Module 2: Case Study

Problem Statement:

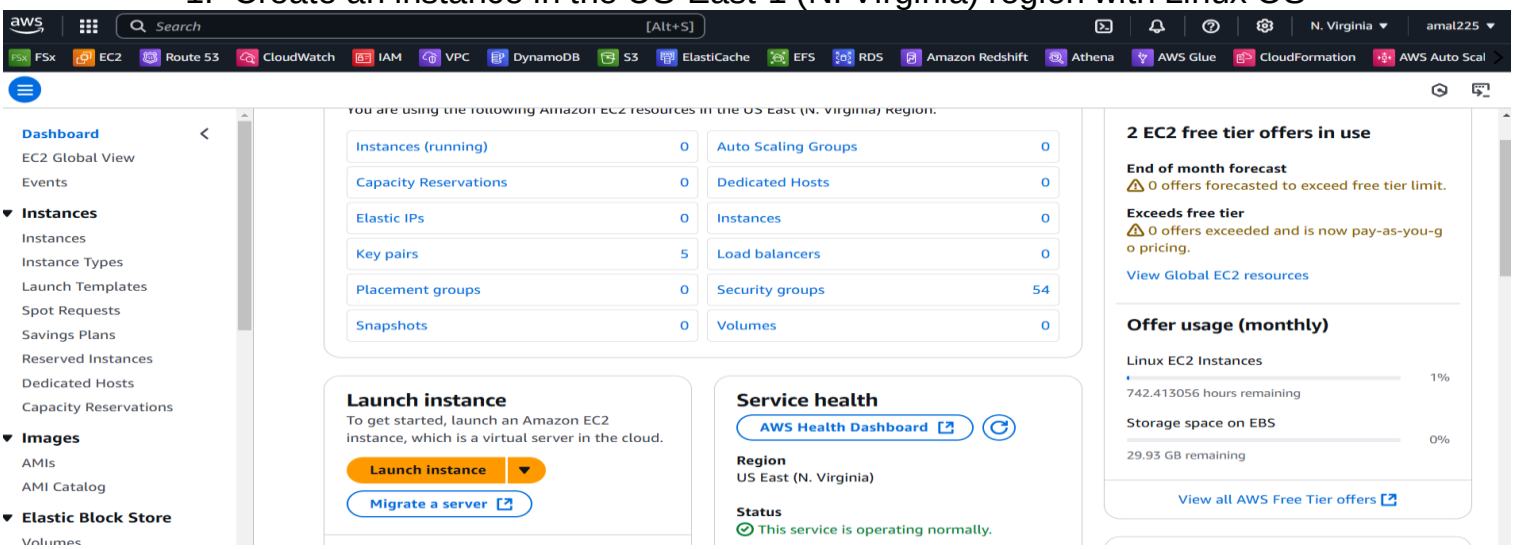
You work for XYZ Corporation. Your corporation is working on an application and they require secured web servers on Linux to launch the application.

Tasks To Be Performed:

1. Create an instance in the US-East-1 (N. Virginia) region with Linux OS and manage the requirement of web servers of your company using AMI.
2. Replicate the instance in the US-West-2 (Oregon) region.
3. Build two EBS volumes and attach them to the instance in the US-East-1 (N. Virginia) region.
4. Delete one volume after detaching it and extend the size of the other volume.
5. Take backup of this EBS volume

Solution:

1. Create an instance in the US-East-1 (N. Virginia) region with Linux OS



Launch an instance Info

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get s
steps below.

Name and tags Info

Name

Web

Add additi

Application and OS Images (Amazon Machine Image) Info

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

Search our full catalog including 1000s of application and OS images

Amazon Linux | macOS | Ubuntu | Windows | Red Hat | SUSE Linux | Debian | Browse more AM

Including AMIs fror
AWS, Marketplace a
the Community

Amazon Machine Image (AMI)

Amazon Linux 2023 AMI — Free tier eligible
ami-0453ec754f44f9a4a (64-bit (x86), uefi-preferred) / ami-0ed83e7a78a23014e (64-bit (Arm), uefi)
Virtualization: hvm ENA enabled: true Root device type: ebs

Description

Amazon Linux 2023 is a modern, general purpose Linux-based OS that comes with 5 years of long term support. It is optimized f
AWS and designed to provide a secure, stable and high-performance execution environment to develop and run your cloud
applications.

Amazon Linux 2023 AMI 2023.6.20241121.0 x86_64 HVM kernel-6.1

Architecture	Boot mode	AMI ID	Username	
64-bit (x86)	uefi-preferred	ami-0453ec754f44f9a4a	ec2-user	Verified provider

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 Ubuntu Pro base pricing: 0.0134 USD per Hour
On-Demand SUSE base pricing: 0.0116 USD per Hour
On-Demand RHEL base pricing: 0.026 USD per Hour
On-Demand Linux base pricing: 0.0116 USD per Hour

Additional costs apply for AMIs with pre-installed software

Key pair (login) Info

You can use a key pair to securely connect to your instance. Ensure that you have access to the
the instance.

Key pair name - *required*

nov11

Network settings Info

VPC - *required* | Info

vpc-067409b5122bc64b5 (default)
172.31.0.0/16

Subnet | Info

No preference — Create new subnet [

Auto-assign public IP | Info

Enable

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 insta

Create security group | Select existing security group

Security group name - *required*

launch-wizard-47

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

Inbound Security Group Rules

Security group rule 1 (TCP, 22, 0.0.0.0/0) — Remove

Type	Protocol	Port range
ssh	TCP	22

Source type	Source	Description - *optional*
Anywhere	Add CIDR, prefix list or security gro	e.g. SSH for admin desktop

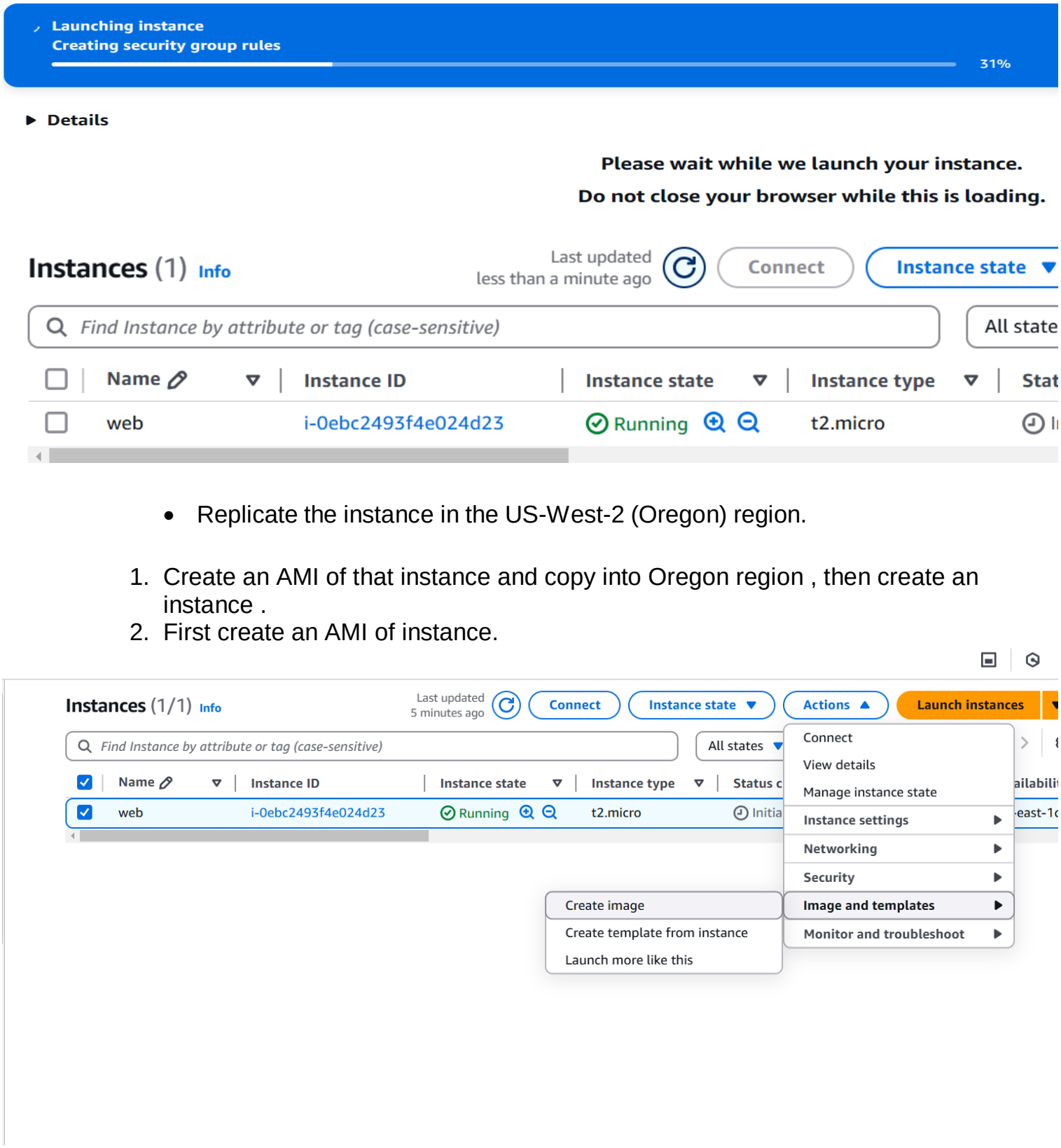
0.0.0.0/0

Security group rule 2 (All, All, 0.0.0.0/0) — Remove

Type	Protocol	Port range
All traffic	All	All

Source type	Source	Description - *optional*
Anywhere	Add CIDR, prefix list or security gro	e.g. SSH for admin desktop

0.0.0.0/0



- Replicate the instance in the US-West-2 (Oregon) region.

