Module-2: Case Study

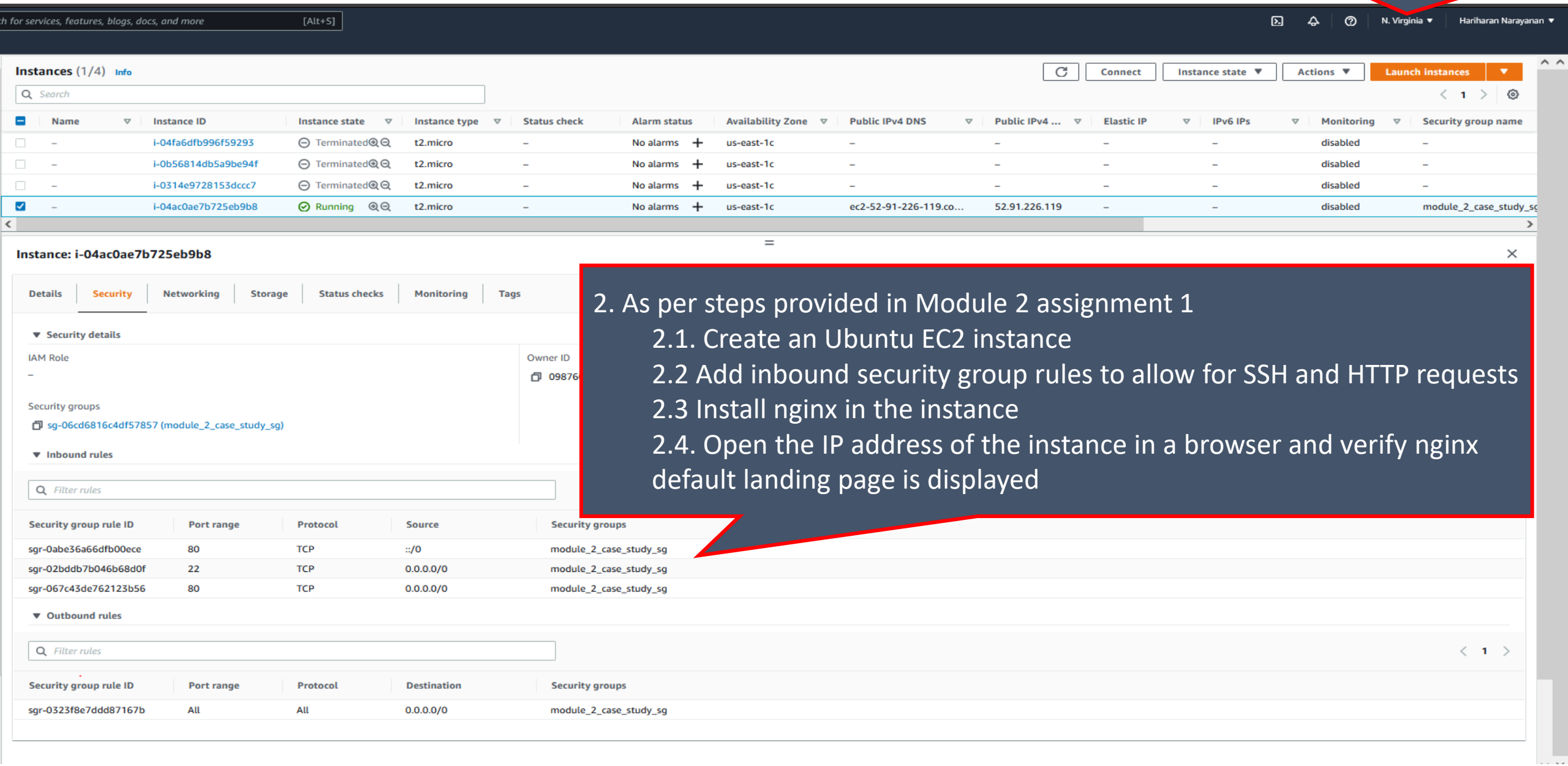
Problem Statement:

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

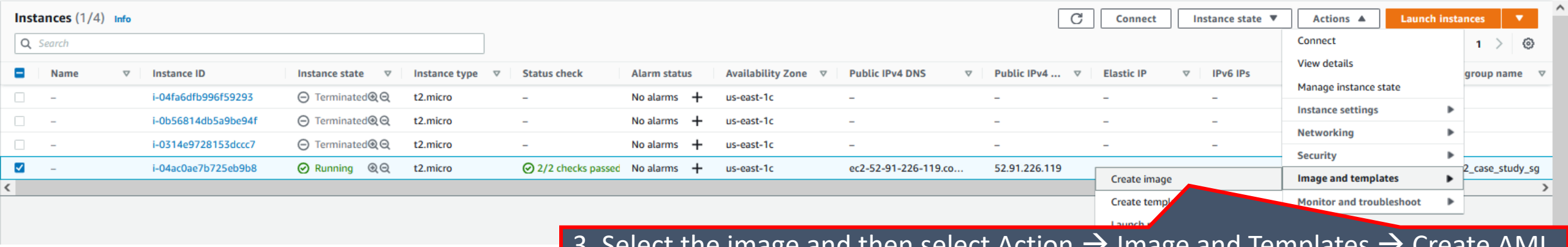
You have been asked to:

1. Create an Instance in 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 us-west-2 (Oregon) region
3. Build two EBS volumes and attach them to the instance in us-east-1 (N. Virginia) region
4. Delete one volume after detaching it and extend the size of other volume
5. Take backup of this EBS volume

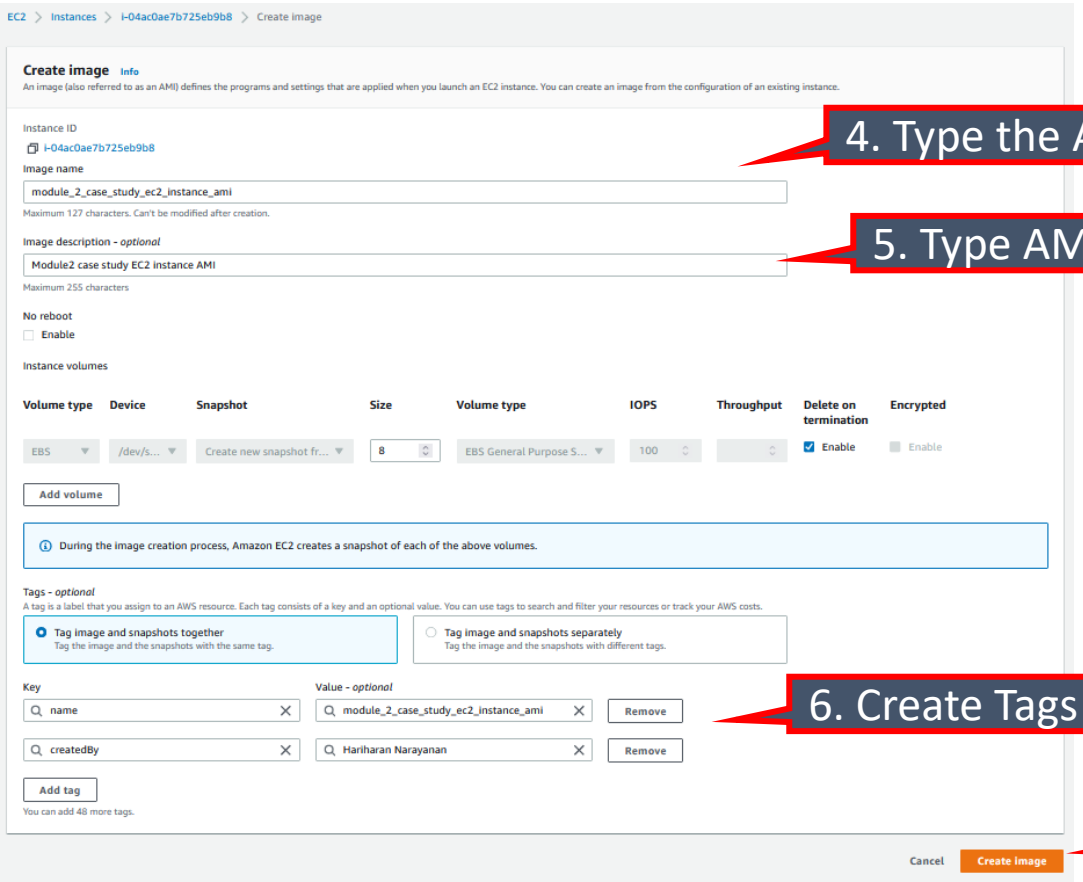
1. Set region as N. Virginia (use-east-1)



2. As per steps provided in Module 2 assignment 1
   - 2.1. Create an Ubuntu EC2 instance
   - 2.2 Add inbound security group rules to allow for SSH and HTTP requests
   - 2.3 Install nginx in the instance
   - 2.4. Open the IP address of the instance in a browser and verify nginx default landing page is displayed



