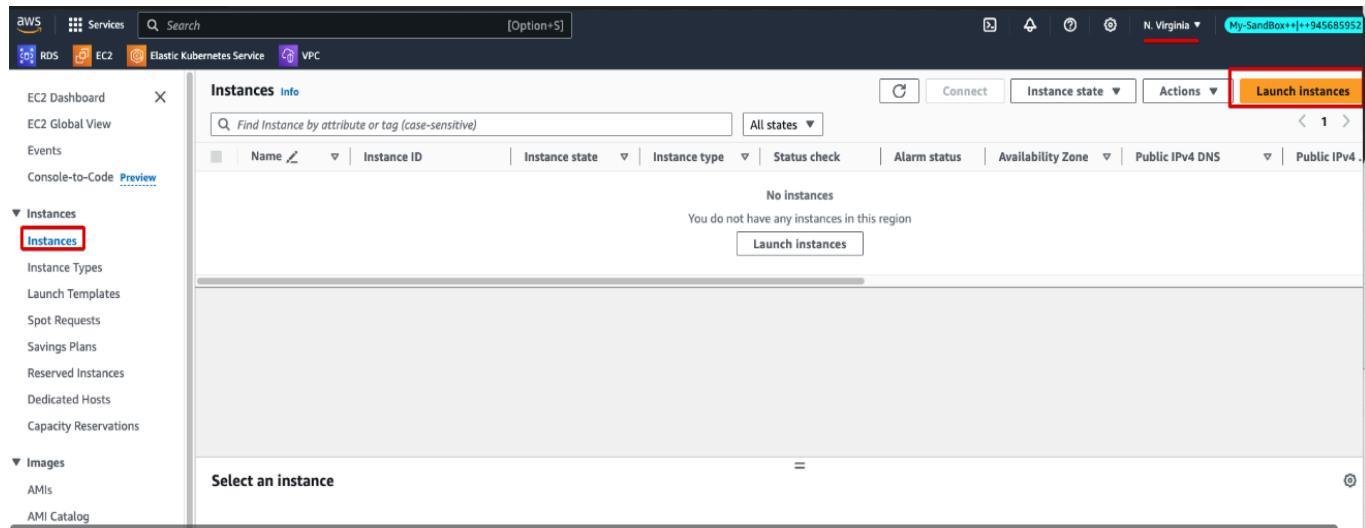
### Goal

The goal of this handson is to demonstrate how to back up a Windows Server using EBS snapshots and AMIs. You will create a Windows Server instance with user data, create a snapshot from the EBS volume, copy the snapshot to another region, create an AMI from the snapshot, and use that AMI to create another Windows Server in the second region. You will then verify that the app and folder created in the user data in step 1 are still present.

### Steps

#### Step 1: Create a Windows Server with User Data

1. Go to the EC2 service console and Launch a new EC2 instance in your preferred region (e.g., us-east-1).



2. Name instance and Choose a Windows Server AMI (e.g Windows Server 2022 Base).

Name  Add additional tags

▼ Application and OS Images (Amazon Machine Image) [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

**Quick Start**

[Amazon Linux](#) [macOS](#) [Ubuntu](#) [Windows](#) [Red Hat](#) [SUSE Linux Enterprise Server](#) [!\[\]\(37999686ffadeec1d165077ab930443b\_img.jpg\) Browse more AMIs](#)  
Including AMIs from AWS, Marketplace and the Community

**Amazon Machine Image (AMI)**

Microsoft Windows Server 2022 Base ami-04df9ee4d3dfde202 (64-bit (x86)) Virtualization: hvm ENA enabled: true Root device type: ebs	Free tier eligible
---	--------------------

Description  
Microsoft Windows Server 2022 Full Locale English AMI provided by Amazon

Architecture AMI ID

3. Select an **instance type** (e.g., t2.micro).

▼ Instance type [Info](#) | [Get advice](#)

Instance type **t2.micro** Free tier eligible

Family: t2 1 vCPU 1 GiB Memory Current generation: true  
On-Demand Windows base pricing: 0.0162 USD per Hour  
On-Demand SUSE base pricing: 0.0116 USD per Hour  
On-Demand RHEL base pricing: 0.0716 USD per Hour  
On-Demand Linux base pricing: 0.0116 USD per Hour

All generations  Compare instance types

Additional costs apply for AMIs with pre-installed software

4. To Configure the Instance with user-data, scroll down to the **Advanced Details** section.

**Advanced details** Info

Domain join directory | Info

IAM instance profile | Info

Hostname type | Info

DNS Hostname | Info

- Enable IP name IPv4 (A record) DNS requests
- Enable resource-based IPv4 (A record) DNS requests
- Enable resource-based IPv6 (AAAA record) DNS requests



5. Copy and paste the provided user data script into the User data text box:

**User data - optional** Info

Upload a file with your user data or enter it in the field.

```
<powershell>
# Enable logging
$logFile = "C:\Temp\user-data-log.txt"
New-Item -Path $logFile -ItemType File -Force

function Log-Message {
    param (
        [string]$message
    )
    $timestamp = Get-Date -Format "yyyy-MM-dd HH:mm:ss"
    $entry = "$timestamp - $message"
    $entry | Out-File -FilePath $logFile -Append
}

# Start logging
```



6. Add storage (or leave default value) and configure the security group as needed.

▼ Network settings [Info](#)

VPC - required [Info](#)

vpc-d0c9adad (default) ▾ [Edit](#)

Subnet [Info](#)

No preference ▾ [Edit](#) [Create new subnet](#) [Edit](#)

Auto-assign public IP [Info](#)

Enable ▾ [Edit](#)

Additional charges apply when outside of [free tier allowance](#)

Firewall (security groups) [Info](#)

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

Create security group  Select existing security group

Security group name - required

Windows Security Group

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_-:/()#,@[]+=&;!\$^

Description - required [Info](#)

