

Module-2: Case Study

Create key pair



Key pairs allow you to connect to your instance securely.

Enter the name of the key pair below. 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](#)

Key pair name

KP1702

The name can include upto 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

Cancel

Create key pair

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▼ Network settings [Info](#)

Edit

Network [Info](#)

vpc-0fab1c85235d6abf7

Subnet [Info](#)

No preference (Default subnet in any availability zone)

Auto-assign public IP [Info](#)

Enable

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

We'll create a new security group called 'launch-wizard-1' with the following rules:

☒ Allow SSH traffic from

Helps you connect to your instance

Anywhere
0.0.0.0/0

☐ Allow HTTPS traffic from the internet

To set up an endpoint, for example when creating a web server

☒ Allow HTTP traffic from the internet

To set up an endpoint, for example when creating a web server

Language

Metadata response hop limit [Info](#)

Select

Allow tags in metadata [Info](#)

Select

User data - optional [Info](#)

Enter user data in the field.

```
#!/bin/bash
yum install httpd -y
service httpd start
yum update -y
echo "Module2: Case Study-EC2/EFS/EBS" > /var/www/html/index.html
```

▼ Summary

Number of instances [Info](#)

1

Software Image (AMI)

Amazon Linux 2 Kernel 5.10 AMI...[read more](#)
ami-0dfcb1ef8550277af

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

Cancel

Launch instance

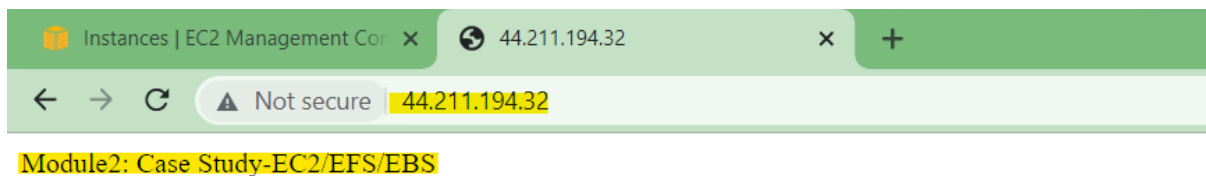
Module-2: Case Study

```
root@ip-172-31-93-238:/var/www/html
Using username "ec2-user".
Authenticating with public key "imported-openssh-key"

      _|_      _|_      )
      _|_      ( _|_      /   Amazon Linux 2 AMI
      _|_      _|_      _|_

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-93-238 ~]$ sudo su
[root@ip-172-31-93-238 ec2-user]# sudo apt-get update
sudo: apt-get: command not found
[root@ip-172-31-93-238 ec2-user]# cd /var/www/
[root@ip-172-31-93-238 www]# ls
cgi-bin  html
[root@ip-172-31-93-238 www]# cd html/
[root@ip-172-31-93-238 html]# ls
index.html
[root@ip-172-31-93-238 html]# cat index.html
Module2: Case Study-EC2/EFS/EBS
[root@ip-172-31-93-238 html]#
```

Webpage:



Module-2: Case Study

2. Replicate the instance in us-west-2 (Oregon) region

Creating Image from existing Instance :

EC2 > Instances > i-0052974a121e5eb1f > Create image

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-0052974a121e5eb1f (LinuxWebsERVER)

Image name

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

Image description - optional

Maximum 255 characters

No reboot
☐ Enable

Instance volumes

Storage type	Device	Snapshot	Size	Volume type	IOPS	Throughput	Delete on termination	Encrypted
EBS	/dev/...	Create new snapshot fr...	8	EBS General Purpose S...	100		<input checked="" type="checkbox"/> Enable	<input type="checkbox"/> Enable

Copy image to US West Oregon:

Create a copy of an Amazon Machine Image in a Region.

Copy Amazon Machine Image (AMI)

Original AMI ID
ami-0d22b723ea3119fa3

AMI copy name

AMI copy description

Destination Region
A copy of the original AMI will be created in the destination Region.

☐ Copy tags
Includes your user-defined AMI tags when copying the AMI.

☐ Encrypt EBS snapshots of AMI copy
Encrypts all snapshots in the AMI copy with the same key.

Cancel

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Instance Launch in Oregon from copied Image:

Name and tags [Info](#)

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

AMI from catalog

My AMIs

Quick Start

Amazon Machine Image (AMI)

CustImage

ami-03b95e244063ac093

Published

Architecture

Virtualization

Root device type

ENA Enabled

2023-02-17T06:19:24.0

x86_64

hvm

ebs

Yes

[Browse more AMIs](#)

Including AMIs from AWS, Marketplace and the Community

▼ Summary

Number of instances [Info](#)

Software Image (AMI)

[Copied ami-0d22b723ea3119fa3 ...read more]

ami-03b95e244063ac093

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group

Storage (volumes)

1 volume(s) - 8 GiB

[Free tier](#): In your first year includes 750 hours of t2.micro (or t3.micro in the Region in which you reside)

[Cancel](#)

[Launch instance](#)

ec2-user@ip-172-31-20-103:/var/www/html

Using username "ec2-user".