3. Select the image and then select Action → Image and Templates → Create AMI

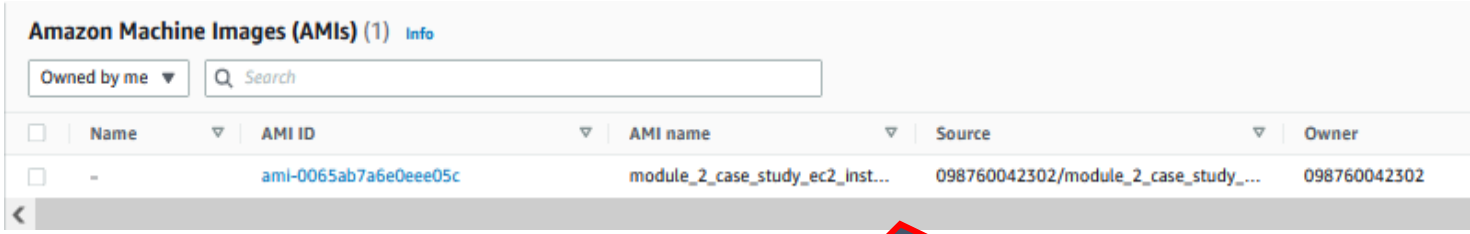


4. Type the AMI name

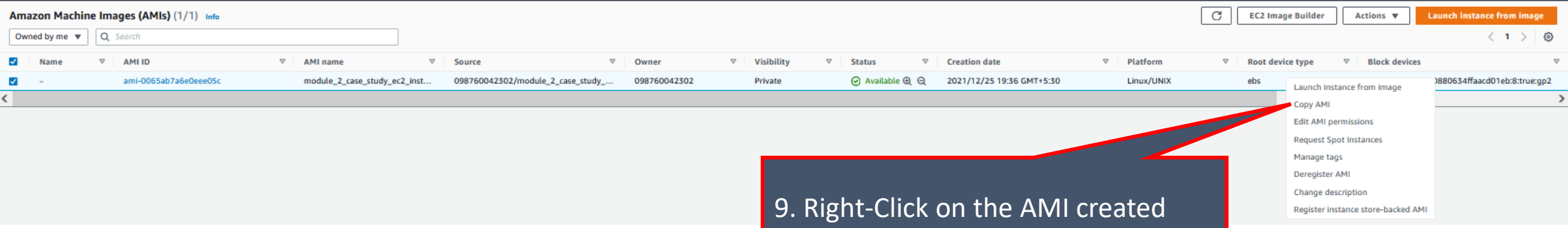
5. Type AMI description

6. Create Tags as needed

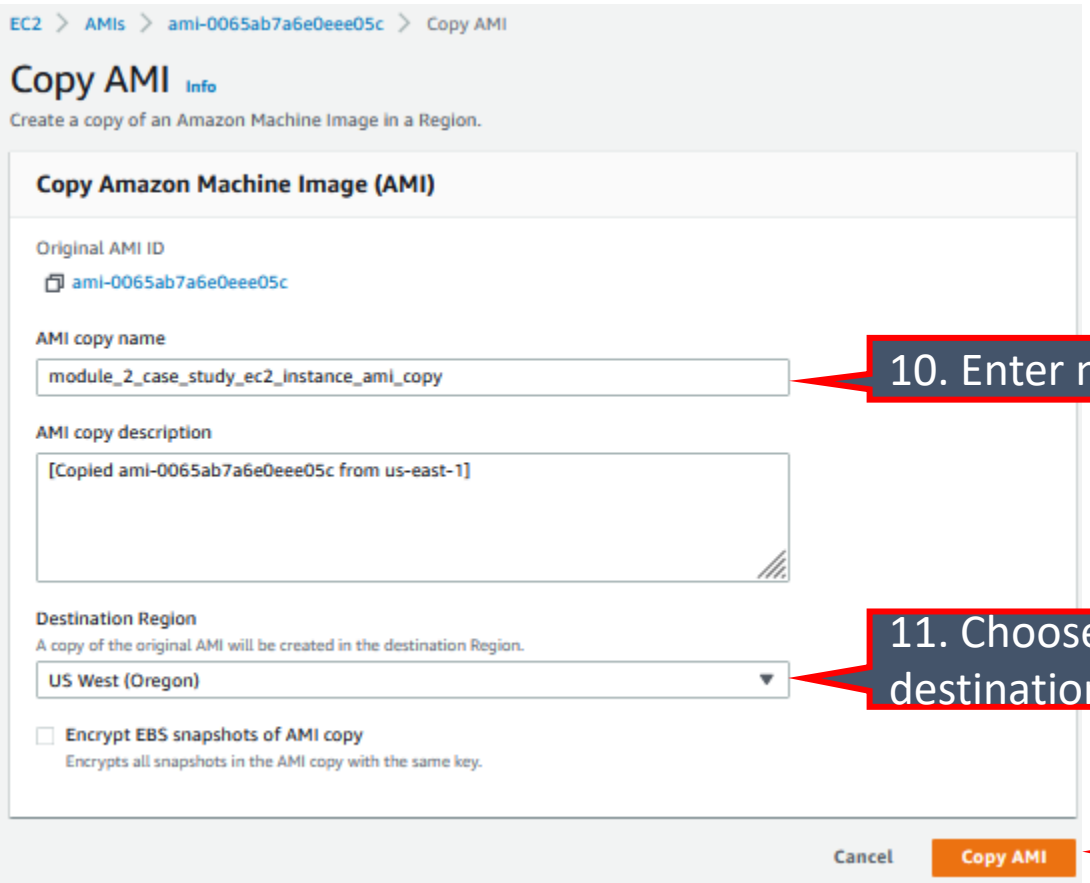
7. Create image



8. Go to AMIs page in the EC2 dashboard. Wait until AMI image state shows as Available



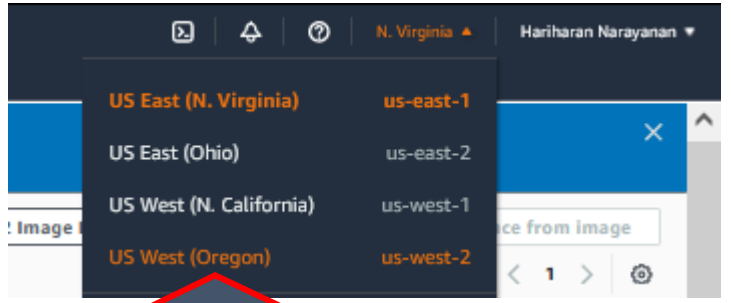
9. Right-Click on the AMI created and select “Copy AMI”