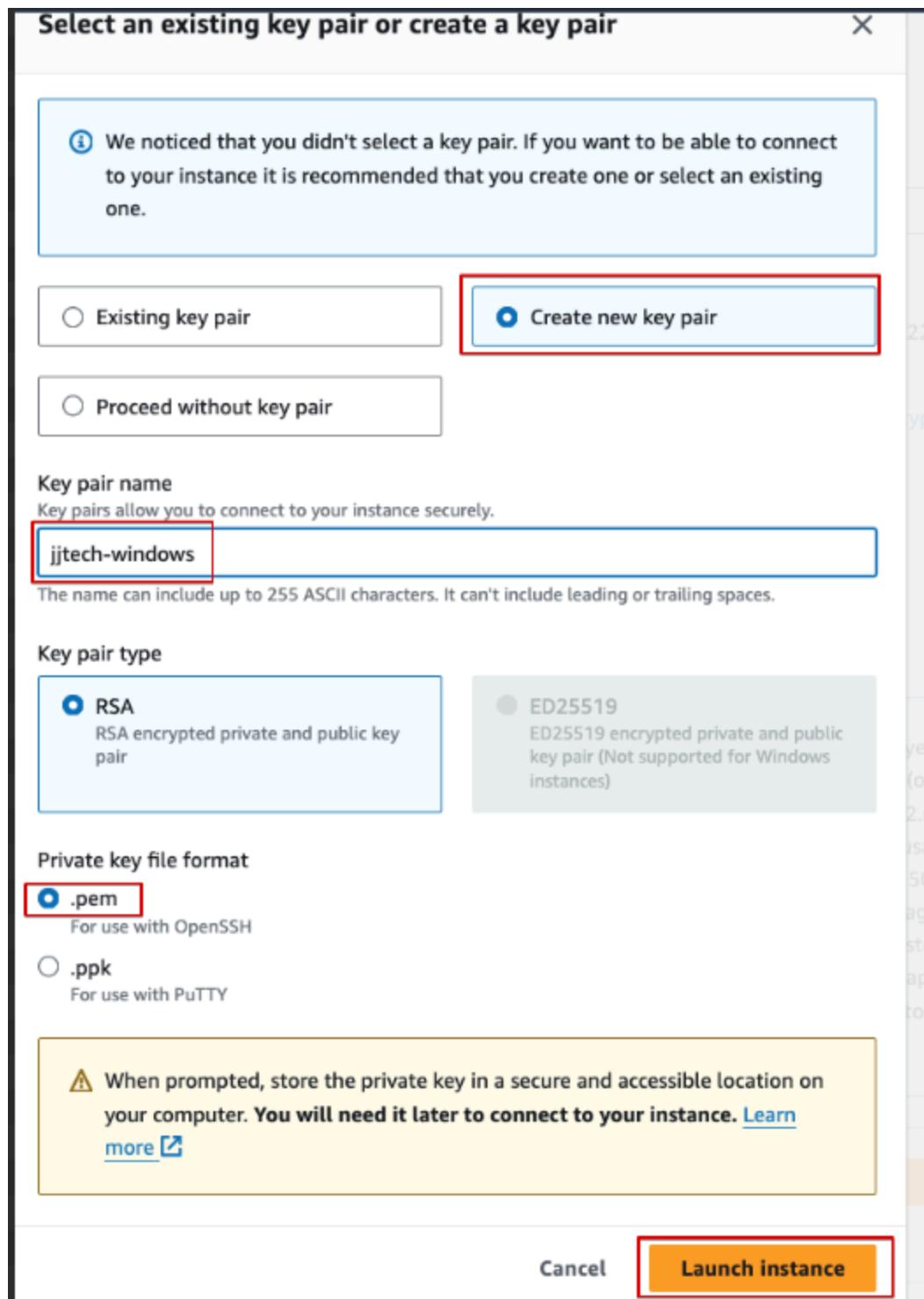
sg for the windows instance allow rdp

Inbound Security Group Rules

▼ Security group rule 1 (TCP, 3389, 0.0.0.0/0) [Remove](#)

Type <a href="#">Info</a> rdp	Protocol <a href="#">Info</a> TCP	Port range <a href="#">Info</a> 3389
Source type <a href="#">Info</a> Anywhere	Source <a href="#">Info</a> <input type="text"/> Add CIDR, prefix list or security	Description - optional <a href="#">Info</a> e.g. SSH for admin desktop

7. Review and **launch the instance**.



## Step 2: Create a Snapshot from the EBS Volume

1. Once the instance is running, go to the EC2 console and select the instance. This will show additional details about the selected instance.

2. Select the storage tab, and click on the root device EBS volume ID link. This will display the volumes console.

The screenshot shows the AWS EC2 Instances page. An instance named "ami-with-windows" (ID: i-039ad839cac7f8e7e) is selected. The "Storage" tab is highlighted with a red box. Under "Root device details", it shows the root device name as "/dev/sda1" and the type as "EBS". In the "Block devices" section, a volume with Volume ID "vol-0499ca0e5730d3cf2" is listed, also highlighted with a red box. The volume is attached to the instance.

3. Click on the Actions button and select Create Snapshot.

The screenshot shows the AWS Volumes page. A volume with Volume ID "vol-0499ca0e5730d3cf2" is selected. The "Actions" menu is open, and the "Create snapshot" option is highlighted with a red box. Below the table, a detailed view of the selected volume is shown, including its size (30 GiB), type (gp2), and status (Volume status: Okay).

4. Provide a description for the snapshot and click Create Snapshot.

**Create snapshot** Info

Create a point-in-time snapshot to back up the data on an Amazon EBS volume to Amazon S3.

**Details**

Volume ID  
vol-0499ca0e5730d3cf2

Description  
Add a description for your snapshot  
windows EBS snapshot for ami creation

Encryption Info  
Not encrypted

**Tags** Info

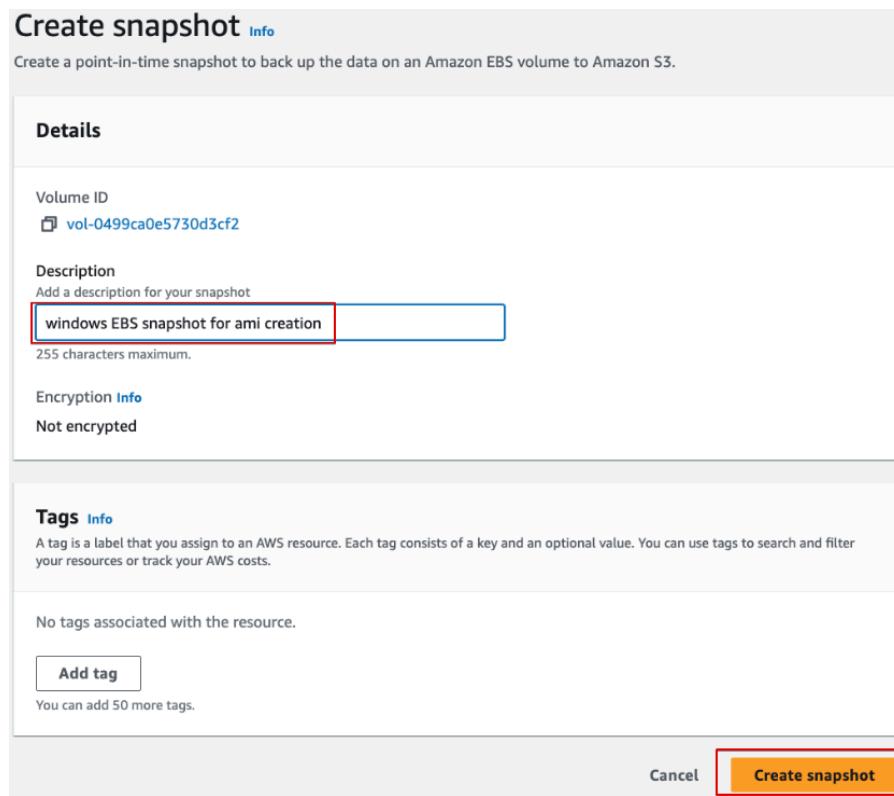
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

No tags associated with the resource.

