Assignment 2:

Using EBS with EC2 Linux Server Instances.

Synopsis:
Demonstrate the creation, attaching, accessing and updating of an additional Elastic Block Store (EBS) across EC2 Linux Servers in the same Subnet as well as in the subnets (of a user created Virtual Private Network (VPC)) created in different Availability Zones (AZs) of the region.

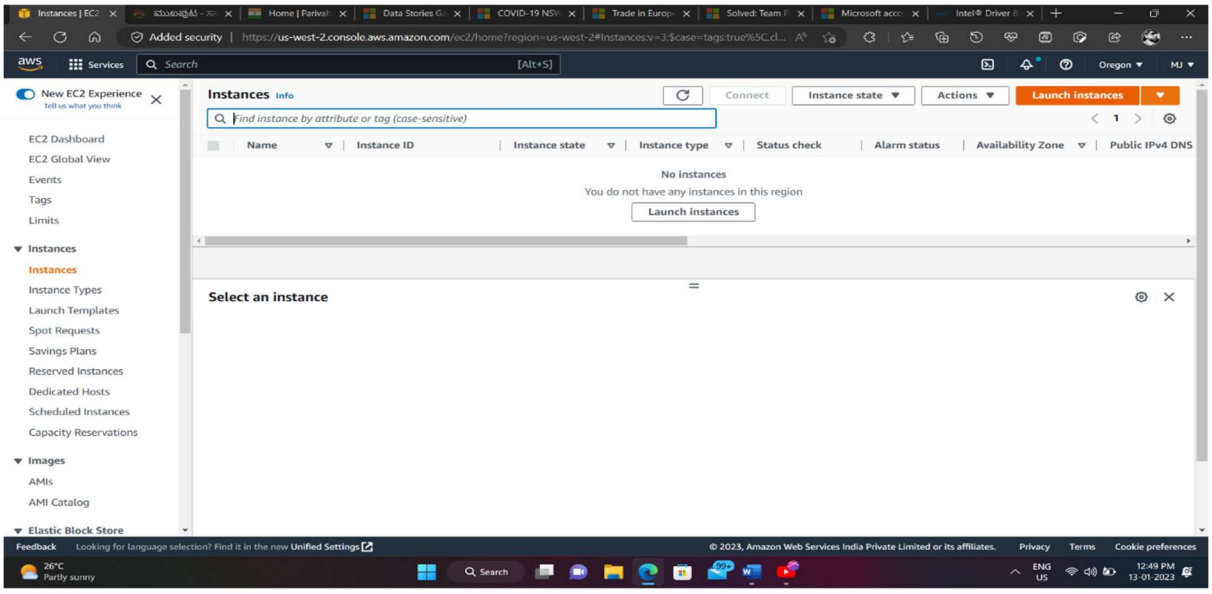
- Launch 2 EC2 Linux server instances in different Availability Zones of same region.
- Under 'Elastic Block Store', go to volumes and create a volume by selecting 1 of the AZ used to create the EC2 instance.
- Select the new volume created, go to 'Actions' and select 'Attach Volume'. (Volume and Instance must always be in the same AZ for them to attach/connect)
- After attaching the volume, we need to connect to the instance and mount the volume to the instance.
- Now for attaching the same volume for instance created in the different AZ we need to take the backup\Snapshot of the volume and 'Create volume from Snapshot'.
- Inside the settings of 'Create volume from Snapshot' we should select the different AZ that we used to create a 2nd EC2 instance for it to attach.
- After the volume is created from the snapshot follow the same procedure to attach and mount this volume to the instance.

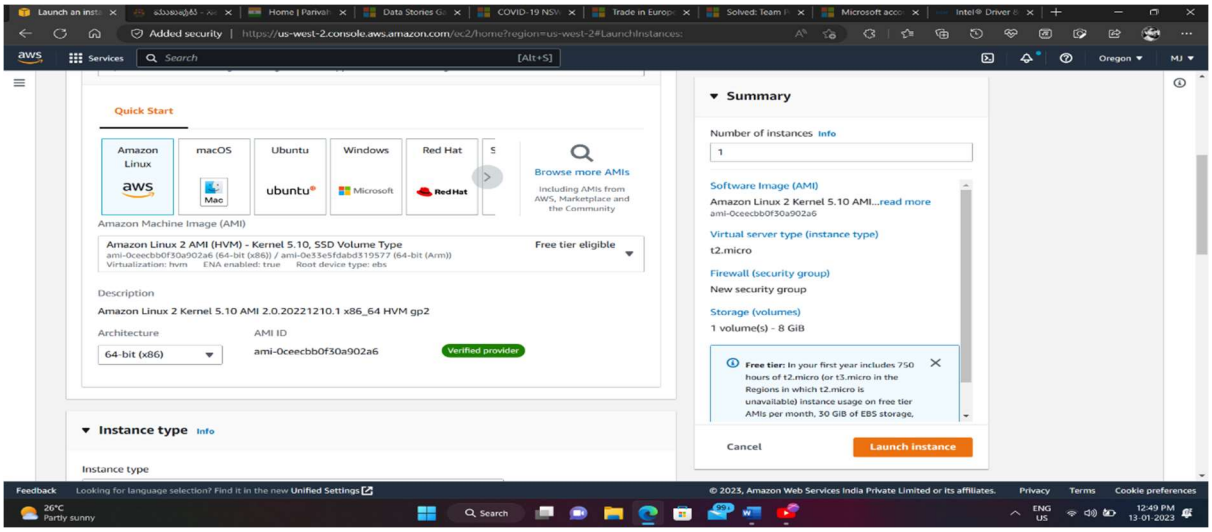
Linux Commands to mount and unmount the volume:

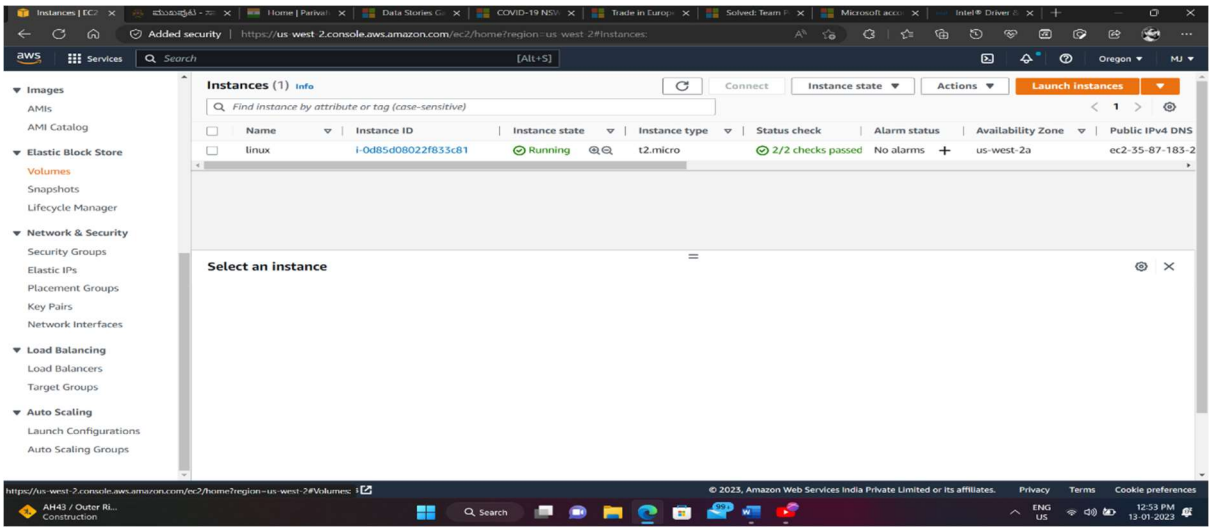
- lsblk ### list the available disks using the following command.
- file -s /dev/xvdf ### Check if the volume has any data using the following command.
- mkfs -t ext4 /dev/xvdf ### Format the volume to the ext4 filesystem using the following command.