Authenticating with public key "imported-openssh-key"

Last login: Fri Feb 17 05:49:48 2023 from 106.216.244.13

||_)

_| (_/_ /

||_|_|_|

Amazon Linux 2 AMI

https://aws.amazon.com/amazon-linux-2/

[ec2-user@ip-172-31-20-103 ~]\$ cd /var/www/html/

[ec2-user@ip-172-31-20-103 html]\$ ls

index.html

[ec2-user@ip-172-31-20-103 html]\$ cat index.html

Module2: Case Study-EC2/EFS/EBS

[ec2-user@ip-172-31-20-103 html]\$

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3. Build two EBS volumes and attach them to the instance in us-east-1 (N. Virginia) region

Volume settings

Volume type [Info](#)

General Purpose SSD (gp2) ▼

Size (GiB) [Info](#)

5

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

IOPS [Info](#)

100 / 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-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.

Language

✔ Successfully created volume vol-04b6491b610bf4862. ✕

📘 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 (2/3)

↺ Actions ▼ Create volume

🔍 Search

< 1 > ⚙️

	Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot	Created	Avai
<input type="checkbox"/>	-	vol-02498332ba377d208	gp2	8 GiB	100	-	snap-0d1c252...	2023/02/17 11:15 GMT+5...	us-e
<input checked="" type="checkbox"/>	EBS1	vol-0a70ad88c0bf70d2d	gp2	5 GiB	100	-	-	2023/02/17 12:56 GMT+5...	us-e
<input checked="" type="checkbox"/>	EBS2	vol-04b6491b610bf4862	gp2	10 GiB	100	-	-	2023/02/17 12:57 GMT+5...	us-e

Volume IDs: vol-0a70ad88c0bf70d2d (EBS1), vol-04b6491b610bf4862 (EBS2)

Monitorina

Attaching Volume:

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EC2 > Volumes > vol-0a70ad88c0bf70d2d > 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-0a70ad88c0bf70d2d (EBS1)

Availability Zone

us-east-1a

Instance [Info](#)

i-0052974a121e5eb1f



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

k Language

© 2023, Amazon

Basic details

Volume ID

 vol-04b6491b610bf4862 (EBS2)

Availability Zone

us-east-1a

Instance [Info](#)

i-0052974a121e5eb1f



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

Device name [Info](#)

/dev/sdg

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**.

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Instances (1/1) Info

Refresh

Connect

Instance state ▼

Actions ▼

Launch instances ▼

Find instance by attribute or tag (case-sensitive)

< 1 > ⚙

<input checked="" type="checkbox"/>	Name ▼	Instance ID	Instance state ▼	Instance type ▼	Status check	Alarm status	Availability Zone ▼	Public IPv4 DNS
<input checked="" type="checkbox"/>	LinuxWebserver	i-0052974a121e5eb1f	Running	t2.micro	2/2 checks passed	No alarms +	us-east-1a	ec2-44-211-194

Instance: i-0052974a121e5eb1f (LinuxWebserver) ⚙ ×

Filter block devices

Volume ID	Device name	Volume size (GiB)	Attachment status	Attachment time	Encrypted	KMS key ID
vol-02498332ba377d208	/dev/xvda	8	Attached	Fri Feb 17 2023 11:15:08 GM...	No	–
vol-0a70ad88c0bf70d2d	/dev/sdf	5	Attached	Fri Feb 17 2023 13:39:16 GM...	No	–
vol-04b6491b610bf4862	/dev/sdg	10	Attached	Fri Feb 17 2023 13:40:20 GM...	No	–

Recent root volume replacement tasks

Create file systems for both the ebs volumes as ext4 type:

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```
[ec2-user@ip-172-31-93-238 ~]$ 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   5G  0 disk
xvdg        202:96    0  10G  0 disk
[ec2-user@ip-172-31-93-238 ~]$ file -s /dev/xvdf
/dev/xvdf: no read permission
[ec2-user@ip-172-31-93-238 ~]$ sudo file -s /dev/xvdf
/dev/xvdf: data
[ec2-user@ip-172-31-93-238 ~]$ sudo file -s /dev/xvdg
/dev/xvdg: data
[ec2-user@ip-172-31-93-238 ~]$ sudo 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
327680 inodes, 1310720 blocks
65536 blocks (5.00%) reserved for the super user
First data block=0
Maximum filesystem blocks=1342177280
40 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