1. Create an AMI of that instance and copy into Oregon region , then create an instance .
2. First create an AMI of instance.

Create image Info

An image (also referred to as an AMI) defines the programs and settings that are applied when you launch an EC2 instance. You can create an image from the configuration of an existing instance.

Instance ID

i-0ebc2493f4e024d23 (web)

Image name

webAMI

Maximum 127 characters. Can't be modified after creation.

Image description - *optional*

Image description

Maximum 255 characters

Reboot instance

When selected, Amazon EC2 reboots the instance so that data is at rest when snapshots of the attached volumes are taken. This ensures data consistency.

Instance volumes

Storage type	Device	Snapshot	Size	Volume type	IOPS	Throughput	Delete on termination	Encrypted

Add volume

During the image creation process, Amazon EC2 creates a snapshot of each of the above volumes.

Tags - *optional*

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.

Tag image and snapshots together
Tag the image and the snapshots with the same tag.

Tag image and snapshots separately
Tag the image and the snapshots with different tags.

No tags associated with the resource.

Add new tag

You can add up to 50 more tags.

Cancel | Create image

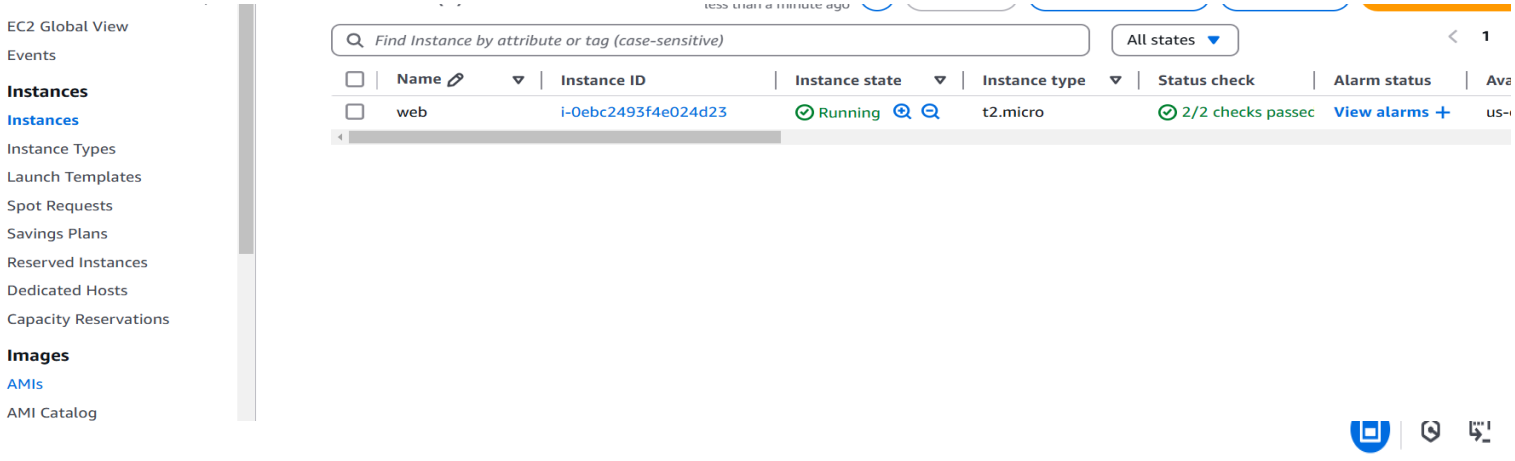
Currently creating AMI ami-084b01108c7abb37a from instance i-0ebc2493f4e024d23. Check that the AMI status is 'Available' before deleting the instance or carrying out other actions related to this AMI.

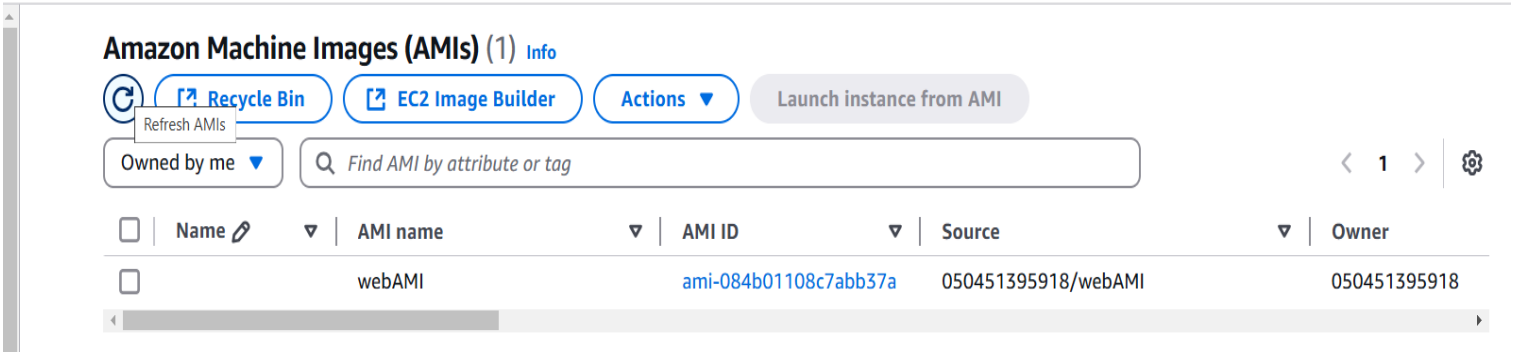
Instances (1/1) Info

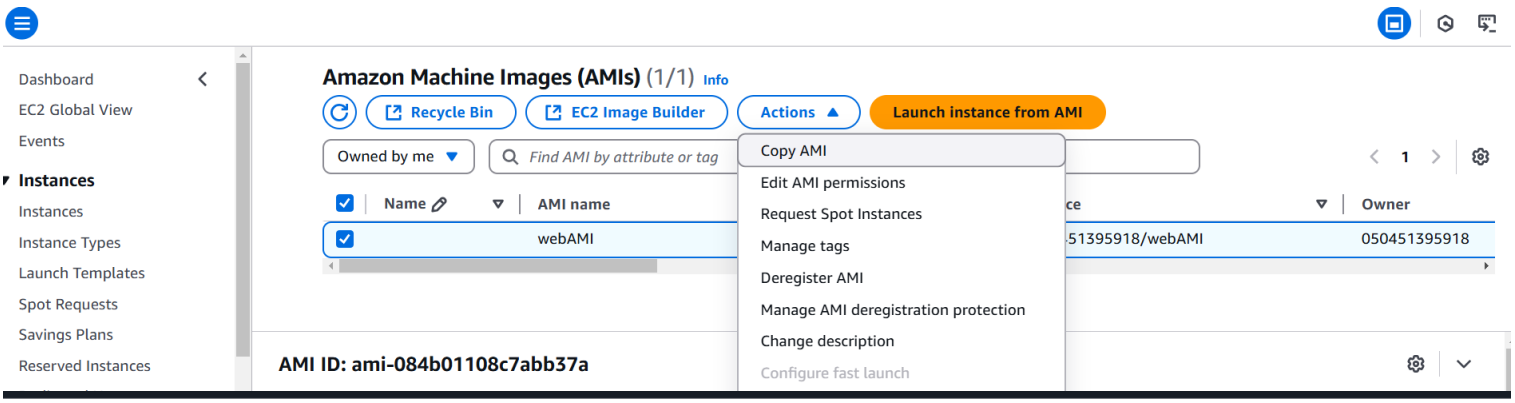
Last updated less than a minute ago | Connect | Instance state | Actions | Launch instances

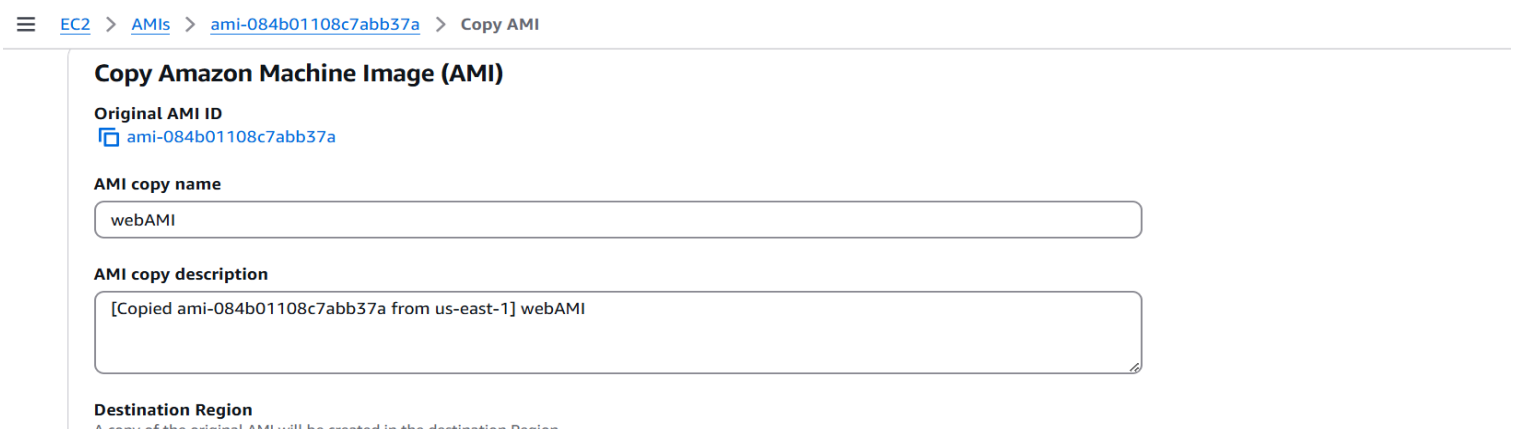
Find Instance by attribute or tag (case-sensitive) | All states | 1