Add tag

You can add 50 more tags.

Cancel **Create snapshot**



### Step 3: Copy the Snapshot to Another Region

1. Go to the Snapshots page in the EC2 console.
2. Select the snapshot you just created, click on the Actions button, and select Copy.

The screenshot shows the AWS EC2 Dashboard with the 'Schemas' section selected. In the main pane, the 'Snapshots' table lists one item: 'Snapshot ID: snap-Ofd0ceeb085315367'. A red box highlights the checkbox next to the first row in the table. On the right, the 'Actions' menu is open, with 'Copy snapshot' highlighted by a red arrow. Below the table, the 'Details' tab is selected, showing the snapshot's metadata.

Name	Snapshot ID	Volume size	Description	Storage tier	Snap
-	snap-Ofd0ceeb085315367	30 GiB	windows EBS snapshot for ...	Standard	<a href="#">Copy</a>

**Snapshot ID: snap-Ofd0ceeb085315367**

**Details** Snapshot settings Storage tier Tags

Snapshot ID <a href="#">snap-Ofd0ceeb085315367</a>	Volume size 30 GiB	Progress Available (100%)	Snapshot status Completed
Owner <a href="#">945685952191</a>	Volume ID <a href="#">vol-0499ca0e5730d3cf2</a>	Started Thu Jun 27 2024 20:22:55 GMT+0200 (Central European Summer Time)	Product codes -
Encryption	KMS key ID	KMS key alias	KMS key ARN

3. Choose the destination region (e.g., us-west-2) and click Copy Snapshot.

The screenshot shows the 'Copy snapshot' dialog box. The left sidebar has 'Schemas' selected. The main area shows the 'Settings' tab. The 'Snapshot ID' field contains 'snap-Ofd0ceeb085315367'. The 'New snapshot settings' section has a description '[Copied snap-Ofd0ceeb085315367 from us-east-1] windows EBS snapshots'. The 'Destination Region' dropdown is set to 'us-west-2'. The 'Encryption' section has the 'Encrypt this snapshot' checkbox unchecked. The 'Tags - optional' section shows 'No tags associated with the resource.' and an 'Add tag' button. At the bottom right are 'Cancel' and 'Copy snapshot' buttons, with 'Copy snapshot' highlighted by a red box.

**Copy snapshot** Info

Copy a snapshot from one AWS Region to another, or within the same Region.

**Settings**

**Snapshot ID**  
The ID of the original snapshot that is to be copied.  
[snap-Ofd0ceeb085315367](#)

**New snapshot settings**

**Description**  
A description for the snapshot copy.  
[Copied snap-Ofd0ceeb085315367 from us-east-1] windows EBS snapshots

**Destination Region**  
The Region in which to create the snapshot copy.  
[us-west-2](#)

**Encryption** Info  
Use Amazon EBS encryption as an encryption solution for your EBS resources.  
 Encrypt this snapshot

**Tags - optional** Info  
A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

No tags associated with the resource.

Add tag

You can add 50 more tags.

Cancel **Copy snapshot**

#### Step 4: Create an AMI from the Snapshot

1. Switch to the destination region (us-west-2) in the EC2 console.
2. Go to the Snapshots page and wait for the snapshot to appear and become available.

The screenshot shows the AWS EC2 Snapshots page. The top navigation bar includes the AWS logo, Services (with RDS, EC2, Elastic Kubernetes Service, and VPC), a search bar, and a region selector set to Oregon. The main content area is titled "Snapshots (1) Info". It displays a single snapshot entry:

Name	Snapshot...	Volume size	Description	Storage tier	Snapshot status	Started
-	snap-042a8...	30 GiB	[Copied sna...]	Standard	Completed	2024/06/2...

The "Completed" status is highlighted with a red box. The left sidebar contains navigation links for EC2 Dashboard, EC2 Global View, Events, Instances (with sub-links for Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Capacity Reservations), Images (with sub-links for AMIs and AMI Catalog), and Elastic Block Store (with sub-links for Volumes, Snapshots, and Lifecycle Manager). The "Snapshots" link is also highlighted with a red box.

3. Select the snapshot, click on the Actions button, and select Create Image (AMI).

The screenshot shows the AWS EC2 Snapshots page with a single snapshot selected (indicated by a red box around the checkbox in the first column). The "Actions" button is highlighted with a red box, and a dropdown menu is open, showing options: "Create volume from snapshot", "Create image from snapshot" (which is highlighted with a red arrow), "Copy snapshot", "Delete snapshot", "Manage tags", "Snapshot settings", and "Archiving".

4. Provide the necessary details like name and description for the AMI, review other information about the AMI to be created.

## Create image from snapshot Info

Create a new image from a snapshot taken from the root device volume of an instance.

### Image settings

#### Snapshot ID

snap-0fd0eceb085315367

#### Image name

A descriptive name for the image.

snapshot-AMI

3 - 128 characters. Valid characters are a-z, A-Z, 0-9, spaces, and - \_ . / ( ) [ ] ' @.

#### Description

A description for the image.

this ami was created from the EBS snapshot in US-east-1

255 characters maximum

#### Architecture Info

Select i386 for 32-bit or x86\_64 for 64-bit.

x86\_64

#### Root device name Info

The device name that is reserved for the root volume.

/dev/sda1

#### Virtualization type Info

The virtualization type to be used by instances launched from this image.

Hardware-assisted virtualization

#### Kernel ID Info

The operating system kernel for the AMI.

Move to the end of the page and click **Create Image**.