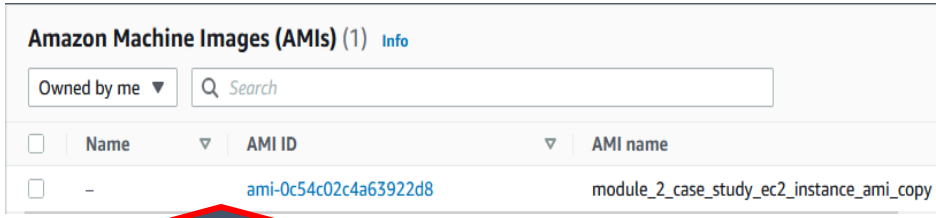
10. Enter name

11. Choose destination Oregon

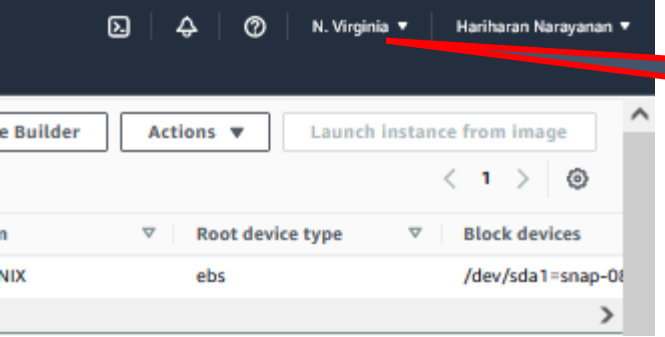
12. Copy AMI



13. In the top-right, choose US West (Oregon) us-west-2 as the region

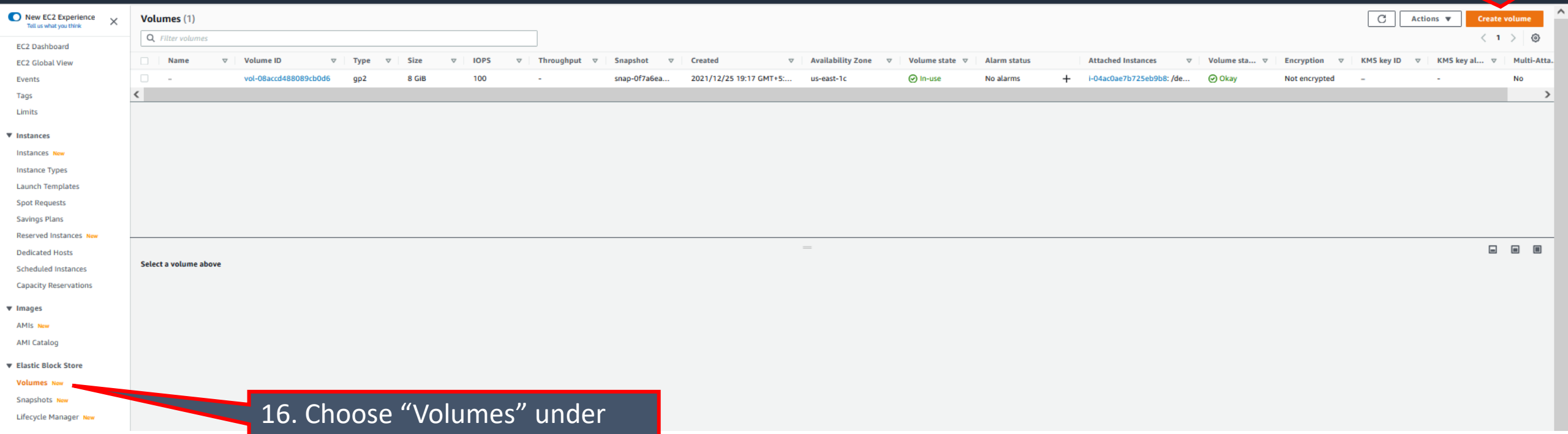


14. Verify that the AMI copy from step 12 is visible in Oregon region



15. Go back to N. Virgina region

17. Create volume



16. Choose “Volumes” under “Elastic Block Store”

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 (gp2)

Size (GiB) Info

100

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

IOPS Info

300 / 3000

Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS.

Throughput (MiB/s) Info

Not applicable

Availability Zone Info

us-east-1c

18. Select same region given for EC2 instance

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*	
name	module_2_case_study_ebs_1	Remove
createdBy	Hariharan Narayanan	Remove

19. Create tags as needed

Add tag

You can add 48 more tags.