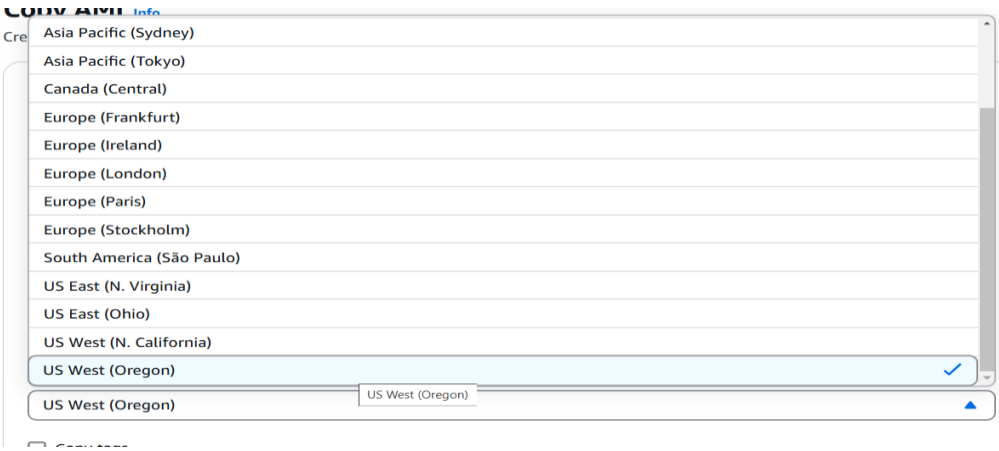
Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availabilit
web	i-0ebc2493f4e024d23	Running	t2.micro	2/2 checks passec	View alarms +	us-east-1d

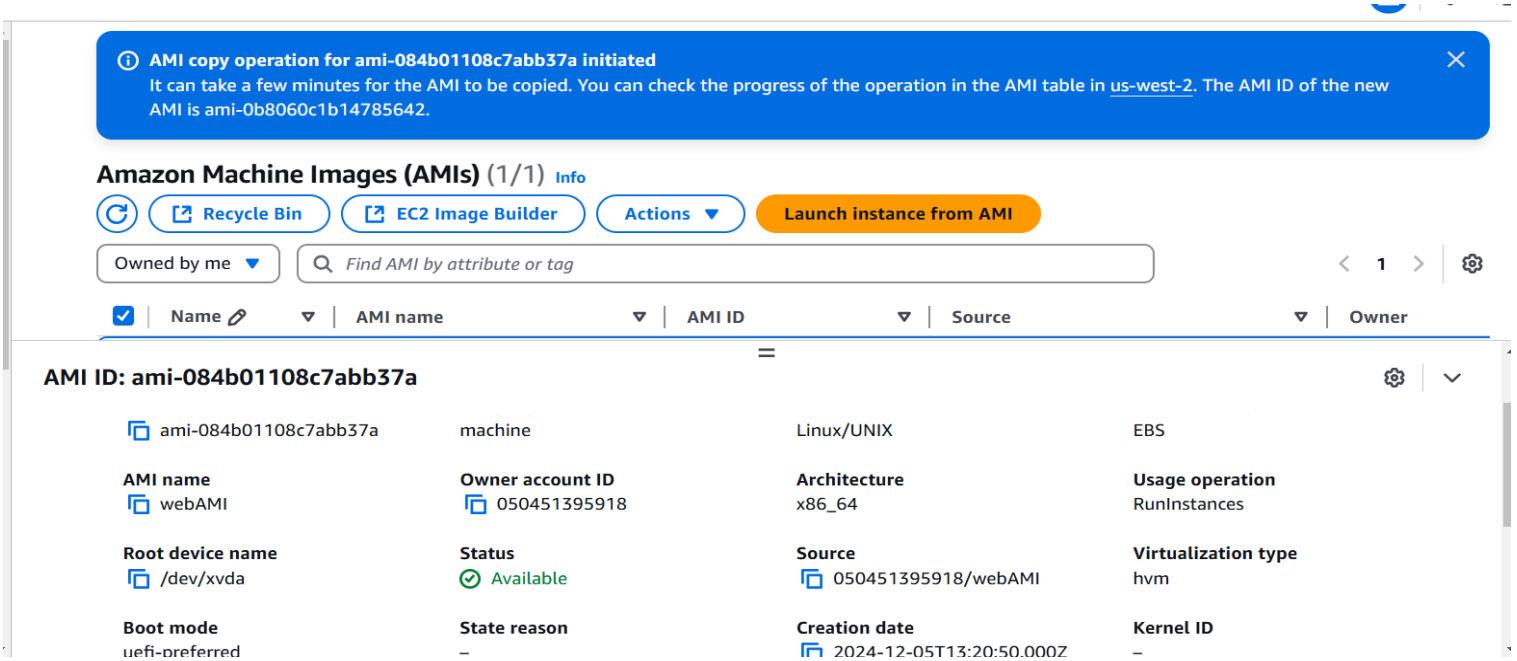

EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Capacity Reservations
Images
AMIs
AMI Catalog
Find Instance by attribute or tag (case-sensitive)
All states
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
web
i-0ebc2493f4e024d23
Running
t2.micro
2/2 checks passec
View alarms

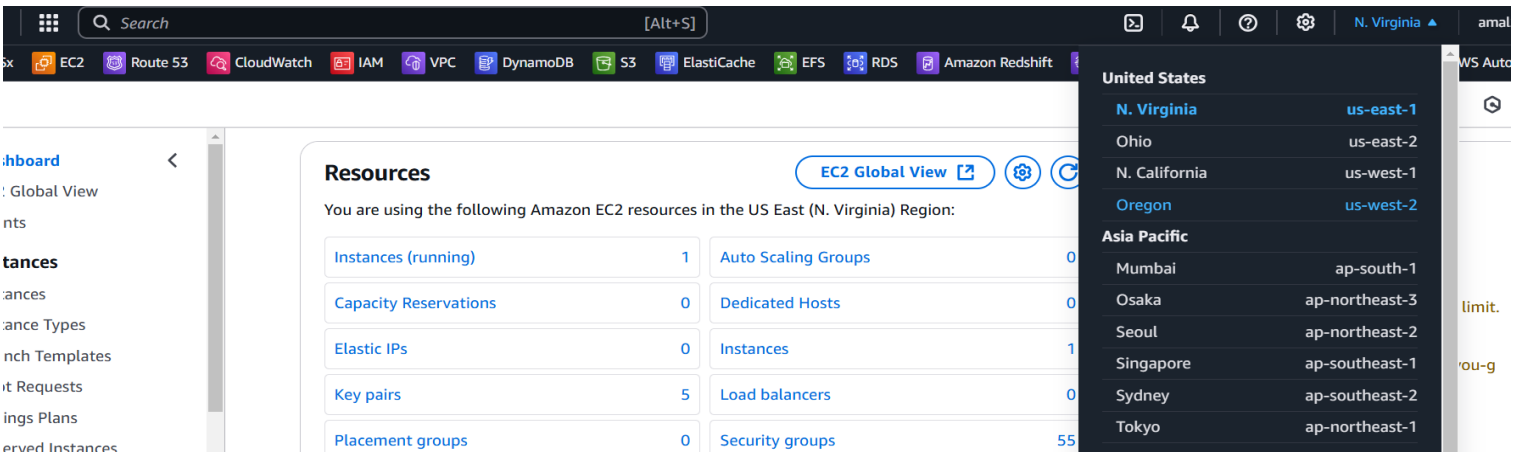

Amazon Machine Images (AMIs) (1) Info
Recycle Bin
EC2 Image Builder
Actions
Launch instance from AMI
Refresh AMIs
Owned by me
Find AMI by attribute or tag
Name
AMI name
AMI ID
Source
Owner
webAMI
ami-084b01108c7abb37a
050451395918/webAMI
050451395918

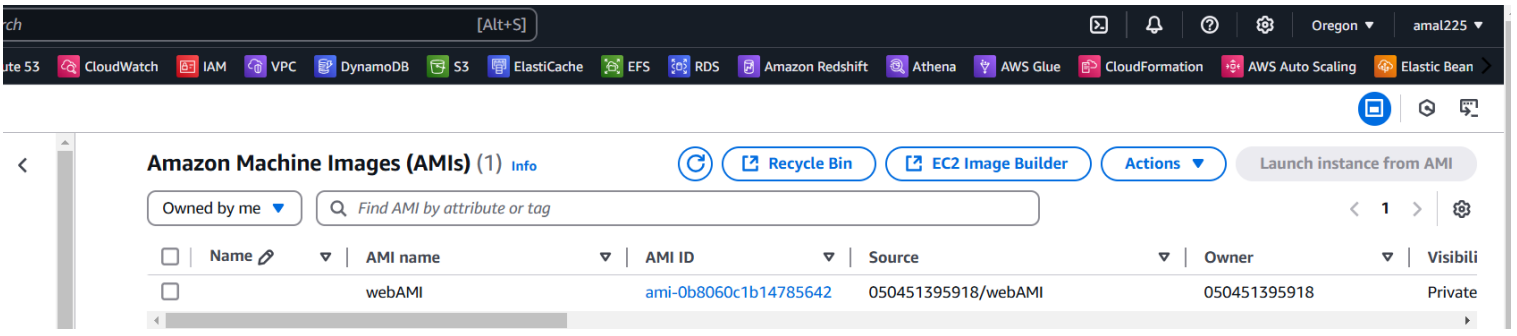

Dashboard
EC2 Global View
Events
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Amazon Machine Images (AMIs) (1/1) Info
Recycle Bin
EC2 Image Builder
Actions
Launch instance from AMI
Owned by me
Find AMI by attribute or tag
Copy AMI
Edit AMI permissions
Request Spot Instances
Manage tags
Deregister AMI
Manage AMI deregistration protection
Change description
Configure fast launch
Name
AMI name
Owner
webAMI
050451395918
AMI ID: ami-084b01108c7abb37a