Allocating group tables: done
Writing inode tables: done
Creating journal (32768 blocks): done
Writing superblocks and filesystem accounting information: done

[ec2-user@ip-172-31-93-238 ~]$ sudo mkfs -t ext4 /dev/xvdg
mke2fs 1.42.9 (28-Dec-2013)
Filesystem label=
OS type: Linux
Block size=4096 (log=2)
Fragment size=4096 (log=2)
```

Mounting the volumes:

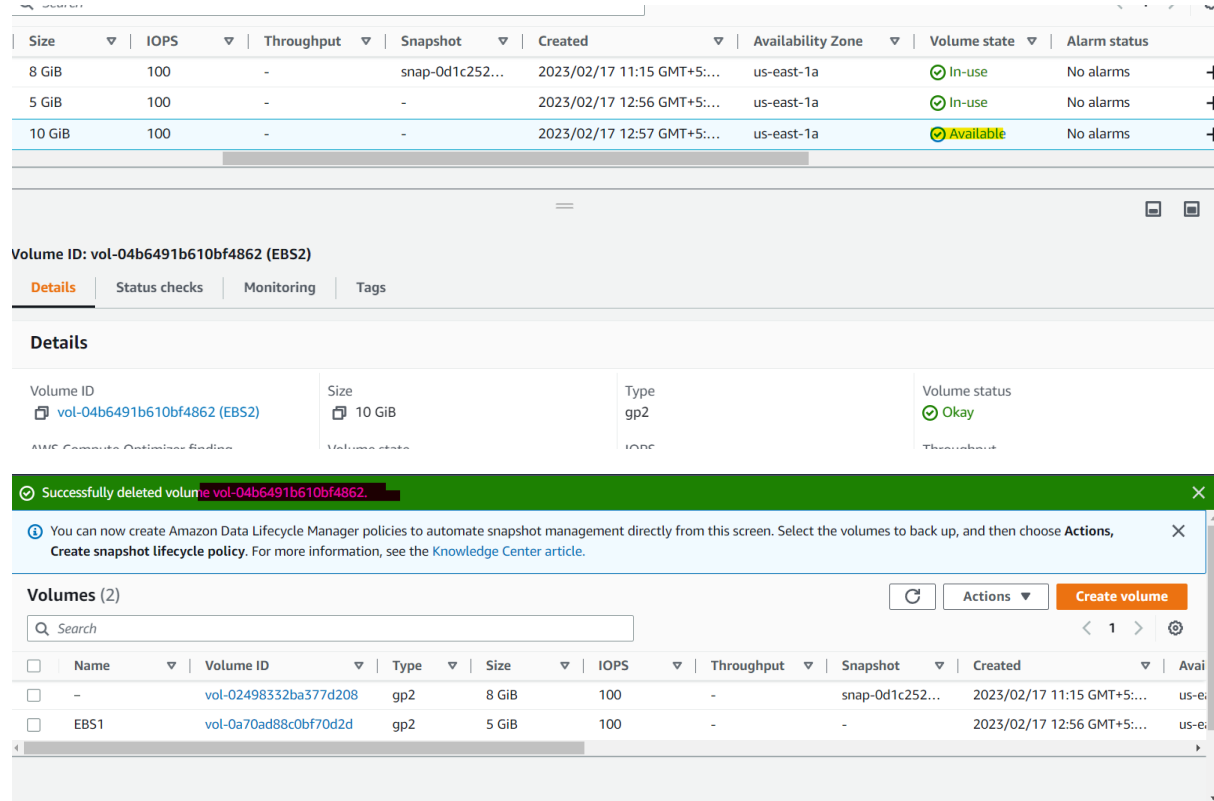
```
[ec2-user@ip-172-31-93-238 ~]$ sudo file -s /dev/xvdf
/dev/xvdf: Linux rev 1.0 ext4 filesystem data, UUID=8c2c88af-bcfe-4dee-af9a-8d09047d256b (extents) (64bit) (large files) (huge files)
[ec2-user@ip-172-31-93-238 ~]$ sudo file -s /dev/xvdg
/dev/xvdg: Linux rev 1.0 ext4 filesystem data, UUID=49db7568-4ea2-42ef-8868-e9041a62d537 (extents) (64bit) (large files) (huge files)
[ec2-user@ip-172-31-93-238 ~]$ mkdir ebs1 ebs2
[ec2-user@ip-172-31-93-238 ~]$ ls
ebs1  ebs2
[ec2-user@ip-172-31-93-238 ~]$ pwd
/home/ec2-user
[ec2-user@ip-172-31-93-238 ~]$ sudo mount /dev/xvdf /home/ec2-user/ebs1
[ec2-user@ip-172-31-93-238 ~]$ sudo mount /dev/xvdg /home/ec2-user/ebs2
[ec2-user@ip-172-31-93-238 ~]$ 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   5G  0 disk /home/ec2-user/ebs1
xvdg        202:96    0  10G  0 disk /home/ec2-user/ebs2
[ec2-user@ip-172-31-93-238 ~]$
```

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

Unmounting and detaching and deleting ebs2 volume:

```
https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-93-238 ~]$ sudo su
[root@ip-172-31-93-238 ec2-user]# umount /dev/xvdf /home/ec2-user/ebs2
umount: /home/ec2-user/ebs2: not mounted.
[root@ip-172-31-93-238 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   5G  0 disk /home/ec2-user/ebs1
xvdg        202:96   0  10G  0 disk
[root@ip-172-31-93-238 ec2-user]#
```



The screenshot displays the AWS Management Console interface. At the top, a table lists EBS volumes with columns for Size, IOPS, Throughput, Snapshot, Created, Availability Zone, Volume state, and Alarm status. Three volumes are listed: an 8 GiB volume (In-use), a 5 GiB volume (In-use), and a 10 GiB volume (Available). Below this, the details for Volume ID: vol-04b6491b610bf4862 (EBS2) are shown. The details section includes tabs for Details, Status checks, Monitoring, and Tags. The Details tab is active, showing a table with Volume ID, Size (10 GiB), Type (gp2), and Volume status (Okay). A green notification banner at the bottom states "Successfully deleted volume vol-04b6491b610bf4862." Below the notification, a message prompts the user to create an Amazon Data Lifecycle Manager policy. At the bottom, the "Volumes (2)" section shows a table with two volumes: one with ID vol-02498332ba377d208 (8 GiB, gp2, In-use) and another with ID vol-0a70ad88c0bf70d2d (5 GiB, gp2, In-use).

Size	IOPS	Throughput	Snapshot	Created	Availability Zone	Volume state	Alarm status
8 GiB	100	-	snap-0d1c252...	2023/02/17 11:15 GMT+5:...	us-east-1a	In-use	No alarms
5 GiB	100	-	-	2023/02/17 12:56 GMT+5:...	us-east-1a	In-use	No alarms
10 GiB	100	-	-	2023/02/17 12:57 GMT+5:...	us-east-1a	Available	No alarms

Volume ID: vol-04b6491b610bf4862 (EBS2)

Details | Status checks | Monitoring | Tags

Details

Volume ID	Size	Type	Volume status
vol-04b6491b610bf4862 (EBS2)	10 GiB	gp2	Okay

Successfully deleted volume vol-04b6491b610bf4862.

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 (2)

Name	Volume ID	Type	Size	IOPS	Throughput	Snapshot	Created	Avai
-	vol-02498332ba377d208	gp2	8 GiB	100	-	snap-0d1c252...	2023/02/17 11:15 GMT+5:...	us-e
EBS1	vol-0a70ad88c0bf70d2d	gp2	5 GiB	100	-	-	2023/02/17 12:56 GMT+5:...	us-e

Extending size:

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EC2 > Volumes > vol-0a70ad88c0bf70d2d > Modify volume

Modify volume [Info](#)

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

Volume details

Volume ID

 vol-0a70ad88c0bf70d2d (EBS1)

Volume type [Info](#)

General Purpose SSD (gp2) ▼

Size (GiB) [Info](#)

8

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

IOPS [Info](#)

100/3000

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

Last login: Fri Feb 17 14:33:05 2023 from 106.193.186.218

```
  _ |  _ | _ )
 _ | ( _ | /   Amazon Linux 2 AMI
 _ | \ _ | _ |
```

<https://aws.amazon.com/amazon-linux-2/>

[ec2-user@ip-172-31-93-238 ~]\$ 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	8G	0	disk	/home/ec2-user/ebs1

[ec2-user@ip-172-31-93-238 ~]\$

5. Take backup of this EBS volume

Details

Volume ID

 vol-0a70ad88c0bf70d2d (EBS1)

Description

Add a description for your snapshot

EBS1-snapshot

255 characters maximum.

Encryption

[Info](#)

Not encrypted

[Add tag](#)

Snapshots (2)								Refresh Recycle Bin Actions Create snapshot	
Owned by me		<input type="text" value="Search"/>						1	
<input type="checkbox"/>	Name	Snapshot ID	Size	Description	Storage...	Snapshot status	Started		
<input type="checkbox"/>	-	snap-063a4ddfcaef47684	8 GiB	Created by CreateImage(f...	Standard	Completed	2023/02/17 11:36 GMT+5...		
<input type="checkbox"/>	-	snap-0bd667134bce81000	8 GiB	EB01-snapshot	Standard	Completed	2023/02/17 20:14 GMT+5...		