## Step 5: Use the AMI to Create Windows Server in the Second Region

1. Go to the AMIs page in the EC2 console in the destination region.

2. Select the AMI you just created and click **Launch instance from AMI**.

The screenshot shows the AWS EC2 console with the 'AMIs' section selected. On the left, a sidebar lists various EC2 services: EC2 Dashboard, EC2 Global View, Events, Instances (with 'Instances', 'Instance Types', 'Launch Templates', 'Spot Requests', 'Savings Plans', 'Reserved Instances', 'Dedicated Hosts', 'Capacity Reservations'), Images (with 'AMIs' highlighted), and Elastic Block Store. The main pane displays the 'Amazon Machine Images (AMIs) (1/1)' page. At the top, there are buttons for 'Recycle Bin' and 'EC2 Image Builder', followed by 'Actions' and a prominent orange 'Launch instance from AMI' button. Below this is a search bar labeled 'Find AMI by attribute or tag'. A table lists one AMI entry: 'Name' is 'ami-snapshot', 'AMI name' is 'ami-00e089bb61c89ddd6', and 'Source' is '9456'. The table has columns for 'Name', 'AMI name', 'Source', and 'Actions'. At the bottom of the page, a callout box provides information about enabling fast launch for Windows AMI instances, stating it improves launch times by up to 65% and only pays for storage of the snapshot. It includes a link to 'Learn more'.

3. Choose an instance type, configure instance details, add storage, and configure the security group as needed. (same as above)

**Name and tags** [Info](#)

Name

instanceFromSnashotAMI

[Add another](#)

**▼ Application and OS Images (Amazon Machine Image)** [Info](#)

An AMI is a template that contains the software configuration (operating system, application servers, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you're looking for below.

[Search our full catalog including 1000s of application and OS images](#)

[AMI from catalog](#) | [My AMIs](#) | [Quick Start](#)

**Amazon Machine Image (AMI)**

ami-snapshot

ami-00e089bb61c89ddd6

[Browse](#) | [Import](#) | [AWS Lambda](#)

Published	Architecture	Virtualization	Root device type	ENI Enabled
2024-06-27T19:22:08.000Z	x86_64	hvm	ebs	Yes

## Create key pair



### Key pair name

Key pairs allow you to connect to your instance securely.

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

### Key pair type

RSA

RSA encrypted private and public key pair

ED25519

ED25519 encrypted private and public key pair (Not supported for Windows instances)

### Private key file format

.pem

For use with OpenSSH

.ppk

For use with PuTTY

When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more](#)

[Cancel](#)

[Create key pair](#)

4. Review and launch the instance.

## Step 6: Confirm the App and Folder Created in the User Data

1. Connect to the new Windows Server instance via RDP.

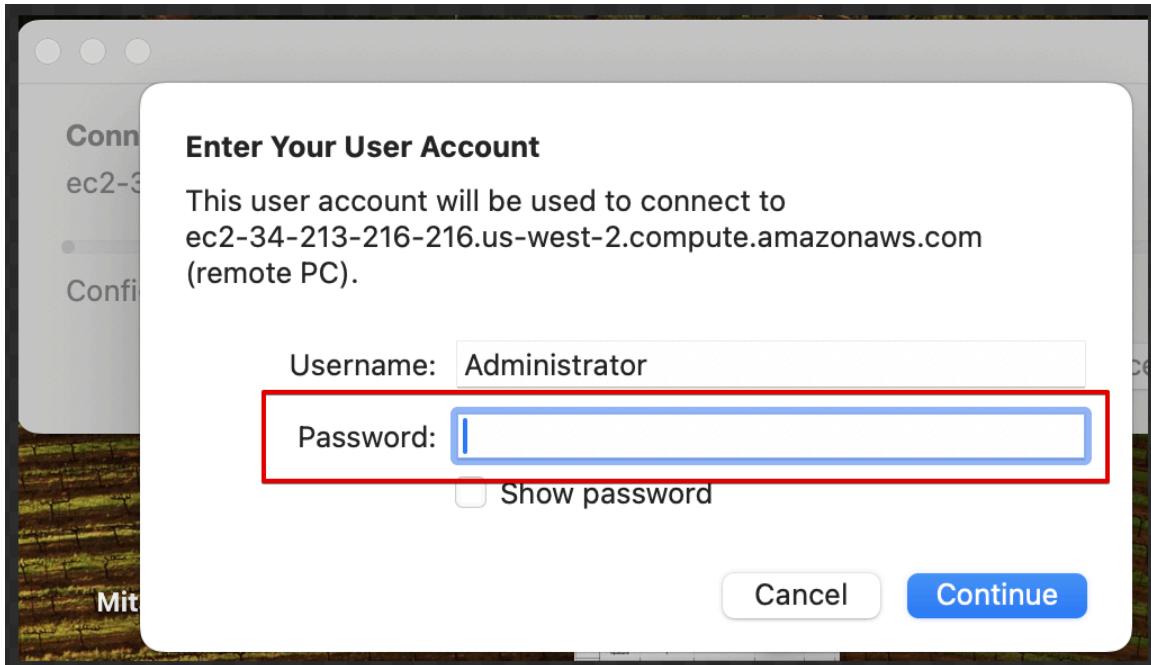
- For MAC users, RemoteDesktop client, should be installed via AppStore.
- Windows users should have this by default.

**Select the instance** you intend to connect into and **click connect**

Select the RDP Client and Download the RDP shortcut file.