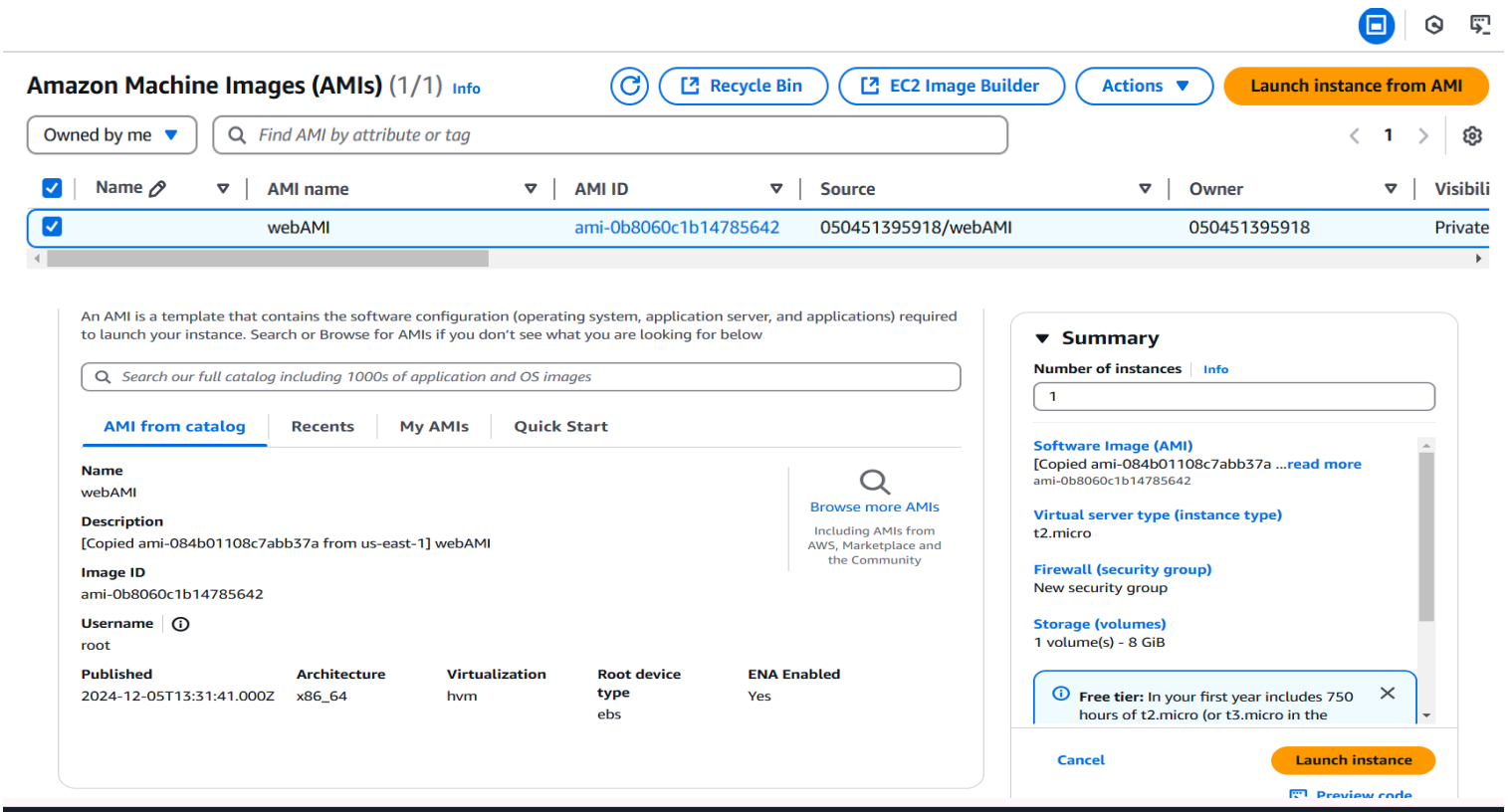

EC2 > AMIs > ami-084b01108c7abb37a > Copy AMI
Copy Amazon Machine Image (AMI)
Original AMI ID
ami-084b01108c7abb37a
AMI copy name
webAMI
AMI copy description
[Copied ami-084b01108c7abb37a from us-east-1] webAMI
Destination Region

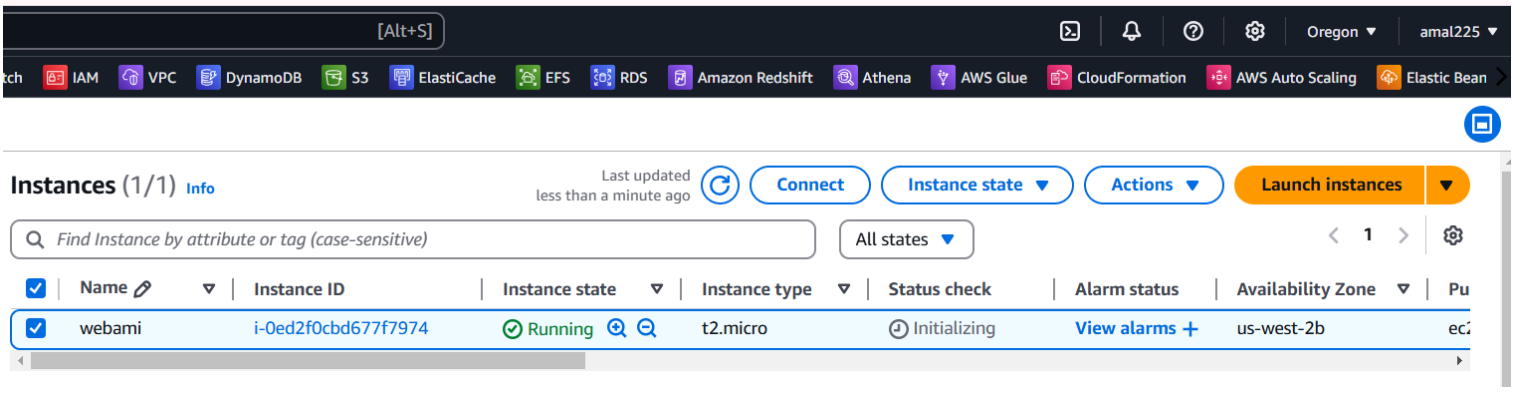

Asia Pacific (Sydney)
Asia Pacific (Tokyo)
Canada (Central)
Europe (Frankfurt)
Europe (Ireland)
Europe (London)
Europe (Paris)
Europe (Stockholm)
South America (São Paulo)
US East (N. Virginia)
US East (Ohio)
US West (N. California)
US West (Oregon)
US West (Oregon)
US West (Oregon)


AMI copy operation for ami-084b01108c7abb37a initiated
It can take a few minutes for the AMI to be copied. You can check the progress of the operation in the AMI table in us-west-2. The AMI ID of the new AMI is ami-0b8060c1b14785642.
Amazon Machine Images (AMIs) (1/1) Info
Recycle Bin
EC2 Image Builder
Actions
Launch instance from AMI
Owned by me
Find AMI by attribute or tag
Name
AMI name
AMI ID
Source
Owner
AMI ID: ami-084b01108c7abb37a
ami-084b01108c7abb37a
machine
Linux/UNIX
EBS
AMI name
webAMI
Owner account ID
050451395918
Architecture
x86_64
Usage operation
RunInstances
Root device name
/dev/xvda
Status
Available
Source
050451395918/webAMI
Virtualization type
hvm
Boot mode
uefi-preferred
State reason
–
Creation date
2024-12-05T13:20:50.000Z
Kernel ID
–

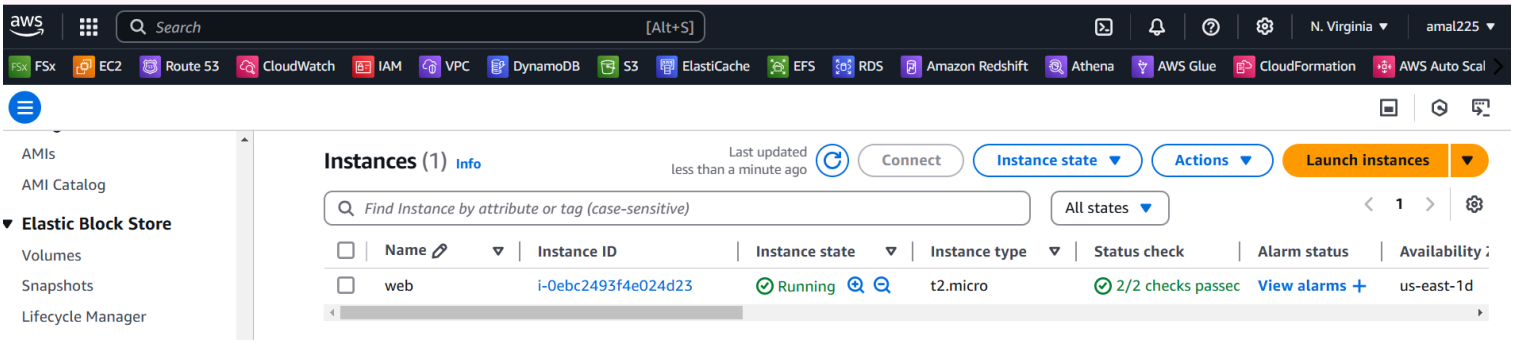

Search
[Alt+S]
N. Virginia
EC2
Route 53
CloudWatch
IAM
VPC
DynamoDB
S3
ElastiCache
EFS
RDS
Amazon Redshift
Resources
EC2 Global View
You are using the following Amazon EC2 resources in the US East (N. Virginia) Region:
Instances (running) 1
Auto Scaling Groups 0
Capacity Reservations 0
Dedicated Hosts 0
Elastic IPs 0
Instances 1
Key pairs 5
Load balancers 0
Placement groups 0
Security groups 55
United States
N. Virginia us-east-1
Ohio us-east-2
N. California us-west-1
Oregon us-west-2
Asia Pacific
Mumbai ap-south-1
Osaka ap-northeast-3
Seoul ap-northeast-2
Singapore ap-southeast-1
Sydney ap-southeast-2
Tokyo ap-northeast-1