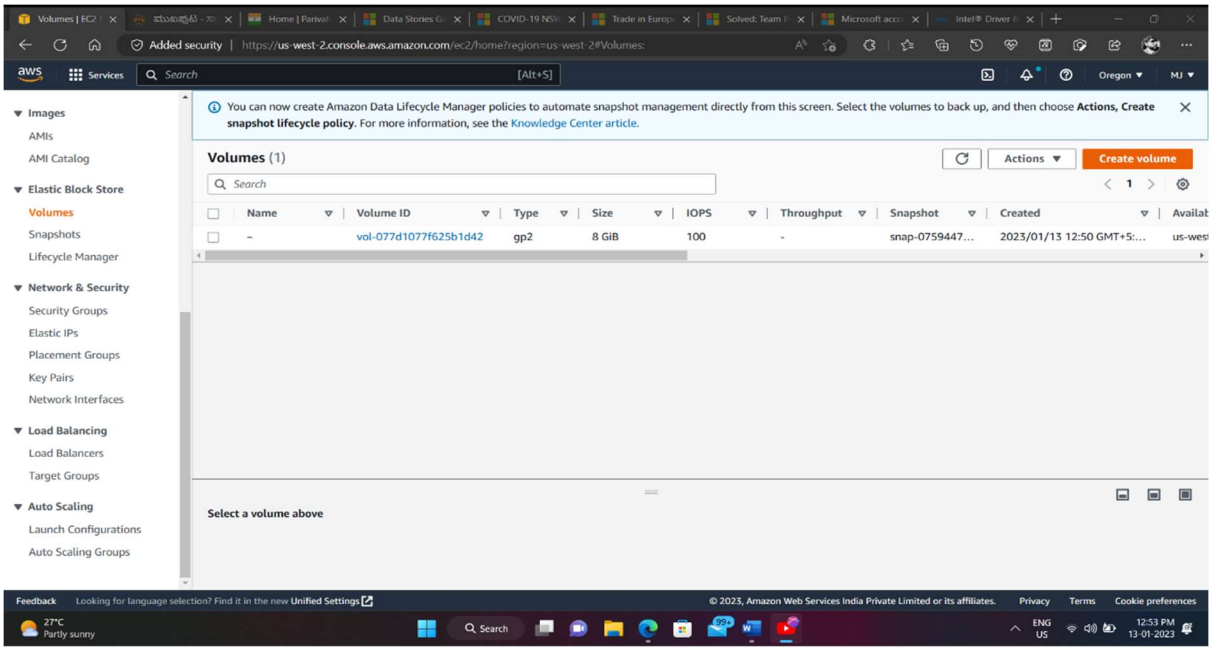
- mkdir /newvolume ### Create a directory of your choice to mount our new ext4 volume.
- mount /dev/xvdf /newvolume/ ### Mount the volume to “newvolume” directory using the following command.
- cd /newvolume & df -h ### cd into newvolume directory and check the disk space to validate the volume mount.
- umount /dev/xvdf ### To unmount the volume.

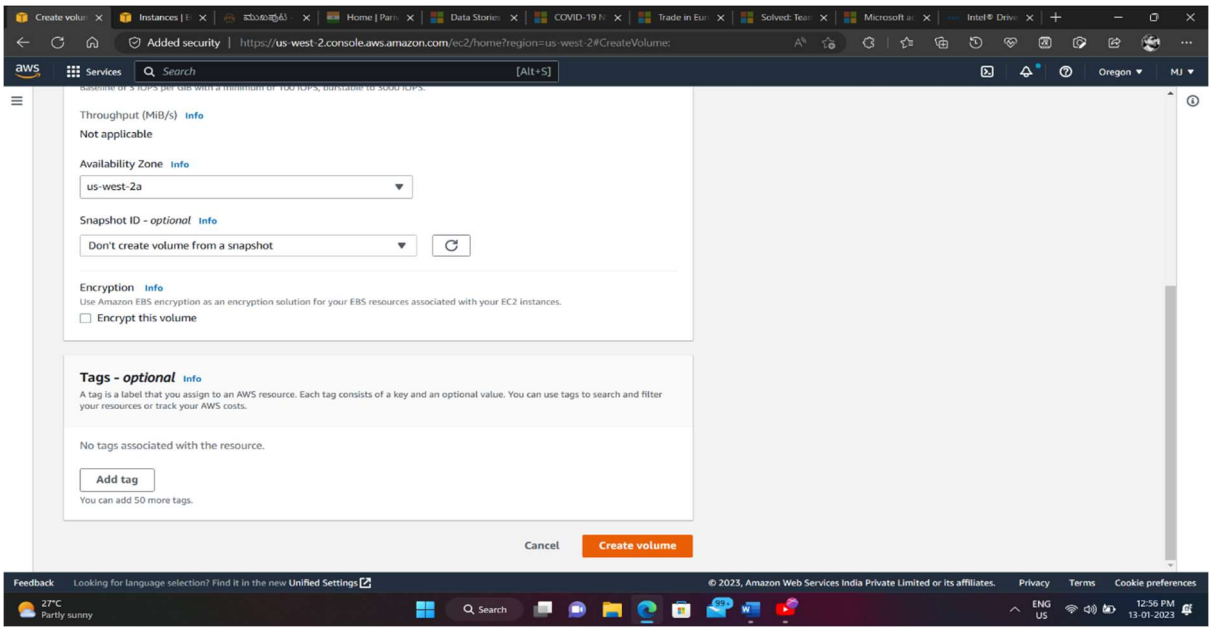
Snapshots of the Assignment:

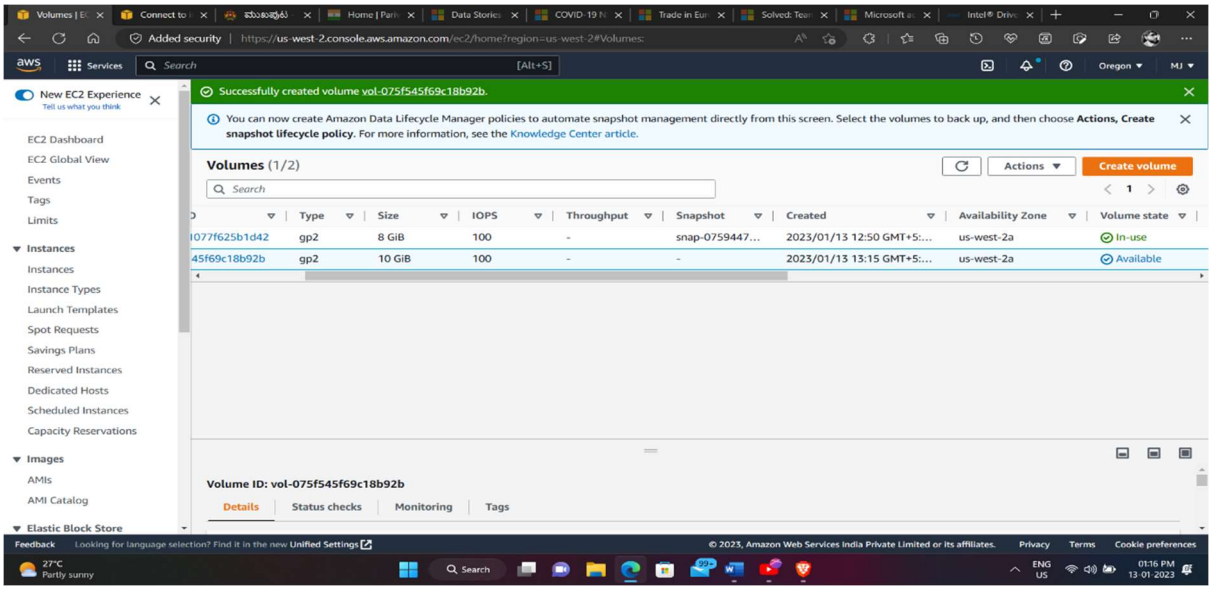


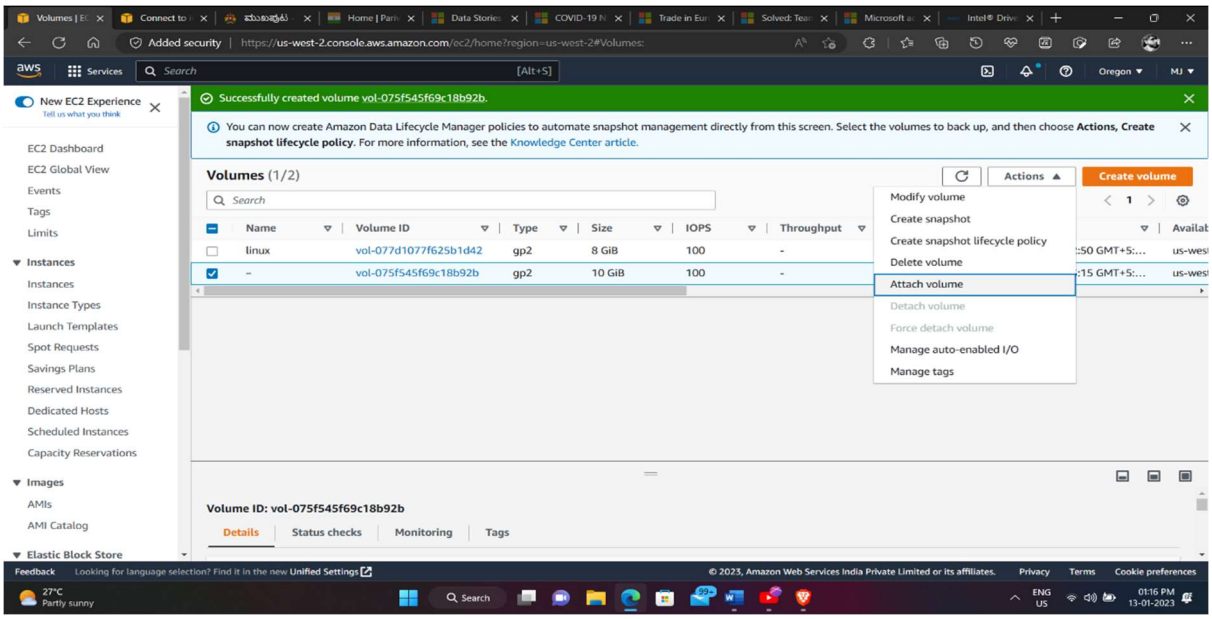


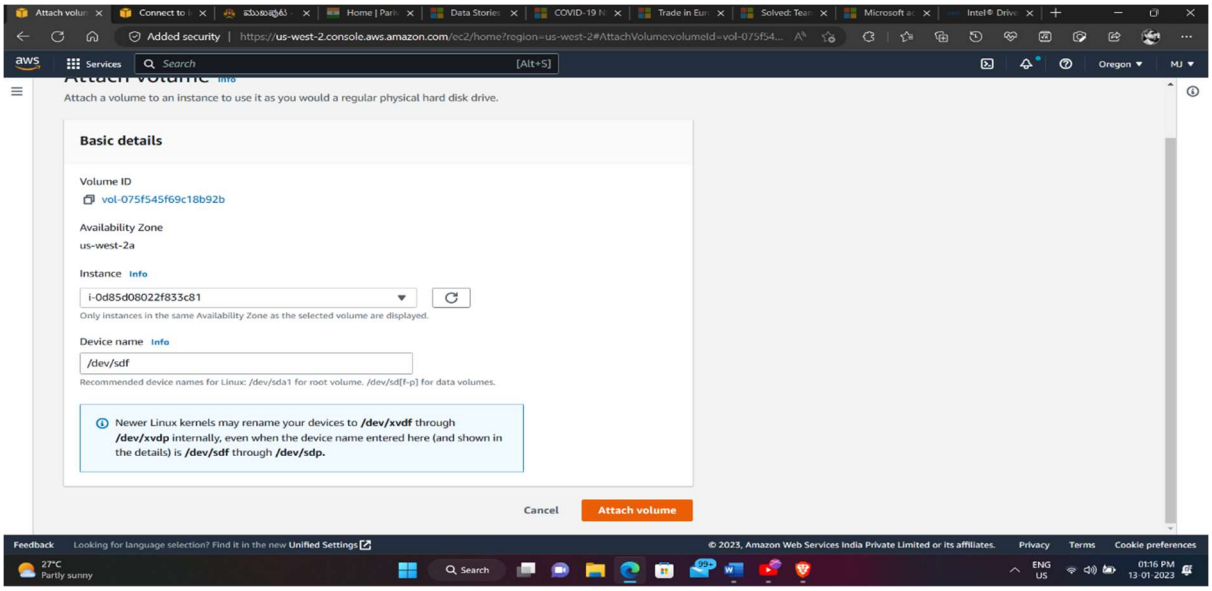

Instances (1) Info
Connect
Instance state
Actions
Launch instances
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
linux
i-0d85d08022f833c81
Running
t2.micro
2/2 checks passed
No alarms
us-west-2a
ec2-35-87-183-2
Select an instance

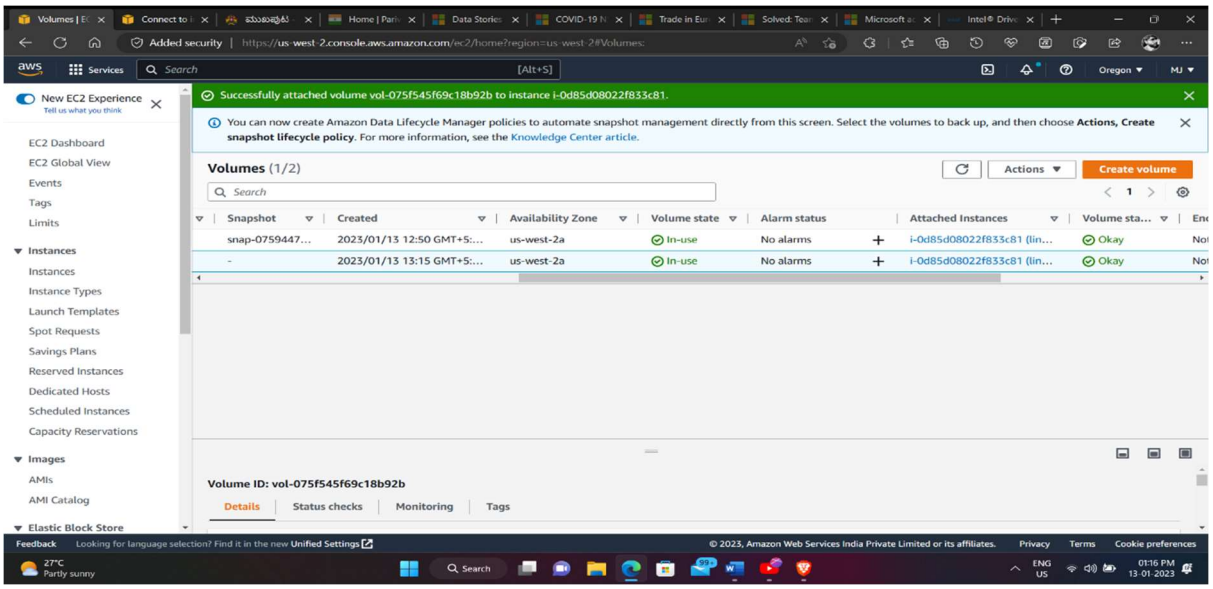

You can now create Amazon Data Lifecycle Manager policies to automate snapshot management directly from this screen. Select the volumes to back up, and then choose Actions, Create snapshot lifecycle policy. For more information, see the Knowledge Center article.
Volumes (1)
Actions
Create volume
Name
Volume ID
Type
Size
IOPS
Throughput
Snapshot
Created
vol-077d1077f625b1d42
gp2
8 GiB
100
snap-0759447...
2023/01/13 12:50 GMT+5:...
Select a volume above

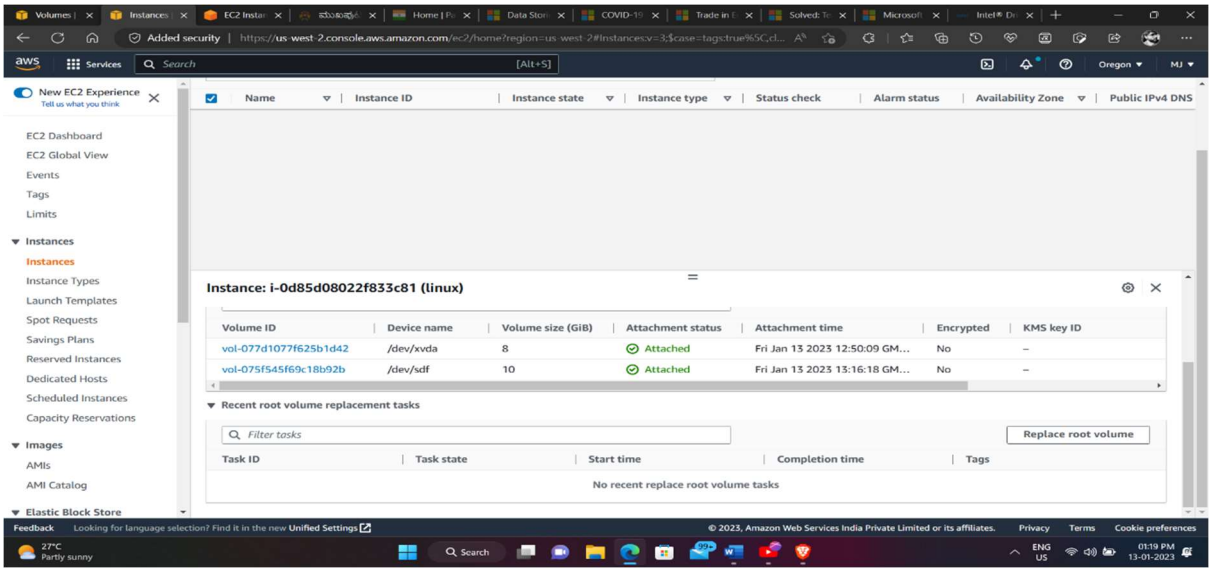

Throughput (MiB/s) Info
Not applicable
Availability Zone Info
us-west-2a
Snapshot ID - optional Info
Don't create volume from a snapshot
Encryption Info
Use Amazon EBS encryption as an encryption solution for your EBS resources associated with your EC2 instances.
Encrypt this volume
Tags - optional Info
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.
No tags associated with the resource.
Add tag
You can add 50 more tags.
Cancel
Create volume