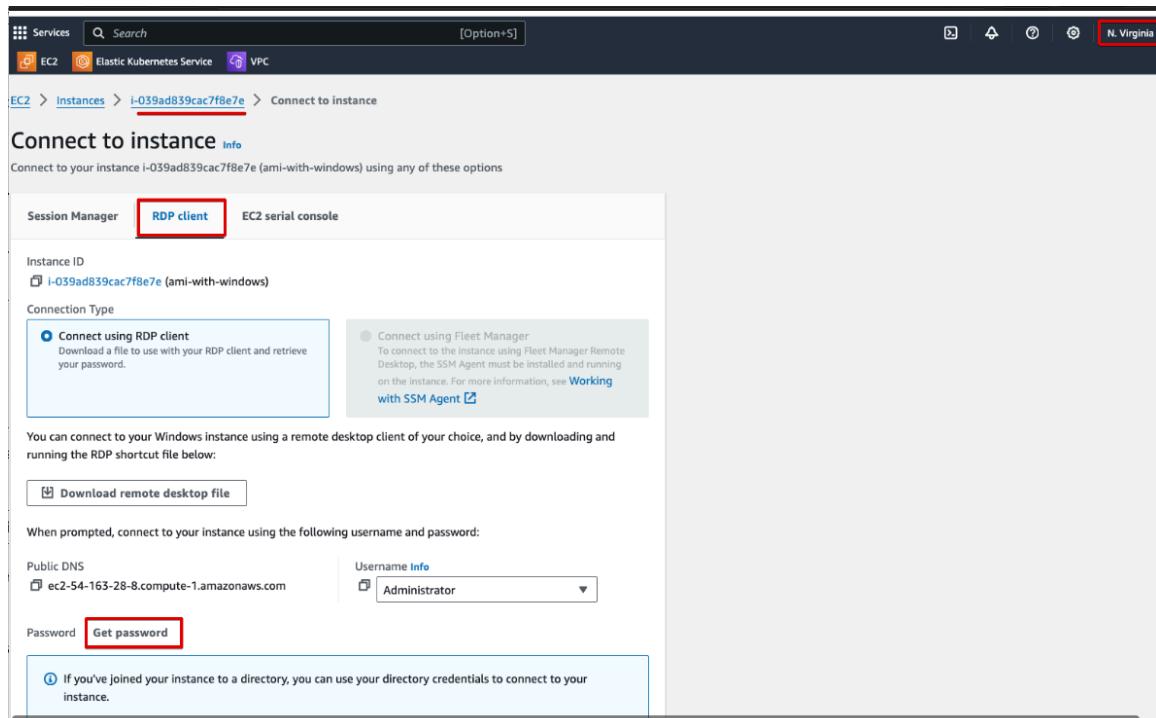
The screenshot shows the AWS Session Manager interface. At the top, there are three tabs: 'Session Manager' (disabled), 'RDP client' (selected and highlighted with a red border), and 'EC2 serial console'. Below the tabs, the 'Instance ID' section displays 'i-0fe560d59e312611e (instanceFromSnashotAMI)'. Under 'Connection Type', two options are shown: 'Connect using RDP client' (selected, indicated by a blue circle) and 'Connect using Fleet Manager' (disabled, indicated by a grey circle). A note below the RDP client option says: 'Download a file to use with your RDP client and retrieve your password.' A large red box highlights the 'Download remote desktop file' button. Below the connection type section, it says: 'You can connect to your Windows instance using a remote desktop client of your choice, and by downloading and running the RDP shortcut file below:' followed by the 'Download remote desktop file' button. To the right, there is a 'Public DNS' section with the value 'ec2-34-213-216-216.us-west-2.compute.amazonaws.com' and a 'Username' dropdown set to 'Administrator'. At the bottom, there is a note: 'If you've joined your instance to a directory, you can use your directory credentials to connect to your instance.'

Run the downloaded RDP file by double clicking on the file. This will open the RDP client and request for the password to connect to the server.

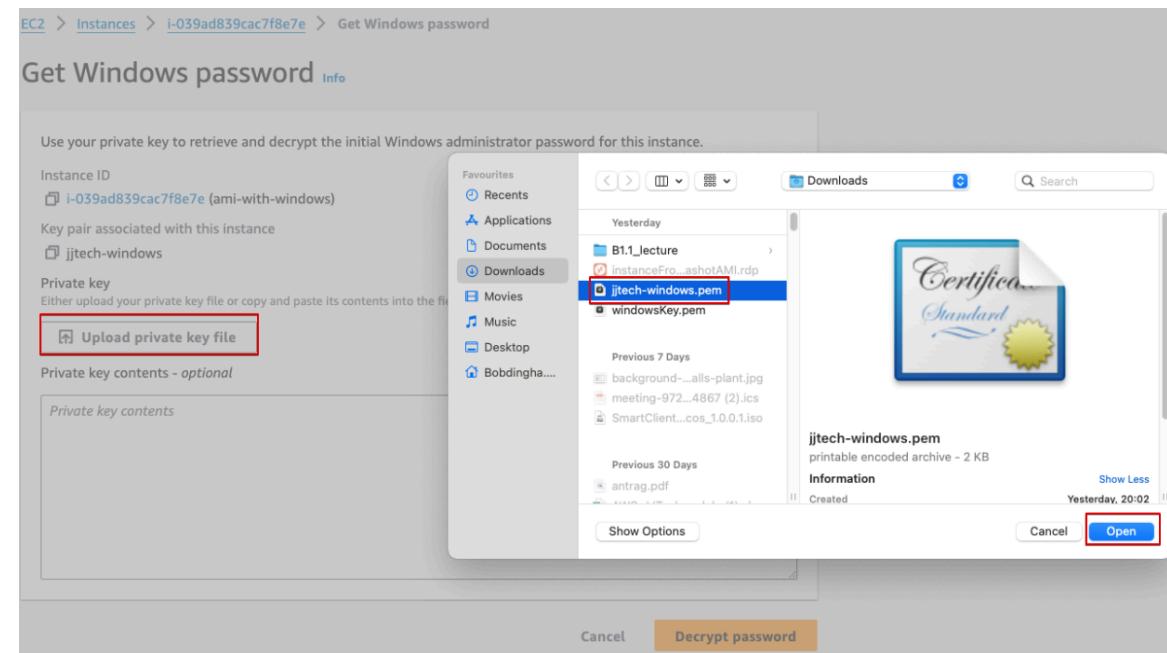


Obtain the password from the original EC2 server in us-east-1 region by

- switch to us-east-1, select server and click on connect, click on RDP Client (as above) and click on get password



- In order to decrypt the password, upload the keypair used to create the instance.



- Review the uploaded keypair and click on Decrypt password

## Get Windows password Info

Use your private key to retrieve and decrypt the initial Windows administrator password for this instance.

Instance ID

[i-039ad839cac7f8e7e](#) (ami-with-windows)

Key pair associated with this instance

jjtech-windows

Private key

Either upload your private key file or copy and paste its contents into the field below.