Cancel | Create volume

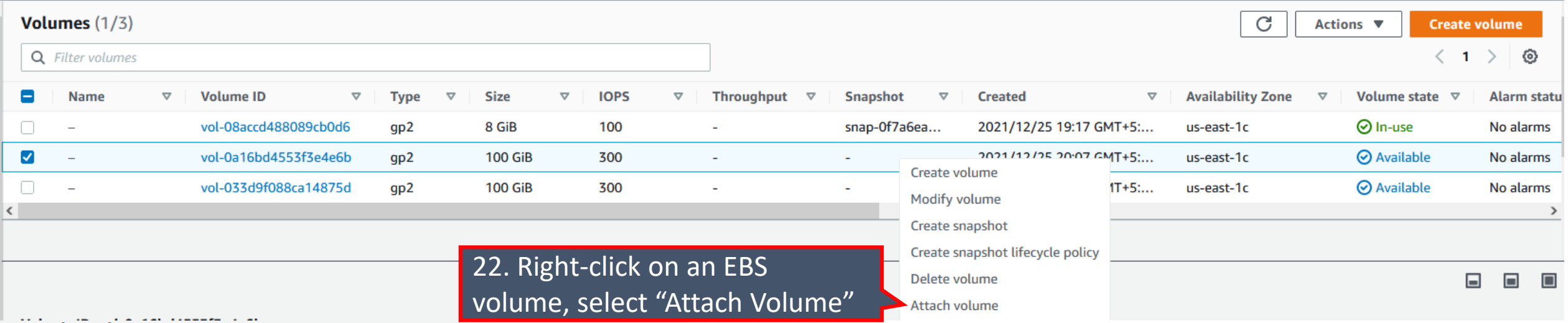
20. Create Volume

21. Repeat same steps to create another EBS volume

Volumes (3)

Filter volumes

Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot	Created	Availability Zone	Volume state
-	vol-08accd488089cb0d6	gp2	8 GiB	100	-	snap-0f7a6ea...	2021/12/25 19:17 GMT+5:...	us-east-1c	In-use
-	vol-0a16bd4553f3e4e6b	gp2	100 GiB	300	-	-	2021/12/25 20:07 GMT+5:...	us-east-1c	Available
-	vol-033d9f088ca14875d	gp2	100 GiB	300	-	-	2021/12/25 20:07 GMT+5:...	us-east-1c	Creating



22. Right-click on an EBS volume, select “Attach Volume”

Attach volume Info

Attach a volume to an instance to use it as you would a regular physical hard disk drive.

Basic details

Volume ID

vol-0a16bd4553f3e4e6b

Availability Zone

us-east-1c

Instance Info

i-04ac0ae7b725eb9b8

Only instances in the same Availability Zone as the selected volume are displayed.

23. Select the EBS instance created earlier to attach

Device name Info

/dev/sdf

Linux device names: /dev/sdf through /dev/sdp

Newer Linux kernels may rename your devices to **/dev/xvdf** through **/dev/xvdp** internally, even when the device name entered here (and shown in the details) is **/dev/sdf** through **/dev/sdp.**

25. Repeat steps 20-24 for the 2nd EBS instance

24. Select Attach Volume

Cancel Attach volume

```
ubuntu@ip-172-31-92-149:~$ lsblk
NAME    MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
loop0     7:0    0   25M  1 loop /snap/amazon-ssm-agent/4046
loop1     7:1    0 55.5M  1 loop /snap/core18/2253
loop2     7:2    0 61.9M  1 loop /snap/core20/1242
loop3     7:3    0 67.2M  1 loop /snap/lxd/21835
loop4     7:4    0 42.2M  1 loop /snap/snapd/14066
xvda    202:0    0    8G  0 disk
└─xvda1 202:1    0    8G  0 part /
xvdf    202:80   0  100G  0 disk
xvdg    202:96   0  100G  0 disk
ubuntu@ip-172-31-92-149:~$ sudo file -s /dev/xvdf
/dev/xvdf: data
```

26. In EBS instance, confirm that both EBS instances are visible as xvdf and xvdg

27. Check that file type is “data” confirming no file system is created

28. Create an XFS file system mounted on /dev/xvdf corresponding to one EBS volume

```
ubuntu@ip-172-31-92-149:~$ sudo mkfs -t xfs /dev/xvdf
meta-data=/dev/xvdf              isize=512    agcount=4, agsize=6553600 blks
         =                       sectsz=512   attr=2, projid32bit=1
         =                       crc=1        finobt=1, sparse=1, rmapbt=0
         =                       reflink=1
data     =                       bsize=4096   blocks=26214400, imaxpct=25
         =                       sunit=0      swidth=0 blks
naming   =version 2              bsize=4096   ascii-ci=0, ftype=1
log      =internal log           bsize=4096   blocks=12800, version=2
         =                       sectsz=512   sunit=0 blks, lazy-count=1
realtime =none                   extsz=4096   blocks=0, rtextents=0
ubuntu@ip-172-31-92-149:~$ sudo file -s /dev/xvdf
/dev/xvdf: SGI XFS filesystem data (blksz 4096, inosz 512, v2 dirs)
```