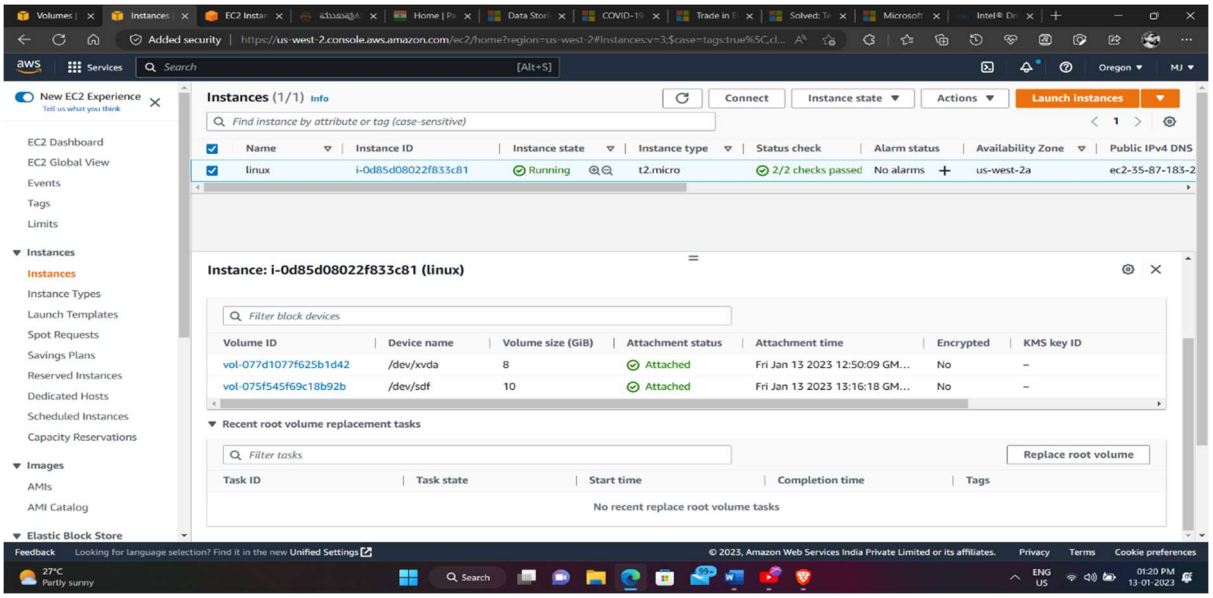

Successfully created volume vol-075f545f69c18b92b.
You can now create Amazon Data Lifecycle Manager policies to automate snapshot management directly from this screen. Select the volumes to back up, and then choose Actions, Create snapshot lifecycle policy. For more information, see the Knowledge Center article.
Volumes (1/2)
Actions
Create volume
Volume ID: vol-075f545f69c18b92b
Details
Status checks
Monitoring
Tags

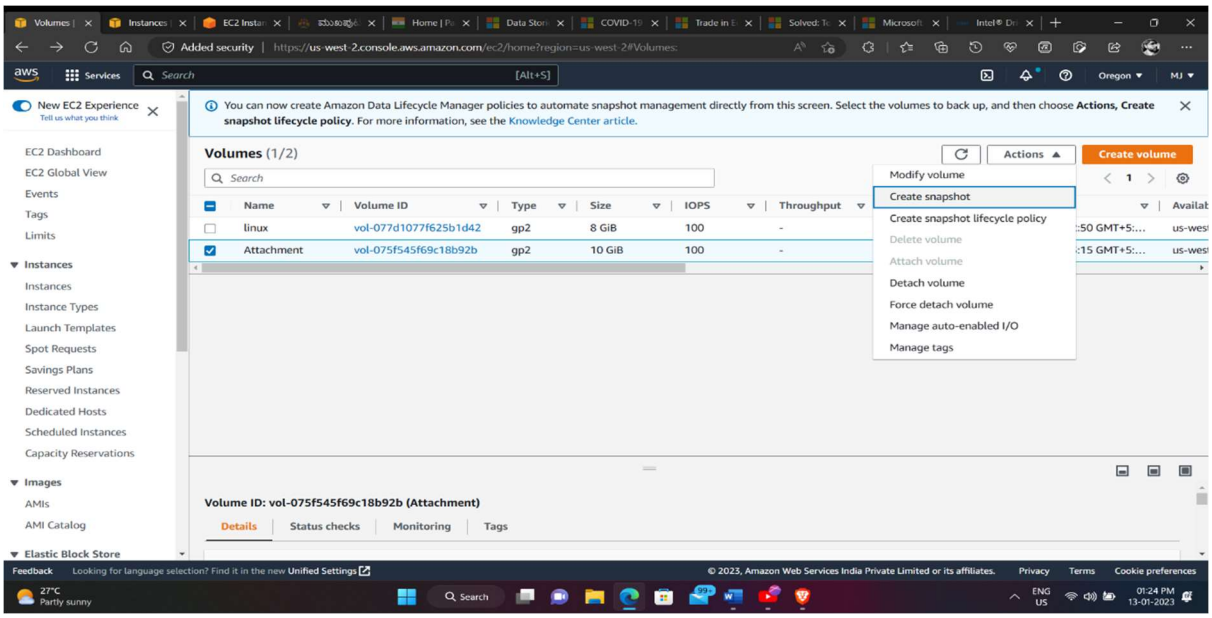

Successfully created volume vol-075f545f69c18b92b.
You can now create Amazon Data Lifecycle Manager policies to automate snapshot management directly from this screen. Select the volumes to back up, and then choose Actions, Create snapshot lifecycle policy. For more information, see the Knowledge Center article.
Volumes (1/2)
Actions
Create volume
Modify volume
Create snapshot
Create snapshot lifecycle policy
Delete volume
Attach volume
Detach volume
Force detach volume
Manage auto-enabled I/O
Manage tags
Volume ID: vol-075f545f69c18b92b
Details
Status checks
Monitoring
Tags

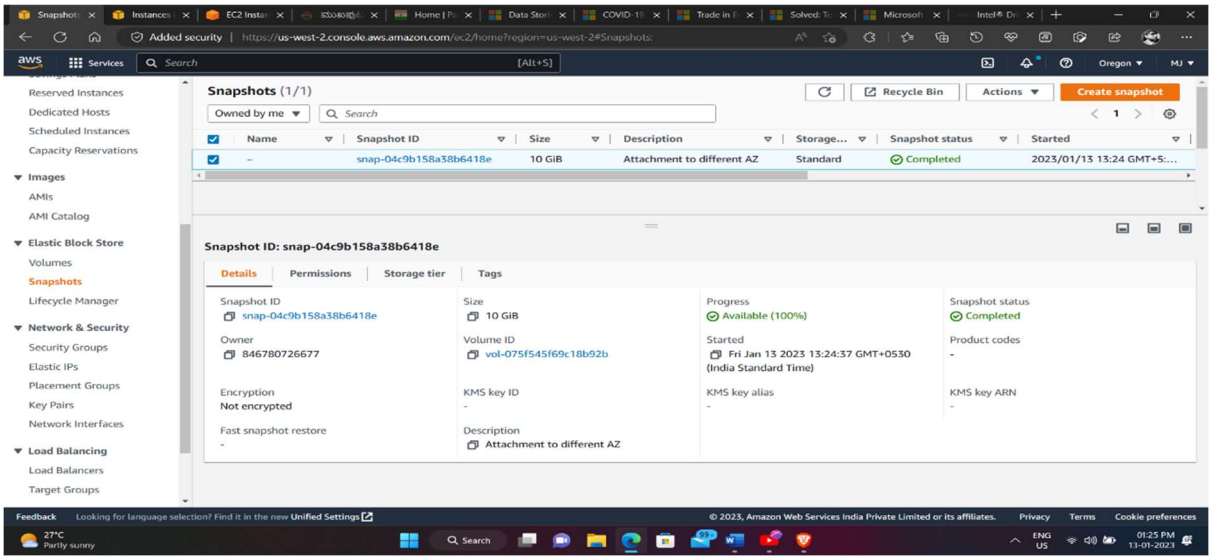

Attach a volume to an instance to use it as you would a regular physical hard disk drive.
Basic details
Volume ID
vol-075f545f69c18b92b
Availability Zone
us-west-2a
Instance Info
i-0d85d08022f833c81
Only instances in the same Availability Zone as the selected volume are displayed.
Device name Info
/dev/sdf
Recommended device names for Linux: /dev/sda1 for root volume. /dev/sd[f-p] for data volumes.
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.
Cancel
Attach volume