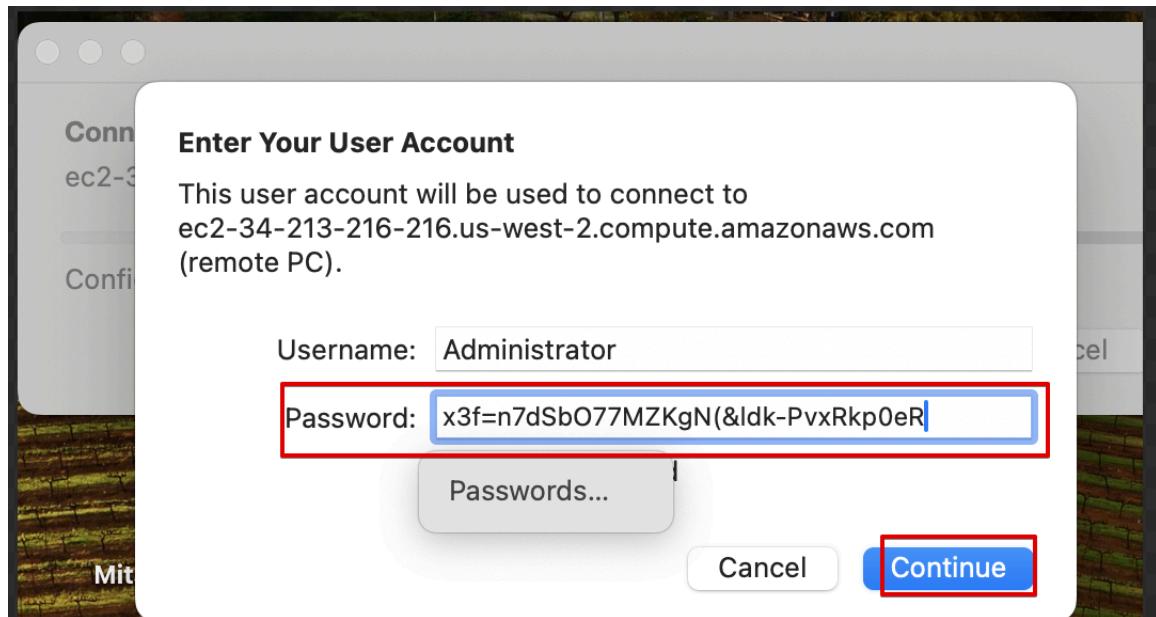
jjtech-windows.pem

1.678KB

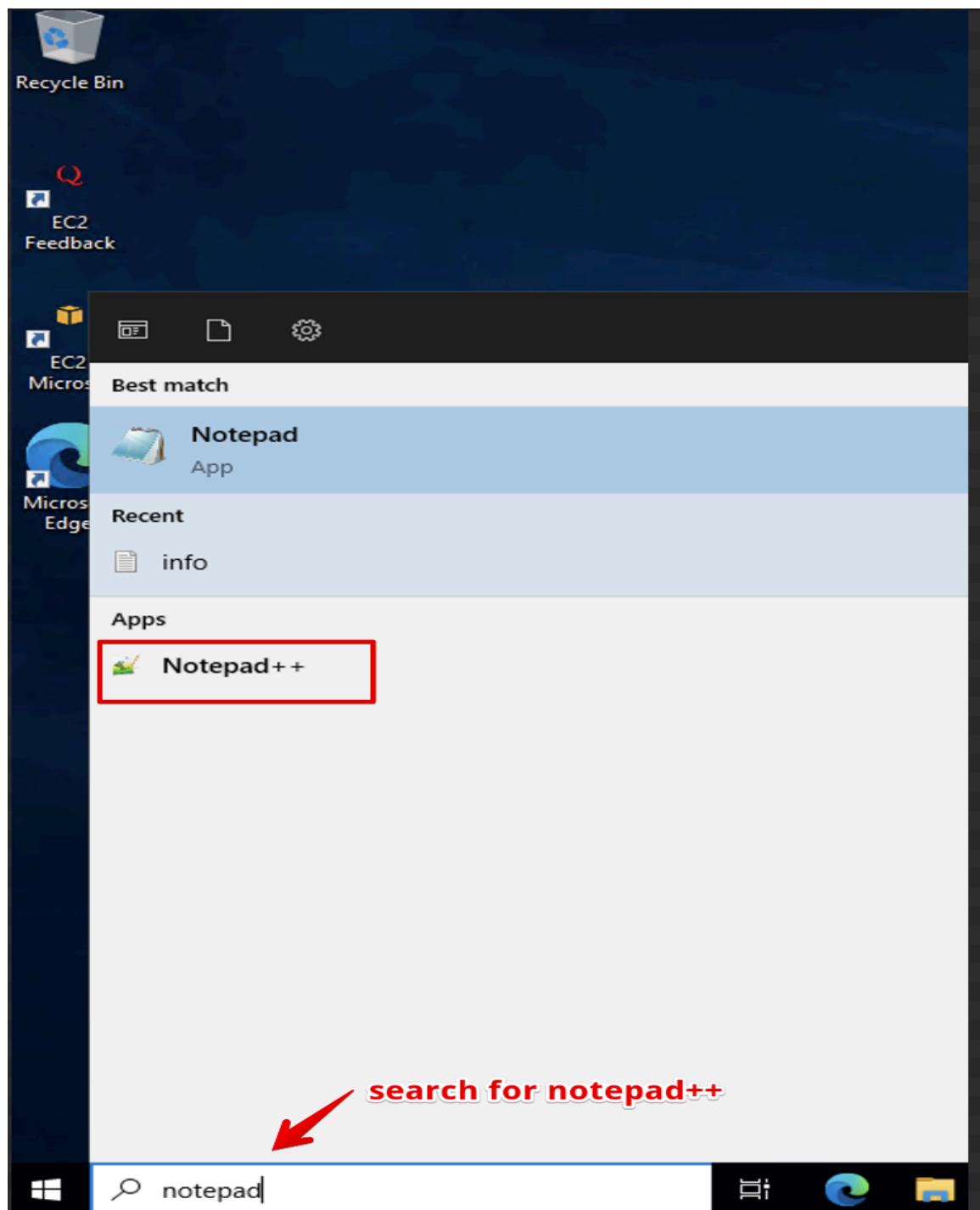
Private key contents - *optional*

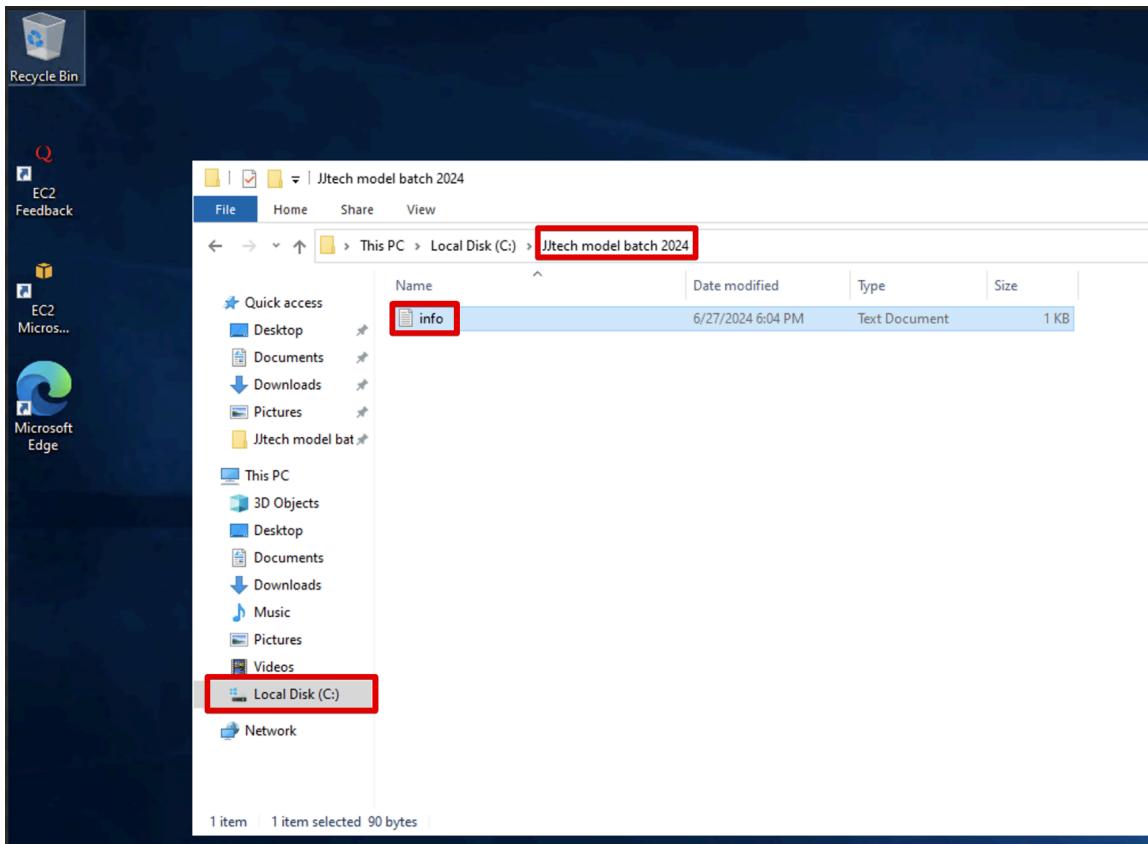
```
-----BEGIN RSA PRIVATE KEY-----  
MIIEpAIBAAKCAQEAYBpOgtbMRFMM6puOhA+ACT199l+l+j000EkZS6dbCi8UqS8M  
UYwNuZWsZxMKOuNOJok56bW74yJ4gv2YXMMXyc3jwALvVx8EAkM+a28NlmO4YaZq  
7k+N6IZqrrf2KYbTu3r7Eoyi8iQ9SBgSrjlA3liDzolU5XOdYvdkDSkNqrJ3CNv0  
BDRpcalOsCXTu0LakenCZwQUYWiqF0519jE10t8bM8At2uPLqXoCCfE3Mlf9wXn  
0l2hKlGkMoT0UDxmw/7vjWoAd8gLtgYTTF972UV+LQmGN0R0YR9nwZnK6IJfh05  
S/8JxLrpOK5Jon7mxQc2B20FQXQ6/XJu99vqQIDAQABaoIBAFS5tsZ1dnajq7Nm  
fBh0i6zd6Yi2ag11qreuU9SRnt2YA7KC5j9dAq6yrhXSnQFEH2H3tpq7RTut68Li