29. Verify that XFS filesystem is created on /dev/xvdf

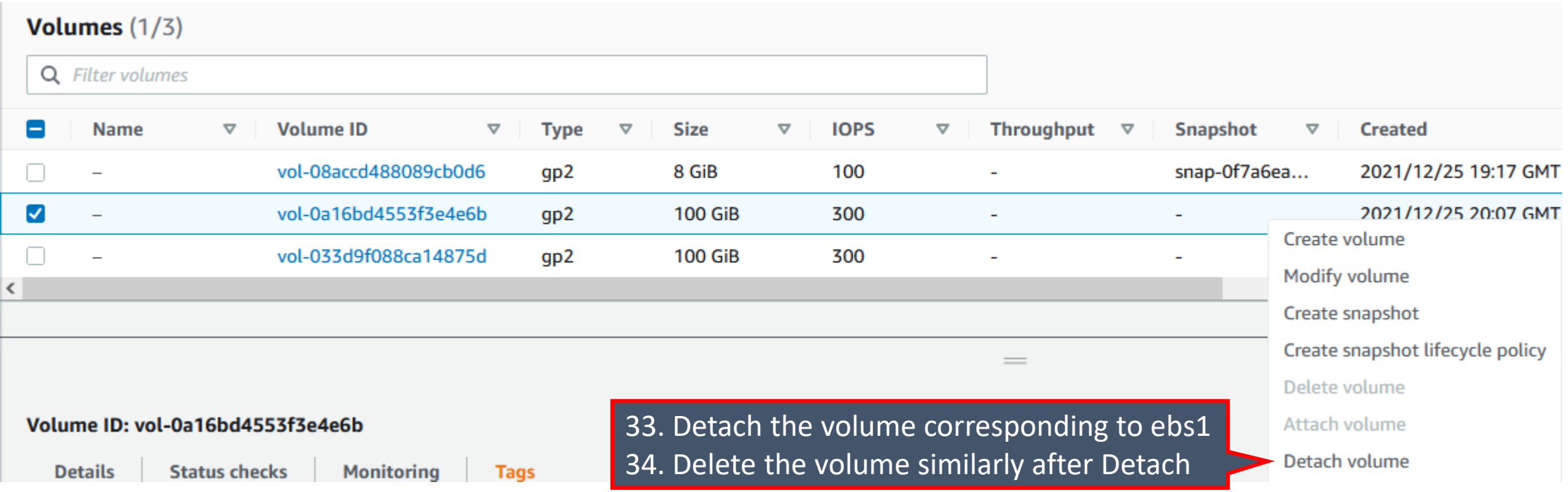
30. Repeat steps 25-28 on the other EBS volume

```
ubuntu@ip-172-31-92-149:~$ mkdir ebs1
ubuntu@ip-172-31-92-149:~$ mkdir ebs2
ubuntu@ip-172-31-92-149:~$ sudo mount /dev/xvdf ebs1
ubuntu@ip-172-31-92-149:~$ ls ebs1
ubuntu@ip-172-31-92-149:~$ sudo mount /dev/xvdg ebs2
ubuntu@ip-172-31-92-149:~$ ls ebs2
```