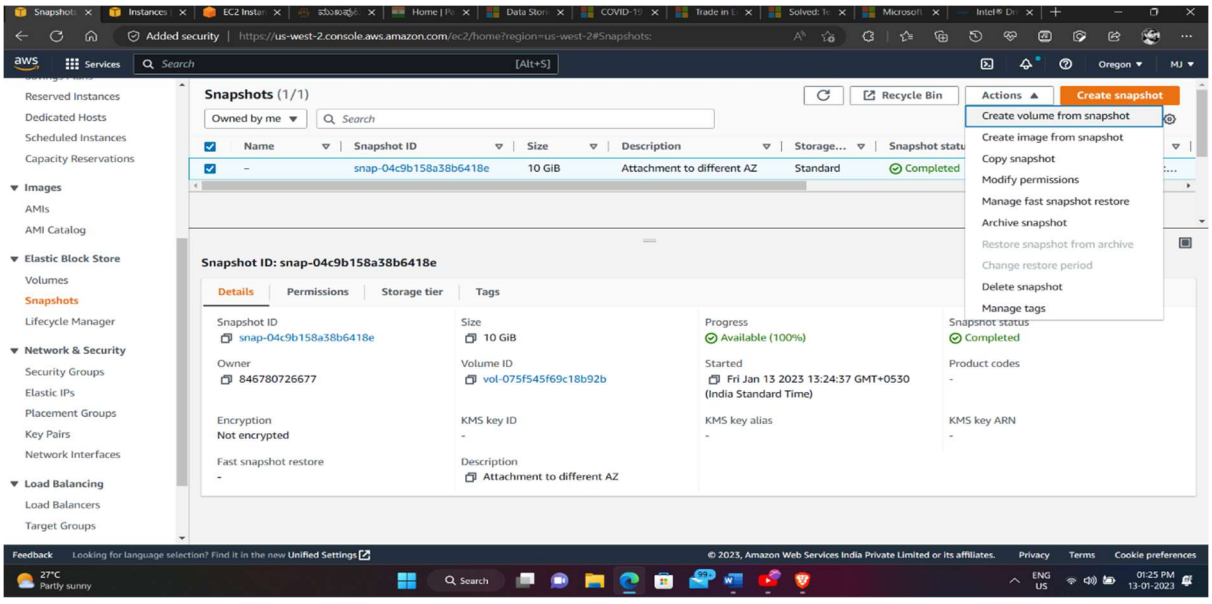

Successfully attached volume vol-075f545f69c18b92b to instance i-0d85d08022f833c81.
You can now create Amazon Data Lifecycle Manager policies to automate snapshot management directly from this screen. Select the volumes to back up, and then choose Actions, Create snapshot lifecycle policy. For more information, see the Knowledge Center article.
Volumes (1/2)
Actions
Create volume
Snapshot
Created
Availability Zone
Volume state
Alarm status
Attached Instances
snap-0759447...
2023/01/13 12:50 GMT+5:...
us-west-2a
In-use
No alarms
i-0d85d08022f833c81 (lin...
Okay
2023/01/13 13:15 GMT+5:...
Volume ID: vol-075f545f69c18b92b
Details
Status checks
Monitoring
Tags

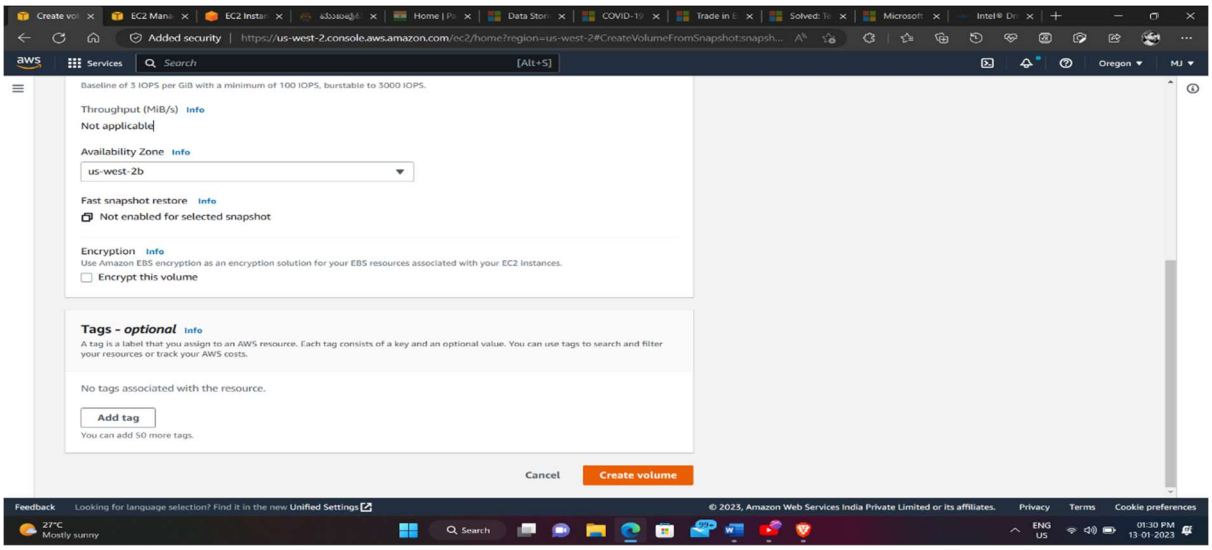

Instance: i-0d85d08022f833c81 (linux)
Volume ID
Device name
Volume size (GiB)
Attachment status
Attachment time
Encrypted
KMS key ID
vol-077d1077f625b1d42
/dev/xvda
8
Attached
Fri Jan 13 2023 12:50:09 GM...
No
vol-075f545f69c18b92b
/dev/sdf
10
Fri Jan 13 2023 13:16:18 GM...
Recent root volume replacement tasks
Filter tasks
Replace root volume
Task ID
Task state
Start time
Completion time
Tags
No recent replace root volume tasks

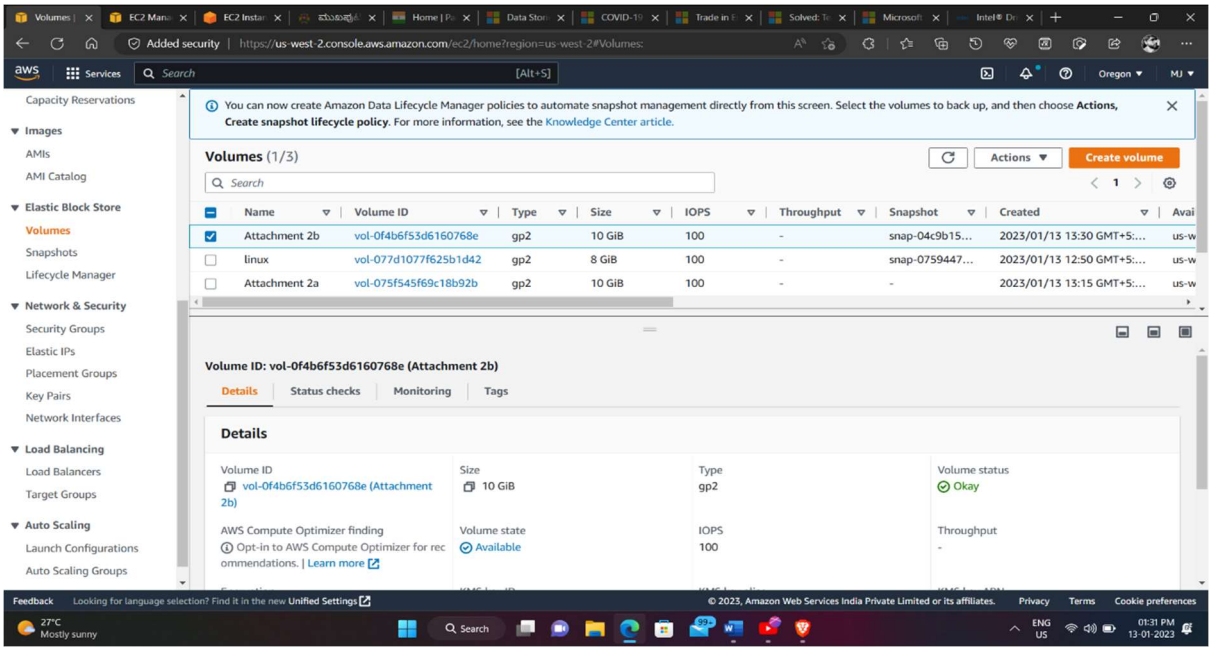

Instances (1/1) Info
Connect
Instance state
Actions
Launch instances
Find instance by attribute or tag (case-sensitive)
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
linux
i-0d85d08022f833c81
Running
t2.micro
2/2 checks passed
No alarms
us-west-2a
Instance: i-0d85d08022f833c81 (linux)
Filter block devices
Volume ID
Device name
Volume size (GiB)
Attachment status
Attachment time
Encrypted
KMS key ID
vol-077d1077f625b1d42
/dev/xvda
8
Attached
Fri Jan 13 2023 12:50:09 GM...
No
vol-075f545f69c18b92b
/dev/sdf
10
Fri Jan 13 2023 13:16:18 GM...
Recent root volume replacement tasks
Filter tasks
Replace root volume
Task ID
Task state
Start time
Completion time
Tags
No recent replace root volume tasks