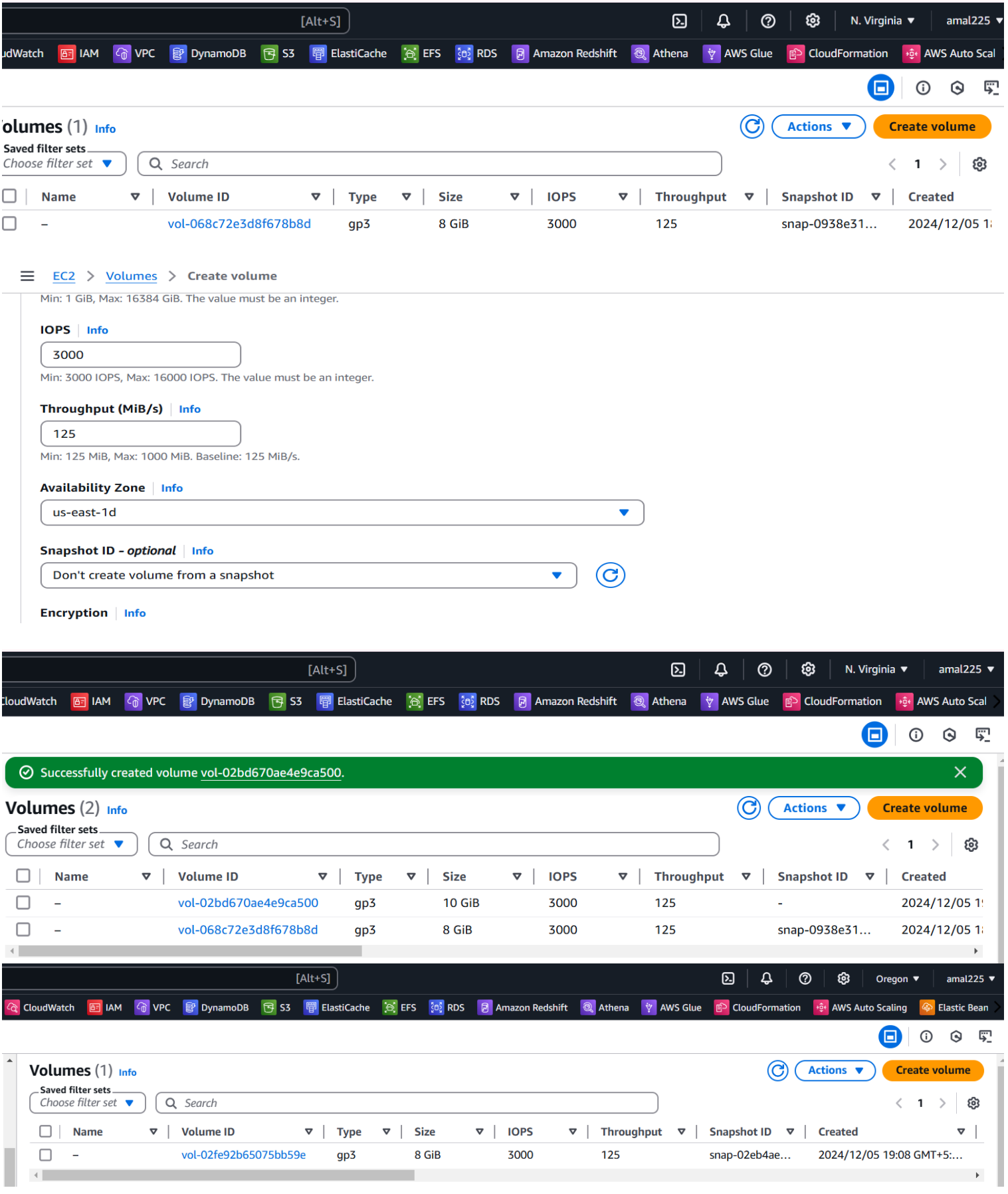

[Alt+S]
Oregon
amal225
CloudWatch
IAM
VPC
DynamoDB
S3
ElastiCache
EFS
RDS
Amazon Redshift
Athena
AWS Glue
CloudFormation
AWS Auto Scaling
Amazon Machine Images (AMIs) (1) Info
Recycle Bin
EC2 Image Builder
Actions
Launch instance from AMI
Owned by me
Find AMI by attribute or tag
Name
AMI name
AMI ID
Source
Owner
Visibili
webAMI
ami-0b8060c1b14785642
050451395918/webAMI
050451395918
Private





1. Build two EBS volumes and attach them to the instance in the US-East-1 (N. Virginia) region and Oregon region.
   - First we create EBS volume in US-East-1(N.Virgnia) region and Oregon region




[Alt+S]
N. Virginia
amal225
IAM
VPC
DynamoDB
S3
ElastiCache
EFS
RDS
Amazon Redshift
Athena
AWS Glue
CloudFormation
olumes (1) Info
Actions
Create volume
Saved filter sets
Choose filter set
Search
Name
Volume ID
Type
Size
IOPS
Throughput
Snapshot ID
Created
vol-068c72e3d8f678b8d
gp3
8 GiB
3000
125
EC2 > Volumes > Create volume
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-1d
Snapshot ID - optional Info
Don't create volume from a snapshot
Encryption Info

[Alt+S]
N. Virginia
amal225
IAM
VPC
DynamoDB
S3
ElastiCache
EFS
RDS
Amazon Redshift
Athena
AWS Glue
CloudFormation
Successfully created volume vol-02bd670ae4e9ca500.
Volumes (2) Info
Actions
Create volume
Saved filter sets
Choose filter set
Search
Name
Volume ID
Type
Size
IOPS
Throughput
Snapshot ID
Created
vol-02bd670ae4e9ca500
gp3
10 GiB
3000
125
-
vol-068c72e3d8f678b8d
gp3
8 GiB
3000
125
snap-0938e31...

[Alt+S]
Oregon
amal225
CloudWatch
IAM
VPC
DynamoDB
S3
ElastiCache
EFS
RDS
Amazon Redshift
Athena
AWS Glue
CloudFormation
AWS Auto Scaling
Elastic Bean
Volumes (1) Info
Actions
Create volume
Saved filter sets
Choose filter set
Search
Name
Volume ID
Type
Size
IOPS
Throughput
Snapshot ID
Created
vol-02fe92b65075bb59e
gp3
8 GiB
3000
125
snap-02eb4ae...
2024/12/05 19:08 GMT+5:...

EC2 > Volumes > 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)

Size (GiB) | Info

15

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.