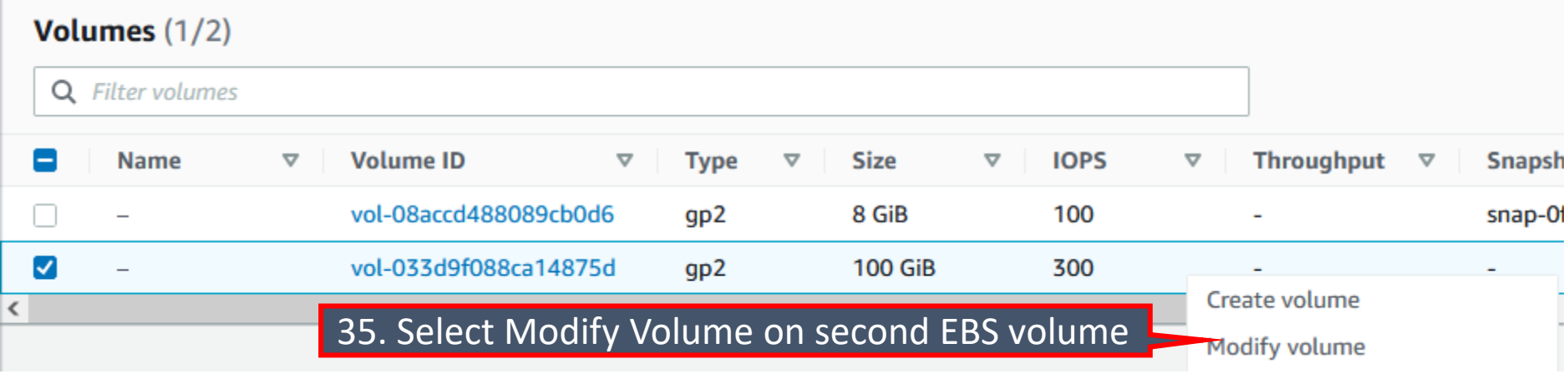
31. Mount both the EBS volumes

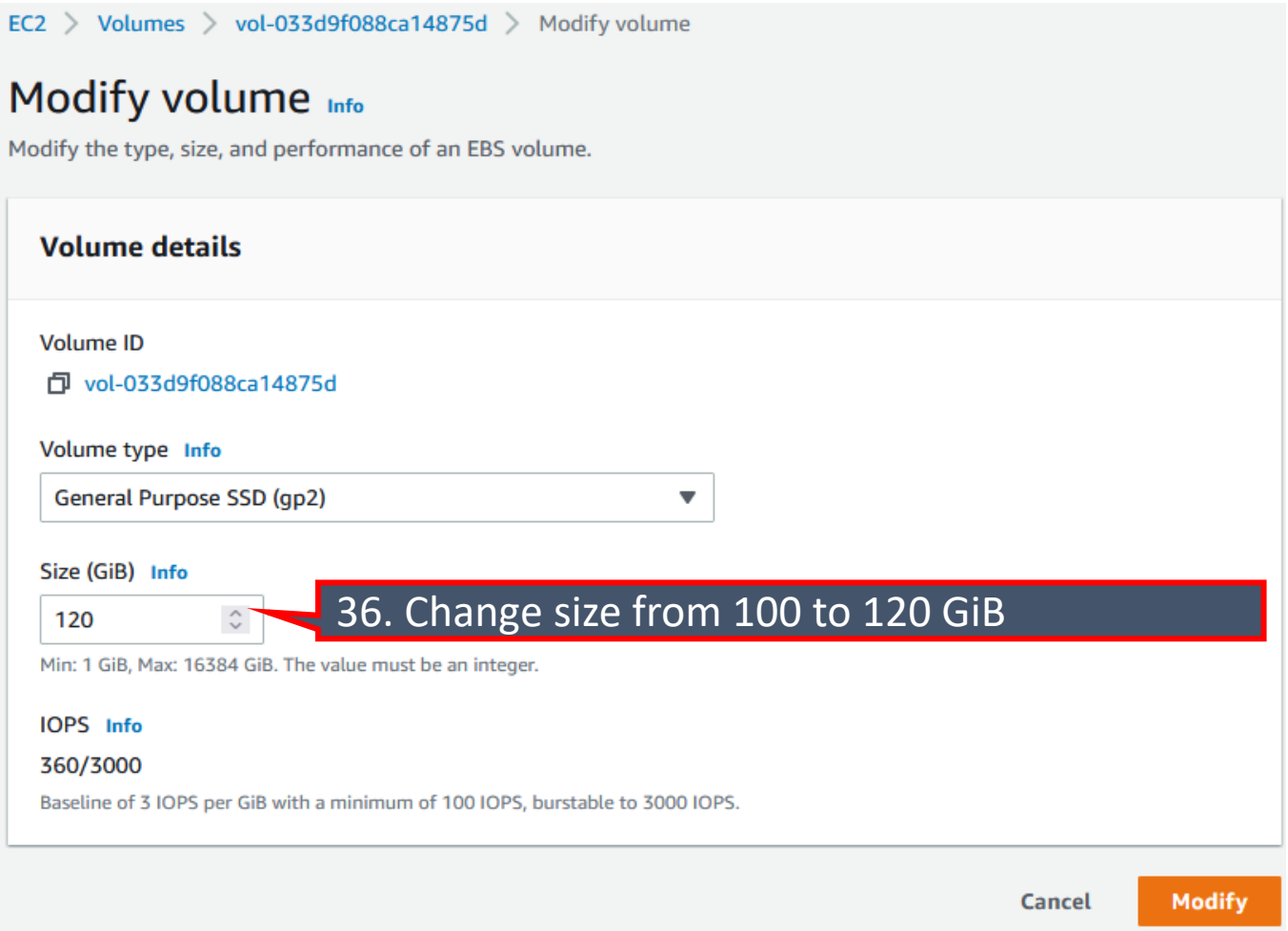
```
ubuntu@ip-172-31-92-149:~$ sudo umount --detach-loop ebs1
ubuntu@ip-172-31-92-149:~$ mount
```

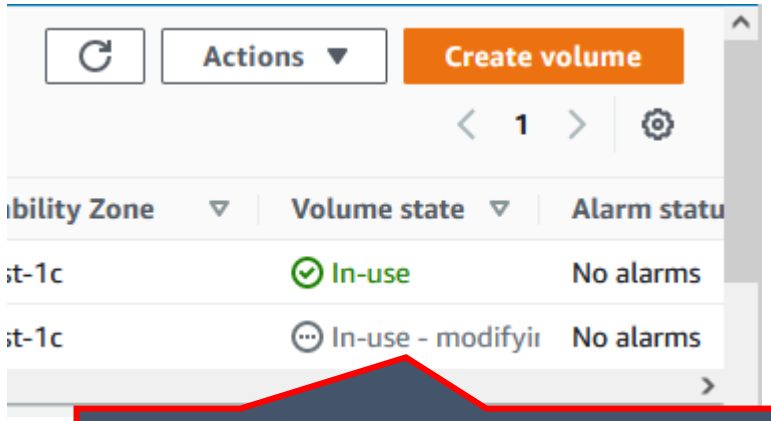
32. Unmount the volume for one EBS and confirm that it is removed