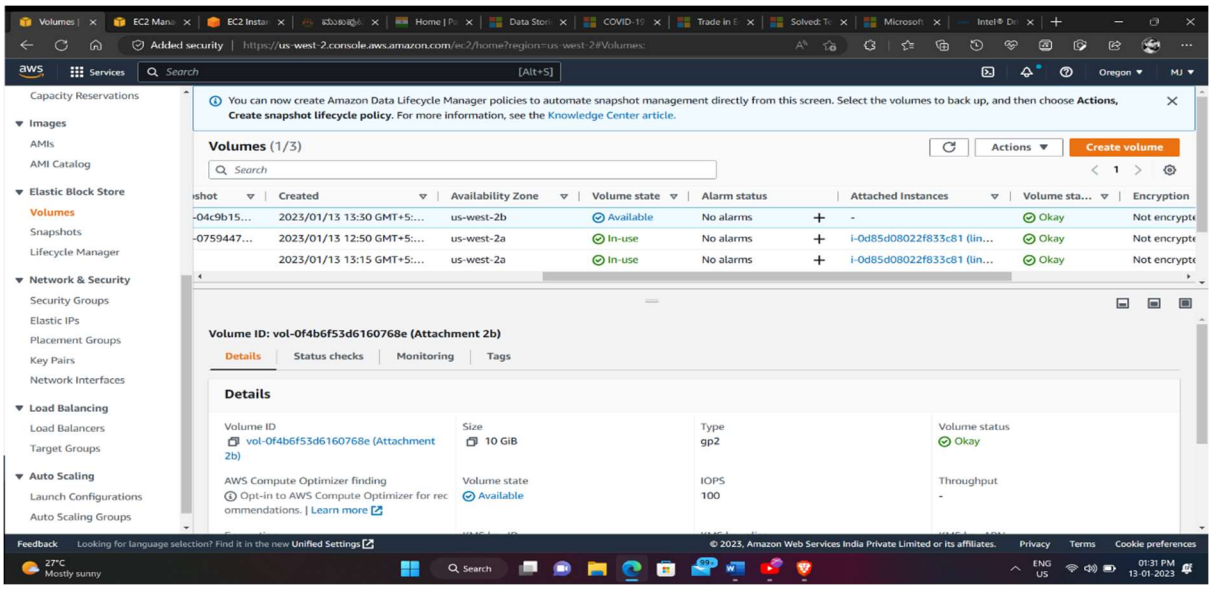

New EC2 Experience
Tell us what you think
You can now create Amazon Data Lifecycle Manager policies to automate snapshot management directly from this screen. Select the volumes to back up, and then choose Actions, Create snapshot lifecycle policy. For more information, see the Knowledge Center article.
Volumes (1/2)
Actions
Create volume
Modify volume
Create snapshot
Create snapshot lifecycle policy
Delete volume
Attach volume
Detach volume
Force detach volume
Manage auto-enabled I/O
Manage tags
Name
Volume ID
Type
Size
IOPS
Throughput
linux
vol-077d1077f625b1d42
gp2
8 GiB
100
Attachment
vol-075f545f69c18b92b
gp2
10 GiB
100
Volume ID: vol-075f545f69c18b92b (Attachment)
Details
Status checks
Monitoring
Tags

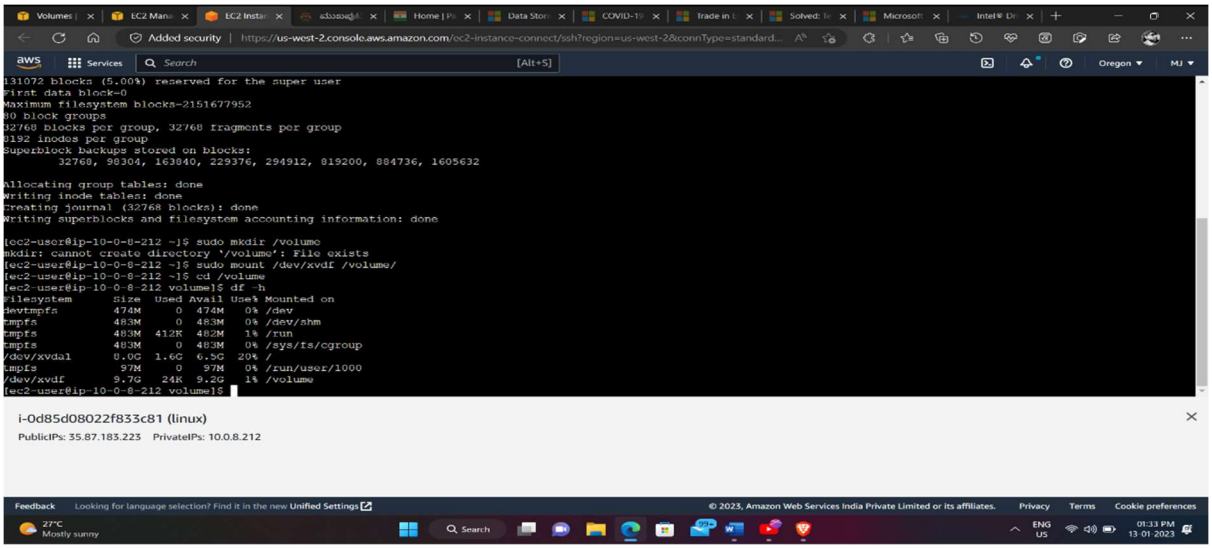

Snapshots (1/1)
Recycle Bin
Actions
Create snapshot
Owned by me
Name
Snapshot ID
Size
Description
Storage...
Snapshot status
Started
snap-04c9b158a38b6418e
10 GiB
Attachment to different AZ
Standard
Completed
2023/01/13 13:24 GMT+5:...
Snapshot ID: snap-04c9b158a38b6418e
Details
Permissions
Storage tier
Tags
Snapshot ID
snap-04c9b158a38b6418e
Size
10 GiB
Progress
Available (100%)
Snapshot status
Completed
Owner
846780726677
Volume ID
vol-075f545f69c18b92b
Started
Fri Jan 13 2023 13:24:37 GMT+0530 (India Standard Time)
Product codes
Encryption
Not encrypted
KMS key ID
KMS key alias
KMS key ARN
Fast snapshot restore
Description
Attachment to different AZ

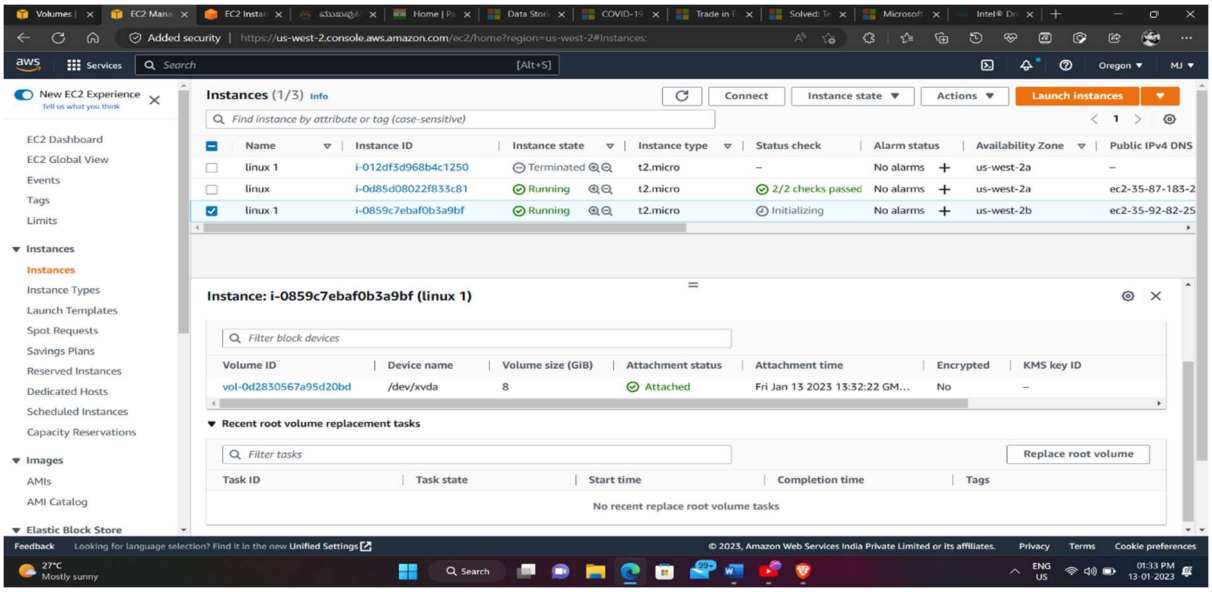

Snapshots (1/1)
Recycle Bin
Actions
Create snapshot
Create volume from snapshot
Create image from snapshot
Copy snapshot
Modify permissions
Manage fast snapshot restore
Archive snapshot
Restore snapshot from archive
Change restore period
Delete snapshot
Manage tags
Snapshot ID: snap-04c9b158a38b6418e
Details
Permissions
Storage tier
Tags
Snapshot ID
snap-04c9b158a38b6418e
Size
10 GiB
Progress
Available (100%)
Snapshot status
Completed
Owner
846780726677
Volume ID
vol-075f545f69c18b92b
Started
Fri Jan 13 2023 13:24:37 GMT+0530 (India Standard Time)
Product codes
Encryption
Not encrypted
KMS key ID
KMS key alias
KMS key ARN
Fast snapshot restore
Description
Attachment to different AZ