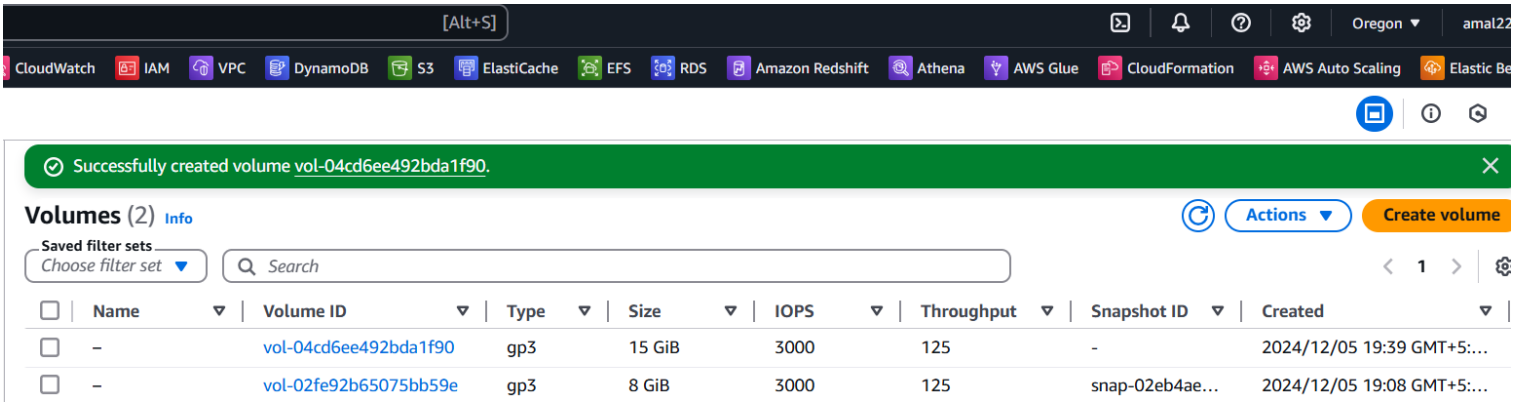
Throughput (MiB/s) | Info

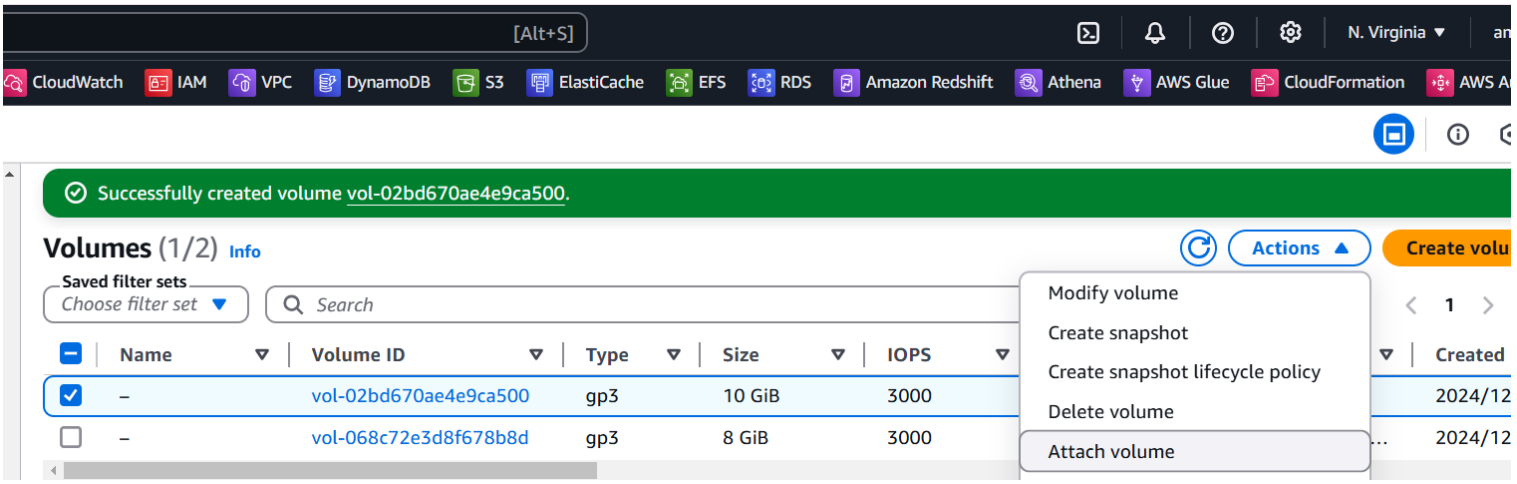
125

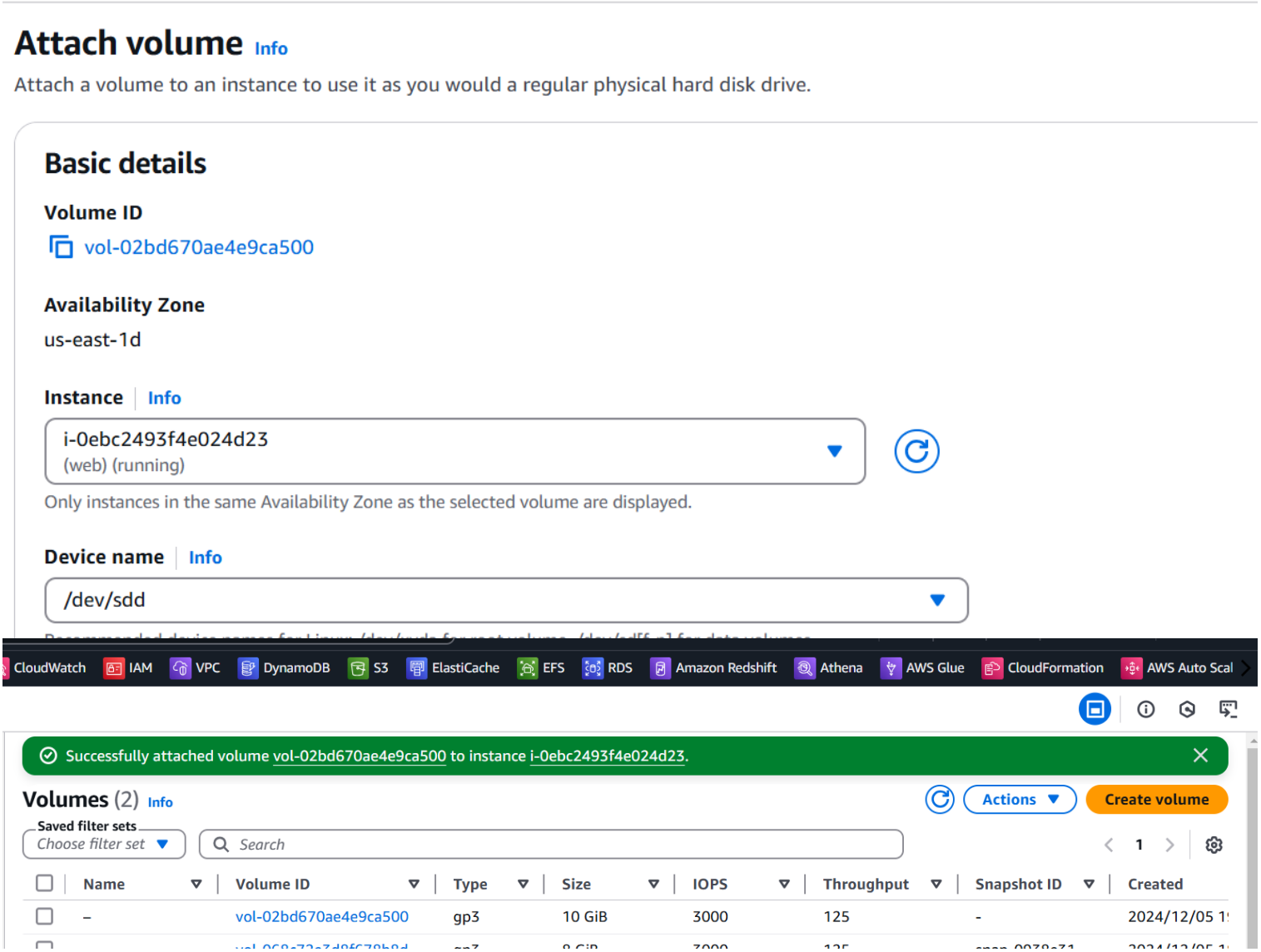
Min: 125 MiB, Max: 1000 MiB. Baseline: 125 MiB/s.