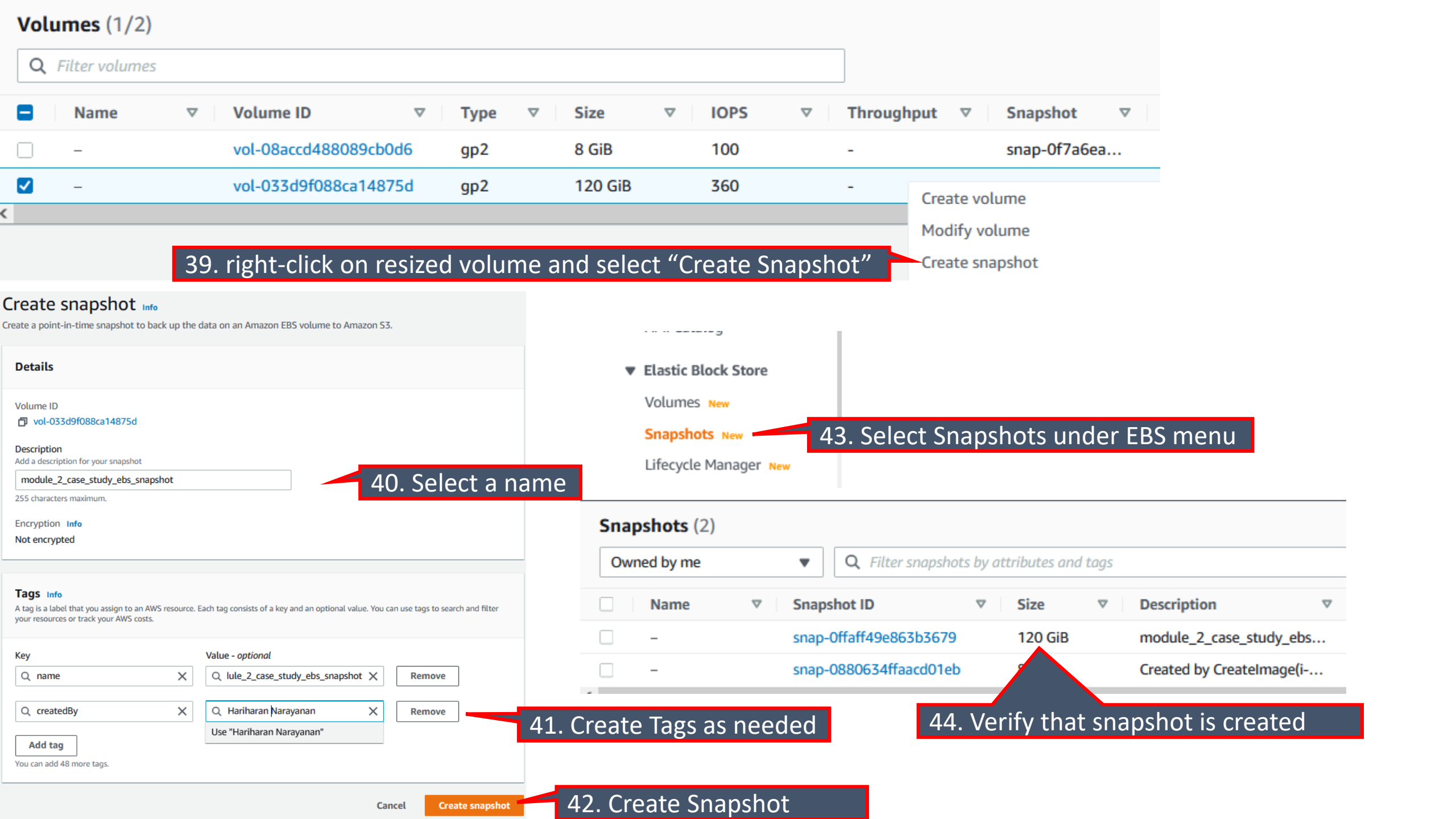


33. Detach the volume corresponding to ebs1
34. Delete the volume similarly after Detach


Volumes (1/2)
Filter volumes
Name
Volume ID
Type
Size
IOPS
Throughput
Snapsh
–
vol-08accd488089cb0d6
gp2
8 GiB
100
-
snap-0
–
vol-033d9f088ca14875d
gp2
100 GiB
300
-
-
Create volume
Modify volume
35. Select Modify Volume on second EBS volume


EC2 > Volumes > vol-033d9f088ca14875d > Modify volume
Modify volume Info
Modify the type, size, and performance of an EBS volume.
Volume details
Volume ID
vol-033d9f088ca14875d
Volume type Info
General Purpose SSD (gp2)
Size (GiB) Info
120
36. Change size from 100 to 120 GiB
Min: 1 GiB, Max: 16384 GiB. The value must be an integer.
IOPS Info
360/3000
Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS.
Cancel
Modify
37. Click on Modify


Actions
Create volume
1
bility Zone
Volume state
Alarm statu
t-1c
In-use
No alarms
t-1c
In-use - modifyi
No alarms
38. Wait for Modify status to change to “In-use”


Volumes (1/2)
Filter volumes
Name
Volume ID
Type
Size
IOPS
Throughput
Snapshot
– vol-08accd488089cb0d6 gp2 8 GiB 100 - snap-0f7a6ea...
– vol-033d9f088ca14875d gp2 120 GiB 360 -
Create volume
Modify volume
Create snapshot
39. right-click on resized volume and select “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-033d9f088ca14875d
Description
Add a description for your snapshot
module_2_case_study_ebs_snapshot
255 characters maximum.
Encryption Info
Not encrypted
40. Select a name
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.
Key
Value - optional
name
lule_2_case_study_ebs_snapshot
Remove
createdBy
Hariharan Narayanan
Use "Hariharan Narayanan"
Remove
Add tag
You can add 48 more tags.
41. Create Tags as needed
Cancel
Create snapshot
42. Create Snapshot
Elastic Block Store
Volumes New
Snapshots New
Lifecycle Manager New
43. Select Snapshots under EBS menu
Snapshots (2)
Owned by me
Filter snapshots by attributes and tags
Name
Snapshot ID
Size
Description
– snap-0ffaff49e863b3679 120 GiB module_2_case_study_ebs...
– snap-0880634ffaacd01eb Created by CreateImage(i-...
44. Verify that snapshot is created