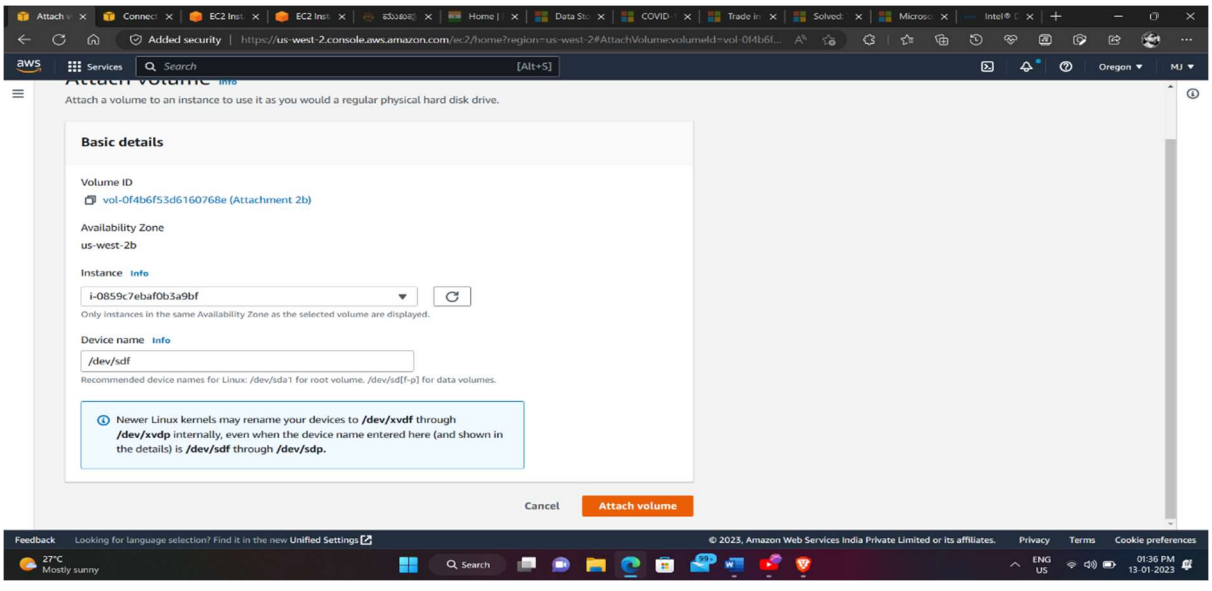

Baseline of 3 IOPS per GiB with a minimum of 100 IOPS, burstable to 3000 IOPS.
Throughput (MiB/s) Info
Not applicable
Availability Zone Info
us-west-2b
Fast snapshot restore Info
Not enabled for selected snapshot
Encryption Info
Use Amazon EBS encryption as an encryption solution for your EBS resources 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.
No tags associated with the resource.
Add tag
You can add 50 more tags.
Cancel
Create volume

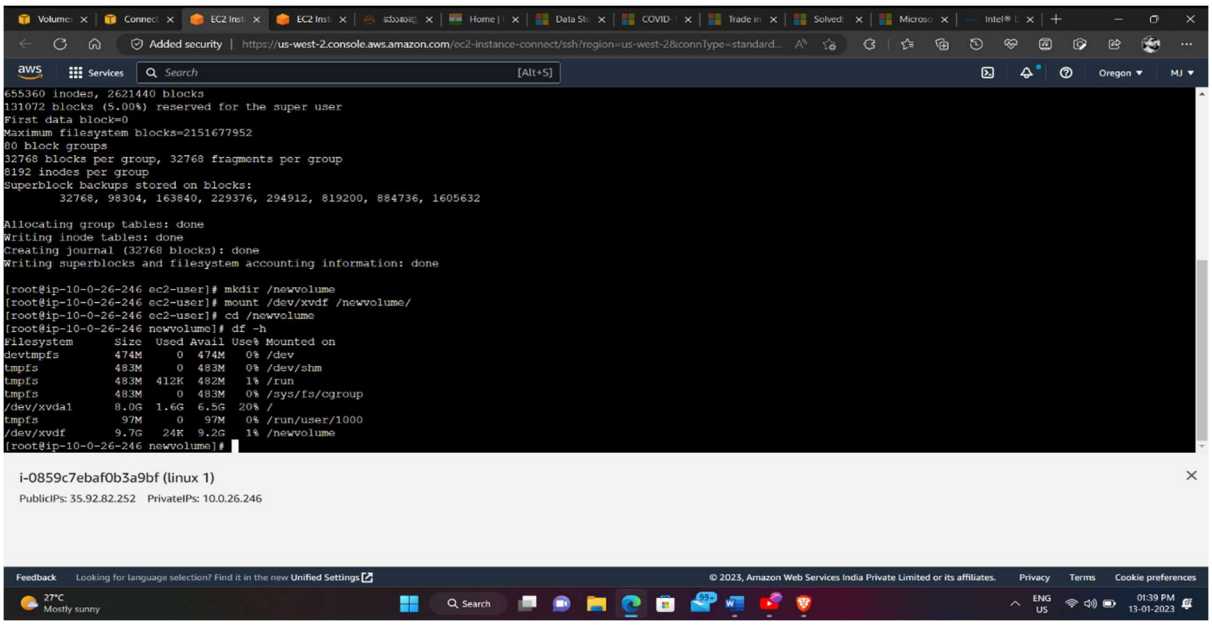

You can now create Amazon Data Lifecycle Manager policies to automate snapshot management directly from this screen. Select the volumes to back up, and then choose Actions, Create snapshot lifecycle policy. For more information, see the Knowledge Center article.
Volumes (1/3)
Actions
Create volume
Name
Volume ID
Type
Size
IOPS
Throughput
Snapshot
Created
Attachment 2b
vol-0f4b6f53d6160768e
gp2
10 GiB
100
snap-04c9b15...
2023/01/13 13:30 GMT+5:...
linux
vol-077d1077f625b1d42
8 GiB
snap-0759447...
2023/01/13 12:50 GMT+5:...
Attachment 2a
vol-075f545f69c18b92b
10 GiB
2023/01/13 13:15 GMT+5:...
Volume ID: vol-0f4b6f53d6160768e (Attachment 2b)
Details
Status checks
Monitoring
Tags
Volume ID
Size
Type
Volume status
Okay
Volume state
Available
IOPS
100
Throughput

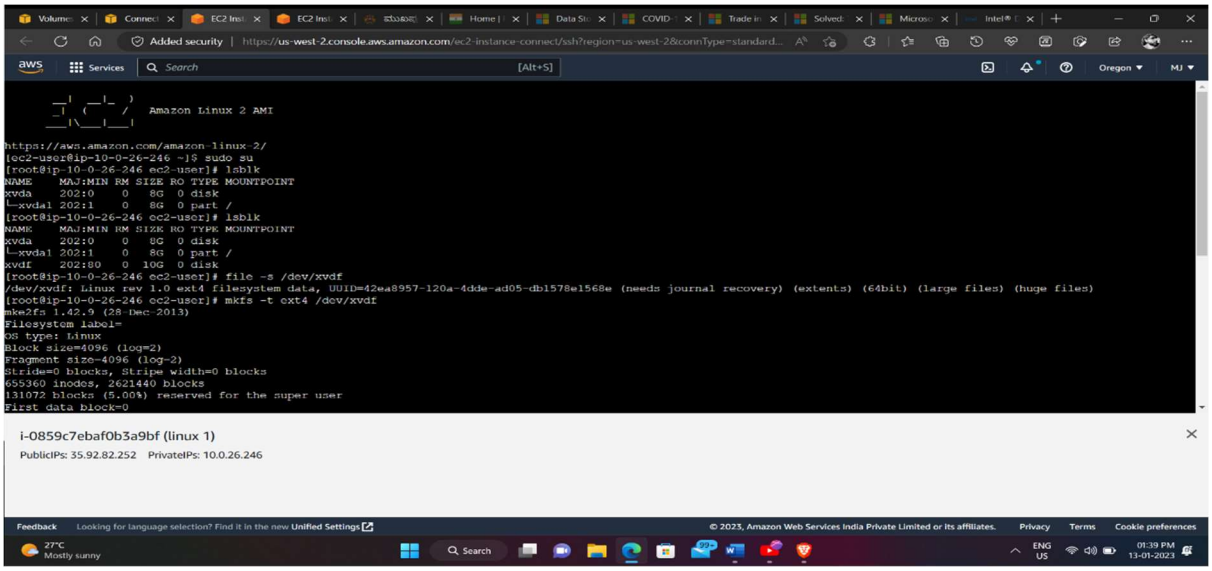

You can now create Amazon Data Lifecycle Manager policies to automate snapshot management directly from this screen. Select the volumes to back up, and then choose Actions, Create snapshot lifecycle policy. For more information, see the Knowledge Center article.
Volumes (1/3)
Actions
Create volume
Created
Availability Zone
Volume state
Alarm status
Attached Instances
Encryption
2023/01/13 13:30 GMT+5:...
us-west-2b
Available
No alarms
Okay
Not encrypte
2023/01/13 12:50 GMT+5:...
us-west-2a
In-use
i-0d85d08022f833c81 (lin...
2023/01/13 13:15 GMT+5:...
Volume ID: vol-0f4b6f53d6160768e (Attachment 2b)
Details
Status checks
Monitoring
Tags
Volume ID
Size
Type
Volume status
Okay
Volume state
Available
IOPS
100
Throughput