Availability Zone | Info

us-west-2b

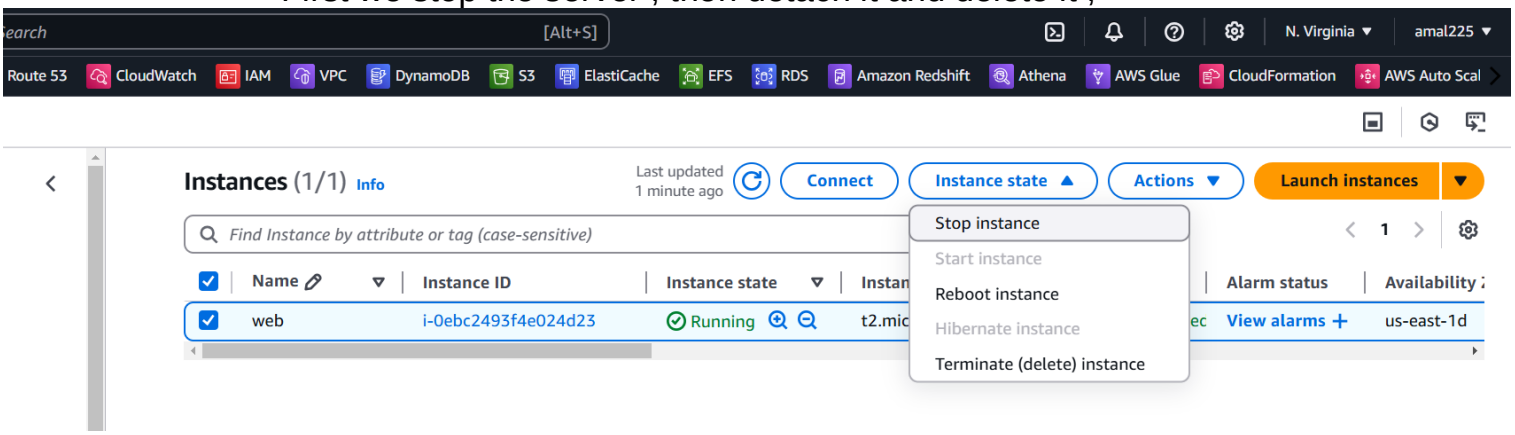




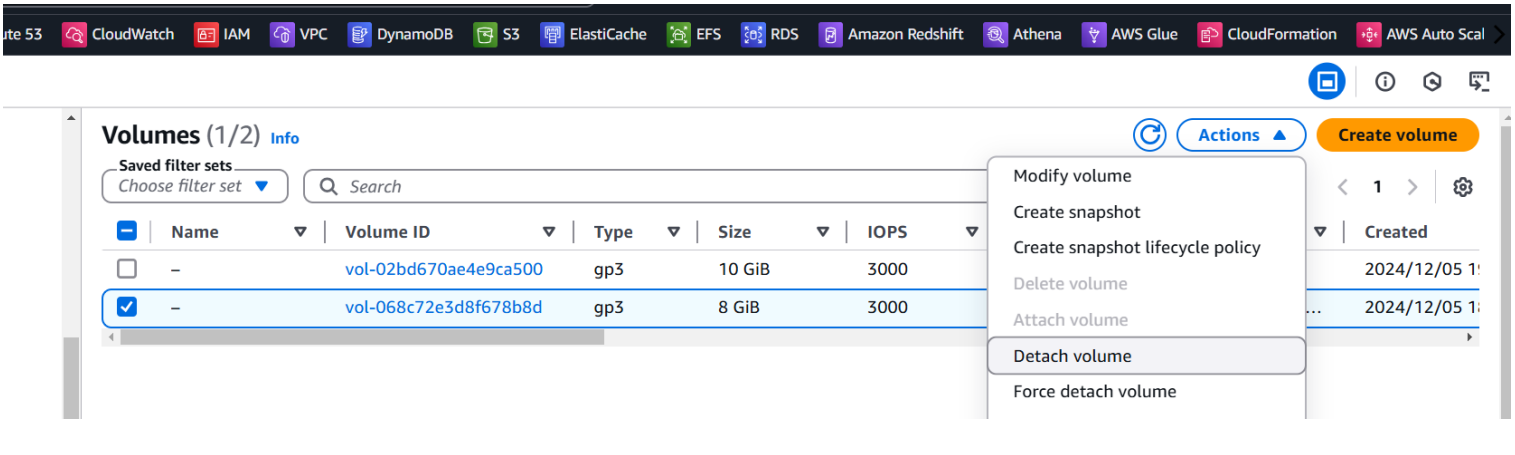


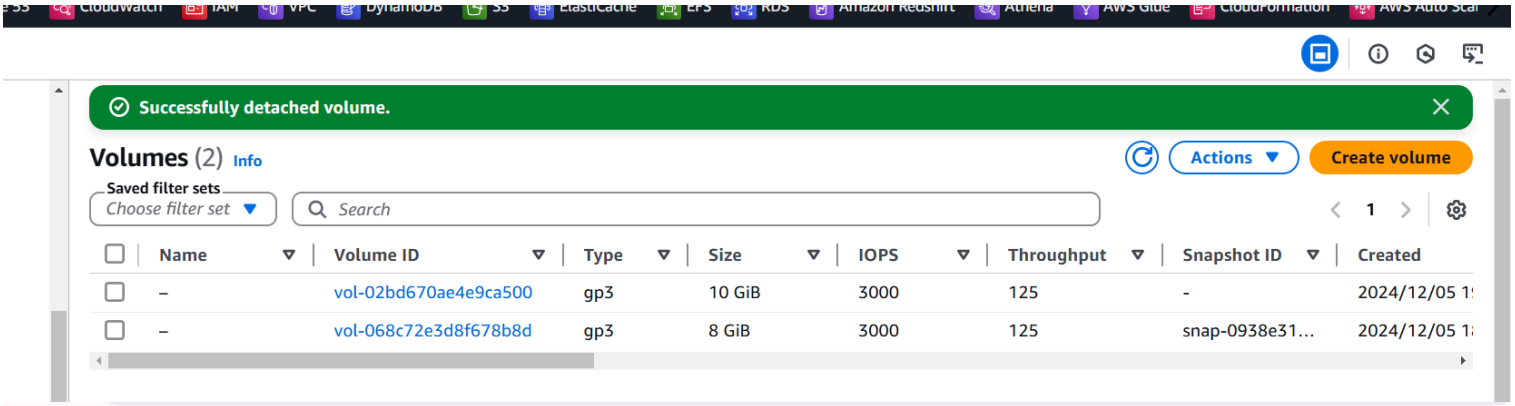
2. Delete one volume after detaching it and extend the size of the other volume

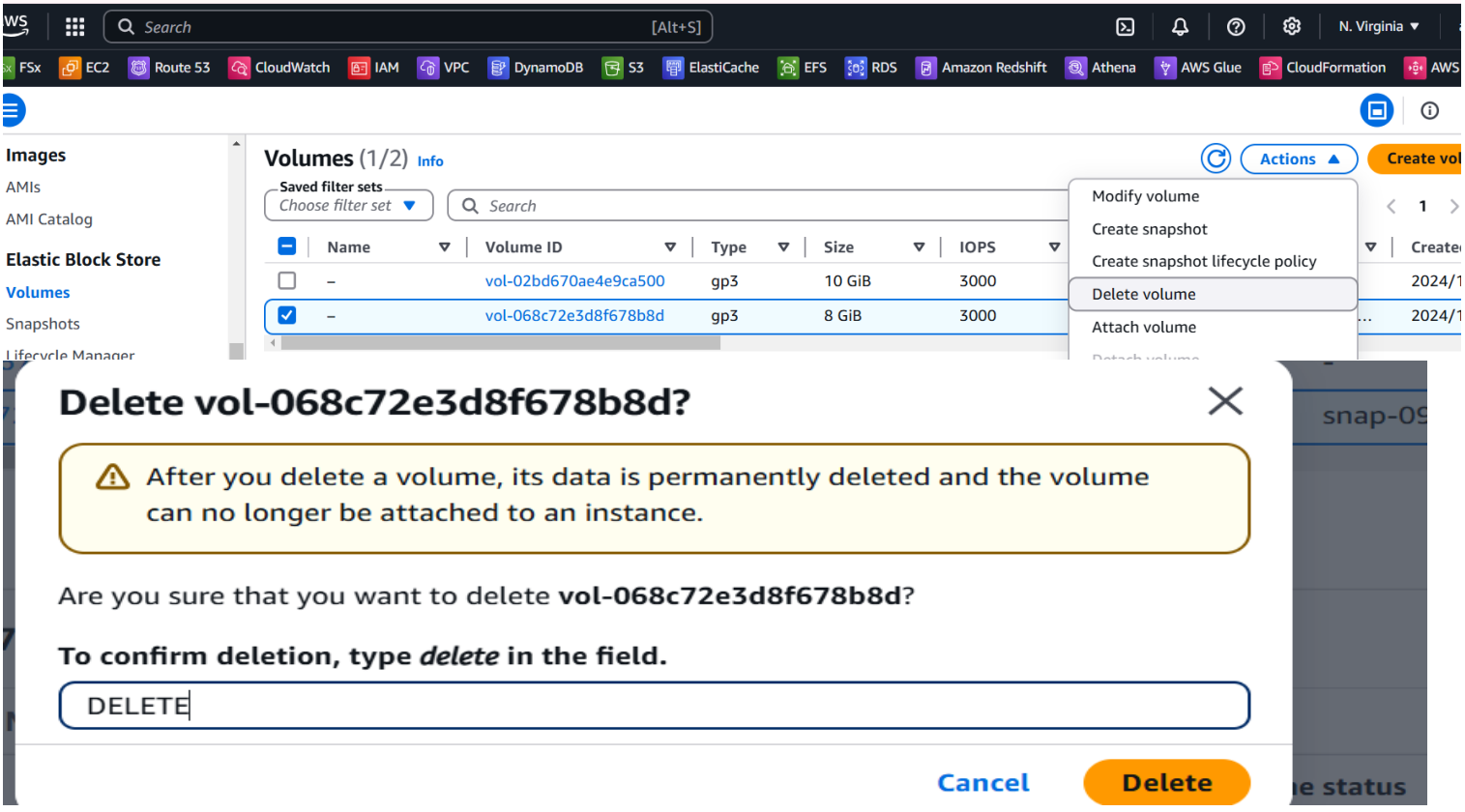
   - First we stop the server , then detach it and delete it ,