```

- copy the decrypted password into the RDP client and connect to the server.

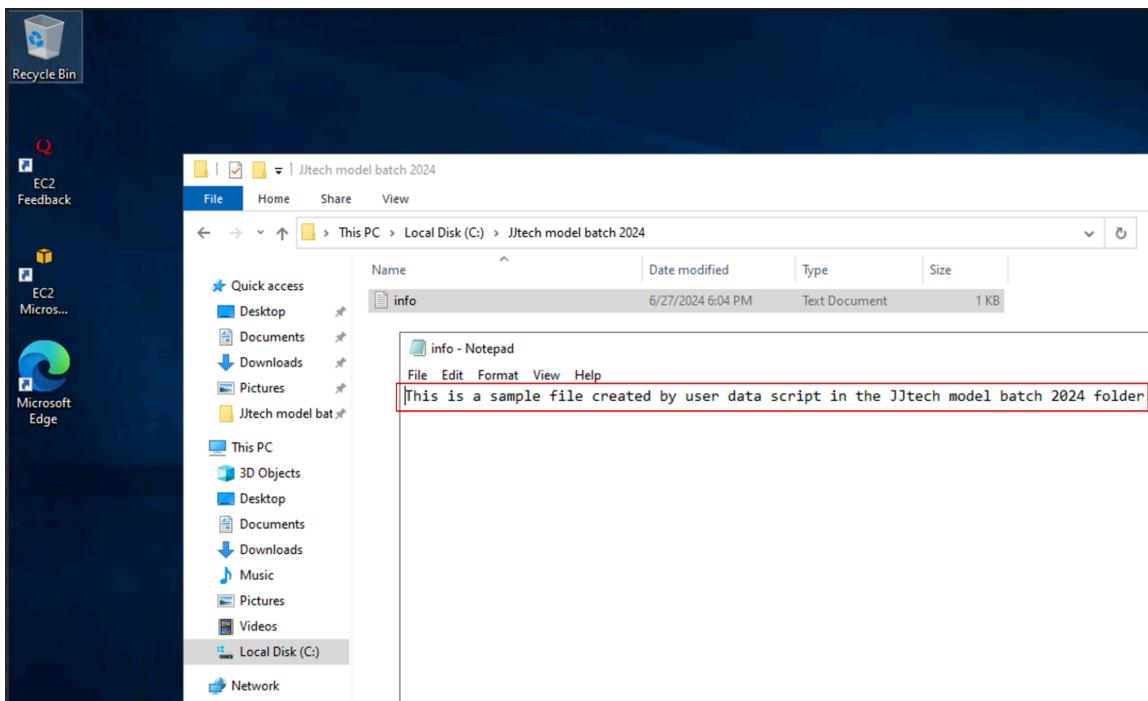


2. Verify that the application (notepad++) folder and the file exist.





3. Open the file and confirm that it contains the same data created by user data script.



## Scenario 2: Simulate Data Lifecycle Manager for Snapshots

### Goal

The goal of this scenario is to demonstrate how to automate the management of EBS snapshots using AWS Data Lifecycle Manager (DLM). You will create a lifecycle policy that automatically creates snapshots of an EBS volume and retains them according to a specified schedule.