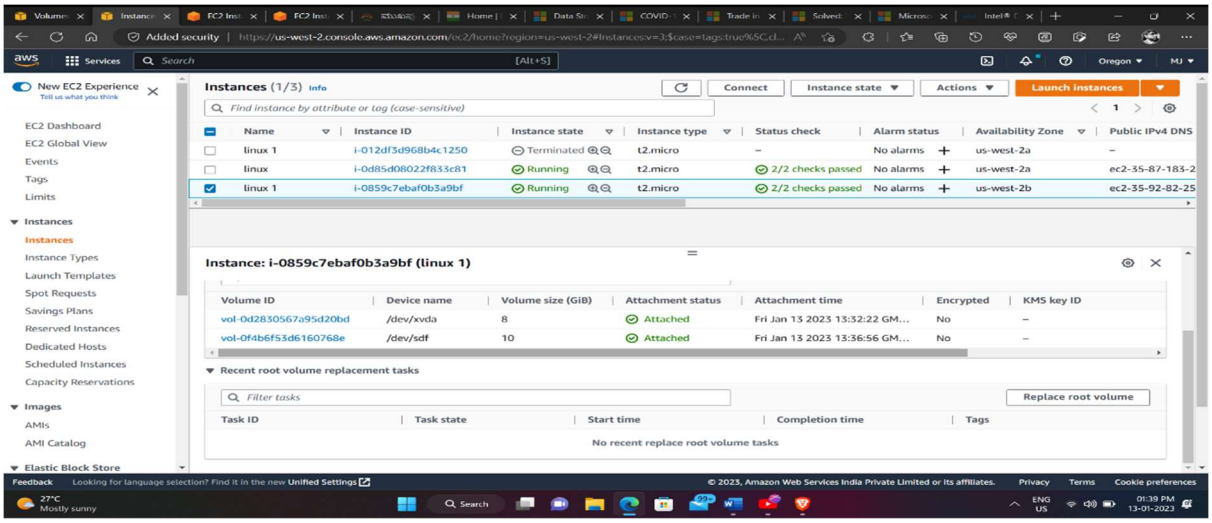

131072 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=2151677952
80 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632
Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done
[ec2-user@ip-10-0-8-212 ~]$ sudo mkdir /volume
mkdir: cannot create directory '/volume': File exists
[ec2-user@ip-10-0-8-212 ~]$ sudo mount /dev/xvdf /volume/
[ec2-user@ip-10-0-8-212 ~]$ cd /volume
[ec2-user@ip-10-0-8-212 volume]$ df -h
Filesystem Size Used Avail Use% Mounted on
devtmpfs 474M 0 474M 0% /dev
tmpfs 483M 0 483M 0% /dev/shm
tmpfs 483M 412K 482M 1% /run
tmpfs 483M 0 483M 0% /sys/fs/cgroup
/dev/xvda1 8.0G 1.6G 6.5G 20% /
tmpfs 97M 0 97M 0% /run/user/1000
/dev/xvdf 9.7G 24K 9.2G 1% /volume
[ec2-user@ip-10-0-8-212 volume]$
i-0d85d08022f833c81 (linux)
PublicIPs: 35.87.183.223 PrivateIPs: 10.0.8.212


Instances (1/3) Info
Connect
Instance state
Actions
Launch instances
Name
Instance ID
Instance state
Instance type
Status check
Alarm status
Availability Zone
Public IPv4 DNS
linux 1 i-012df3d968b4c1250 Terminated t2.micro – No alarms us-west-2a –
linux i-0d85d08022f833c81 Running t2.micro 2/2 checks passed No alarms us-west-2a ec2-35-87-183-2
linux 1 i-0859c7ebaf0b3a9bf Running t2.micro Initializing No alarms us-west-2b ec2-35-92-82-25
Instance: i-0859c7ebaf0b3a9bf (linux 1)
Volume ID
Device name
Volume size (GiB)
Attachment status
Attachment time
Encrypted
KMS key ID
vol-0d2830567a95d20bd /dev/xvda 8 Attached Fri Jan 13 2023 13:32:22 GM... No –
Recent root volume replacement tasks
Replace root volume
Task ID
Task state
Start time
Completion time
Tags
No recent replace root volume tasks


Attach a volume to an instance to use it as you would a regular physical hard disk drive.
Basic details
Volume ID
vol-0f4b6f53d6160768e (Attachment 2b)
Availability Zone
us-west-2b
Instance Info
i-0859c7ebaf0b3a9bf
Only instances in the same Availability Zone as the selected volume are displayed.
Device name Info
/dev/sdf
Recommended device names for Linux: /dev/sda1 for root volume. /dev/sd[f-p] for data volumes.
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.
Cancel
Attach volume


655360 inodes, 2621440 blocks
131072 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=2151677952
80 block groups
32768 blocks per group, 32768 fragments per group
8192 inodes per group
Superblock backups stored on blocks:
32768, 98304, 163840, 229376, 294912, 819200, 884736, 1605632
Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done
[root@ip-10-0-26-246 ec2-user]# mkdir /newvolume
[root@ip-10-0-26-246 ec2-user]# mount /dev/xvdf /newvolume/
[root@ip-10-0-26-246 ec2-user]# cd /newvolume
[root@ip-10-0-26-246 newvolume]# df -h
Filesystem Size Used Avail Use% Mounted on
devtmpfs 474M 0 474M 0% /dev
tmpfs 483M 0 483M 0% /dev/shm
tmpfs 483M 412K 482M 1% /run
tmpfs 483M 0 483M 0% /sys/fs/cgroup
/dev/xvda1 8.0G 1.6G 6.5G 20% /
tmpfs 97M 0 97M 0% /run/user/1000
/dev/xvdf 9.7G 24K 9.2G 1% /newvolume
[root@ip-10-0-26-246 newvolume]#
i-0859c7ebaf0b3a9bf (linux 1)
PublicIPs: 35.92.82.252 PrivateIPs: 10.0.26.246


Amazon Linux 2 AMI
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-10-0-26-246 ~]$ sudo su
[root@ip-10-0-26-246 ec2-user]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda 202:0 0 8G 0 disk
└─xvda1 202:1 0 8G 0 part /
[root@ip-10-0-26-246 ec2-user]# lsblk
NAME MAJ:MIN RM SIZE RO TYPE MOUNTPOINT
xvda 202:0 0 8G 0 disk
└─xvda1 202:1 0 8G 0 part /
xvdf 202:80 0 10G 0 disk
[root@ip-10-0-26-246 ec2-user]# file -s /dev/xvdf
/dev/xvdf: Linux rev 1.0 ext4 filesystem data, UUID=42ea8957-120a-4dde-ad05-db1578e1568e (needs journal recovery) (extents) (64bit) (large files) (huge files)
[root@ip-10-0-26-246 ec2-user]# mkfs -t ext4 /dev/xvdf
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
Stride=0 blocks, Stripe width=0 blocks
655360 inodes, 2621440 blocks
131072 blocks (5.00%) reserved for the super user
First data block=0
i-0859c7ebaf0b3a9bf (linux 1)
PublicIPs: 35.92.82.252 PrivateIPs: 10.0.26.246


New EC2 Experience
EC2 Dashboard
EC2 Global View
Events
Tags
Limits
Instances
Instances
Instance Types
Launch Templates
Spot Requests
Savings Plans
Reserved Instances
Dedicated Hosts
Scheduled Instances
Capacity Reservations
Images
AMIs
AMI Catalog
Elastic Block Store
Instances (1/3) Info
Connect
Instance state
Actions
Launch instances
Name | Instance ID | Instance state | Instance type | Status check | Alarm status | Availability Zone | Public IPv4 DNS
linux 1 | i-012df3d968b4c1250 | Terminated | t2.micro | – | No alarms | us-west-2a | –
linux | i-0d85d08022f833c81 | Running | t2.micro | 2/2 checks passed | No alarms | us-west-2a | ec2-35-87-183-2
linux 1 | i-0859c7ebaf0b3a9bf | Running | t2.micro | 2/2 checks passed | No alarms | us-west-2b | ec2-35-92-82-25
Instance: i-0859c7ebaf0b3a9bf (linux 1)
Volume ID | Device name | Volume size (GiB) | Attachment status | Attachment time | Encrypted | KMS key ID
vol-0d2830567a95d20bd | /dev/xvda | 8 | Attached | Fri Jan 13 2023 13:32:22 GM... | No | –
vol-0f4b6f53d6160768e | /dev/sdf | 10 | Attached | Fri Jan 13 2023 13:36:56 GM... | No | –
Recent root volume replacement tasks
Filter tasks
Replace root volume
Task ID | Task state | Start time | Completion time | Tags
No recent replace root volume tasks