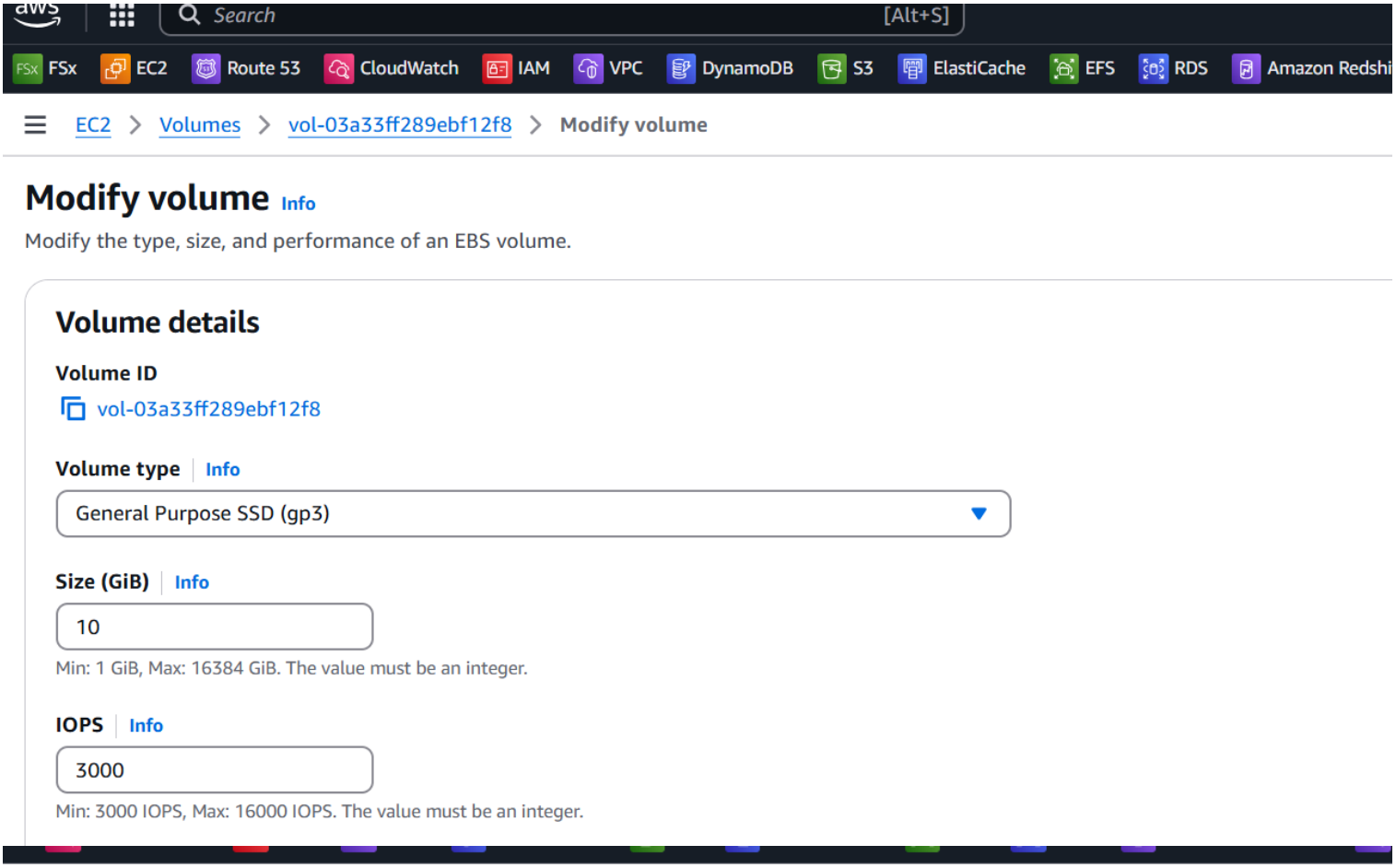
-

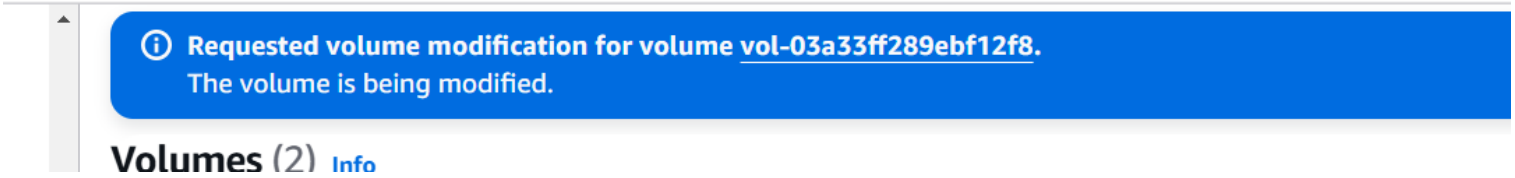






- Extend the size of the other volume





Volumes (2) Info

Modify volume Info

Modify the type, size, and performance of an EBS volume.

Volume details

Volume ID

vol-02bd670ae4e9ca500

Volume type | Info

General Purpose SSD (gp3)

Size (GiB) | Info

18

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.

Modify vol-02bd670ae4e9ca500?

If you are increasing the size of the volume, you must extend the file system to the new size of the volume. You can only do this when the volume enters the optimizing state. For more information see Extend the file system after resizing an EBS volume. .

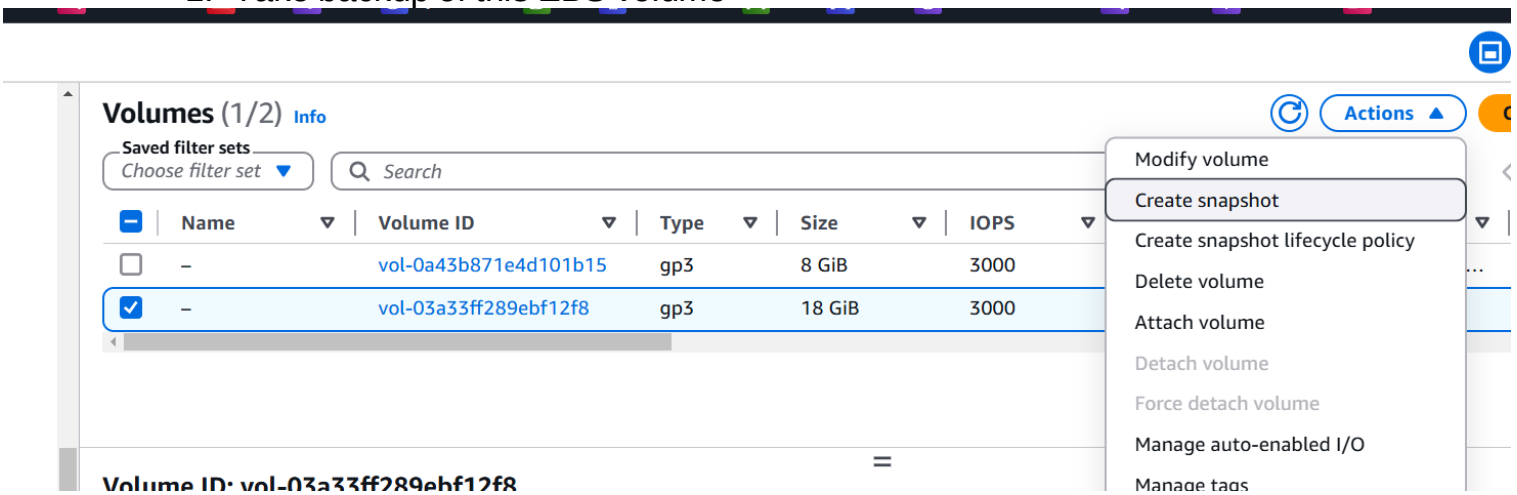
The modification might take a few minutes to complete.

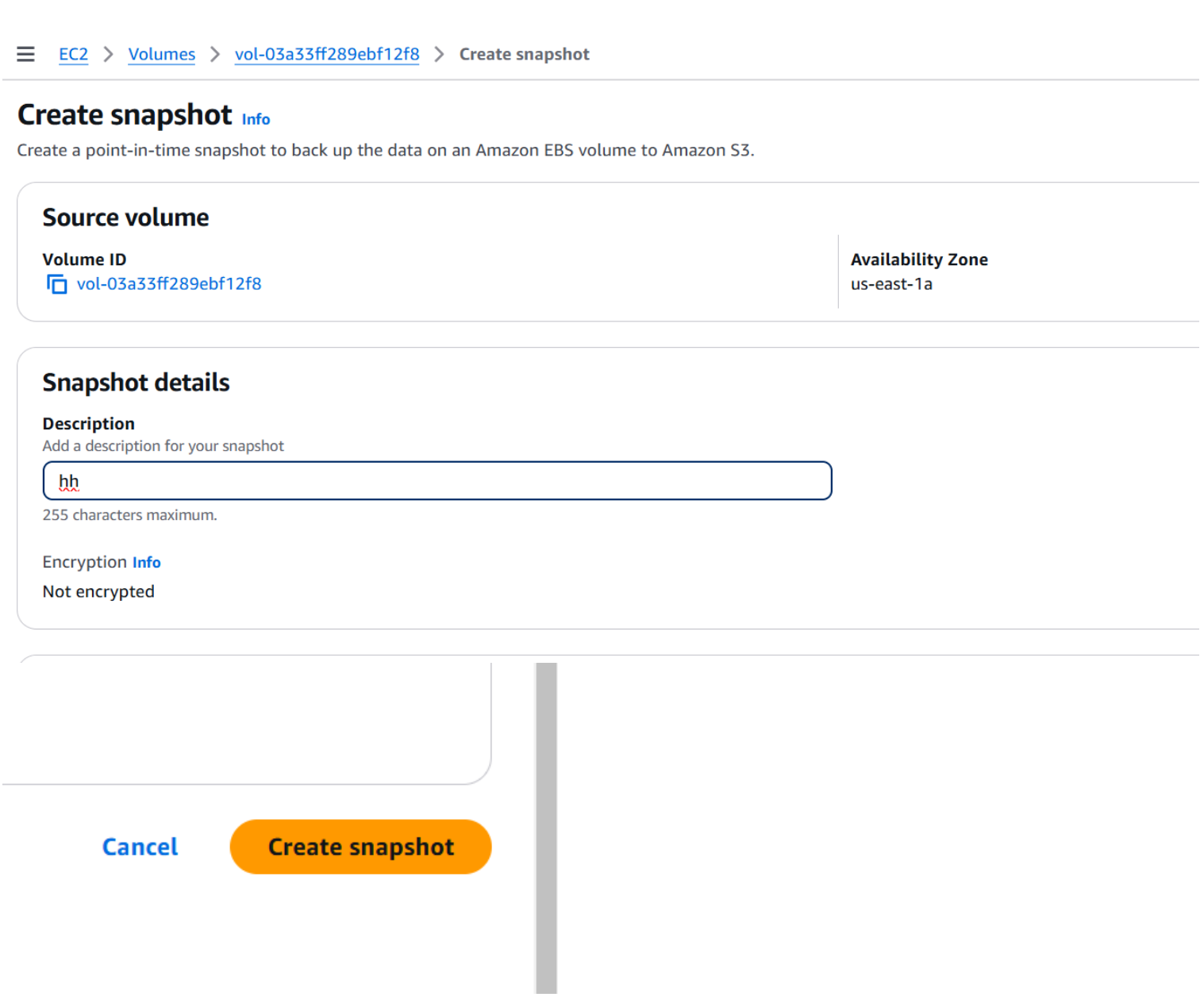
You are charged for the new volume configuration after volume modification starts. For pricing information, see Amazon EBS Pricing.

Are you sure that you want to modify vol-02bd670ae4e9ca500?

Cancel Modify

1. Take backup of this EBS volume





Thanks
Amal Raj

-