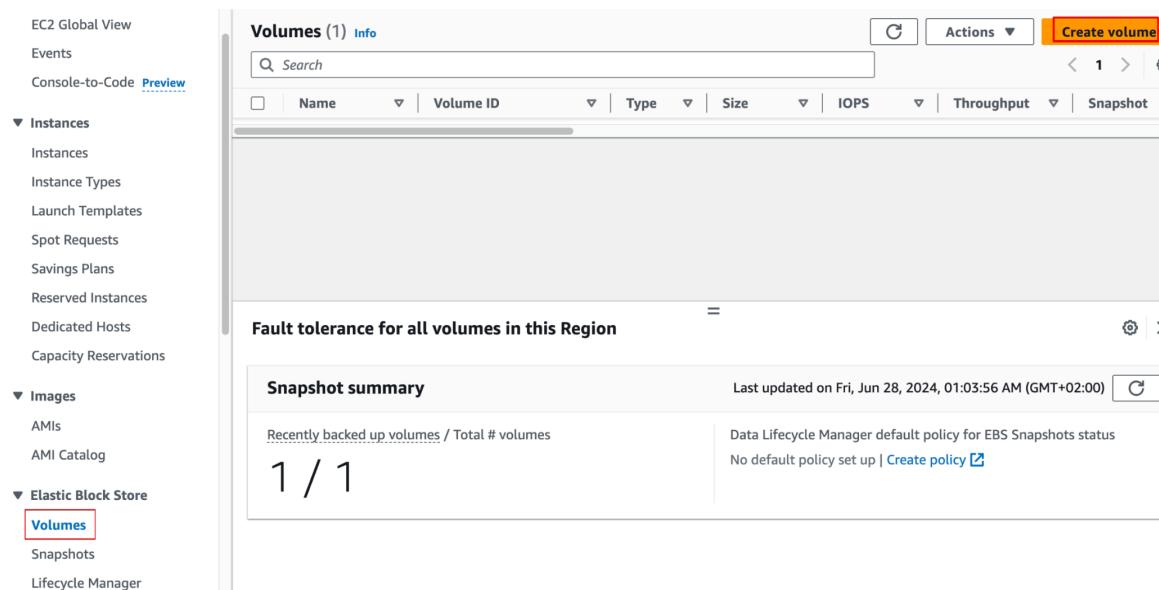
### Steps

#### Step 1: Create an EBS Volume

1. In the AWS Management Console, navigate to the EC2 dashboard.

2. Click on "Volumes" in the left-hand menu.

3. Click on "Create Volume".



4. Specify the volume type, size, and availability zone. Click "Create Volume".

## Create volume [Info](#)

Create an Amazon EBS volume to attach to any EC2 instance in the same Availability Zone.

### Volume settings

Volume type [Info](#)

General Purpose SSD (gp3)

ⓘ General Purpose SSD gp3 is now the default selection. gp3 provides up to 20% lower cost per GB than gp2. [Learn More](#)

Size (GiB) [Info](#)

50

Min: 1 GiB, Max: 16384 GiB. The value must be an integer.

IOPS [Info](#)

3000

Min: 3000 IOPS, Max: 16000 IOPS. The value must be an integer.

Throughput (MiB/s) [Info](#)

125

Min: 125 MiB, Max: 1000 MiB. Baseline: 125 MiB/s.

Availability Zone [Info](#)

us-east-1a

**Snapshot ID - optional** [Info](#)

Don't create volume from a snapshot

**Encryption** [Info](#)

Use Amazon EBS encryption as an encryption solution for your EBS resources associated with your EC2 instances.

Encrypt this volume

**Tags - optional** [Info](#)

A tag is a label that you assign to an AWS resource. Each tag consists of a key and an optional value. You can use tags to search and filter your resources or track your AWS costs.

Key	Value - optional	
<input type="text" value="Name"/> <input type="button" value="X"/>	<input type="text" value="DLM-volume"/> <input type="button" value="X"/>	<input type="button" value="Remove"/>
Use "DLM-volume"		
<input type="button" value="Add tag"/>		

You can add 49 more tags.

**Snapshot summary** [Info](#)

Click refresh to view backup information  
The volume type that you select and the tags that you assign determine whether the volume will be backed up by any Data Lifecycle Manager policies.

## Step 2: Create a Lifecycle Policy

1. In the EC2 dashboard, scroll down to "Lifecycle Manager" under the "Elastic Block Store" section.
2. Click on "Lifecycle Manager".
3. Select "EBS Snapshot Policy" as the policy type.

**Amazon Data Lifecycle Manager**

Automate the creation, retention, copy and deletion of snapshots and AMIs

Amazon Data Lifecycle Manager provides a simple, automated way to back up data stored on Amazon EBS volumes.

**Benefits and features**

Automated snapshot and AMI creation	Fast snapshot restore integration
Create a policy that automates the creation, retention, and deletion of EBS snapshots and EBS-backed AMIs.	Automate the creation of snapshots that are enabled for fast snapshot restore. Fast snapshot restore enables you to restore volumes that are fully initialized at creation and instantly deliver all of their provisioned performance.
Built-in cross-Region copy	Automated cross-account

**Pricing**

There is no charge for using Amazon Manager. You incur storage costs for created and copied by your policies, for optional features, such as fast sn you use.

**Getting started**

4. Click on **next Step** and add details to the policy.

5. Under "Resource type", select "Volume".

6. Under "Target resources", select the volume you created and click on **Add**. Provide a description for the policy.

**Specify settings**

**Step 1** Specify settings

**Step 2** Configure schedule 1 - Schedule 1

**Step 3** Review and create

**Target resources** Info

Specify the resources that are to be targeted by this policy.

**Target resource types**

Select the type of resources that are to be targeted.

Volume

Instance

**Target resource tags**

All resources of the selected type that have at least one of these tags will be targeted by the policy.

Name

44 tags remaining of 45.

7. Specify the schedule for creating snapshots (e.g., every 12 hours).

The screenshot shows the AWS CloudFormation Step Function configuration interface. On the left, there's a navigation sidebar with 'Step 1 Specify settings' (highlighted in blue), 'Step 2 Configure schedule 1 - Schedule 1' (highlighted with a red box), and 'Step 3 Review and create'. The main area is titled 'Configure schedule 1 - Schedule 1' with the sub-instruction: 'Schedules define how often the policy runs and the specific actions that are to be performed. The policy must have at least one schedule.' A note says: 'You can add 3 more schedules to this policy. They must have the same retention type as Schedule 1, but they can have their own retention count or age. Snapshot archiving can be enabled for one schedule only.' Below this is a 'Schedule details' section with the following fields:

- Schedule name: Schedule 1
- Frequency: Daily
- Every: 12 hours
- Starting at: 09:00 UTC
- Retention type: Count
- Keep: 3 snapshots in standard tier

Buttons for 'Remove schedule' and 'Add another schedule' are also present.

8. Set the retention rules (e.g., retain snapshots for 30 days). or using the count.

9. **Review** the policy and click "**Create policy**".

#### Step 3: Verify Snapshots Creation

1. After the policy has been active for the specified period, navigate to the "Snapshots" section in the EC2 dashboard.
2. Verify that snapshots of the EBS volume have been created according to the policy schedule.
3. Confirm that the retention rules are being applied (older snapshots should be deleted according to the policy).