

Lab 5

MANAGE INSTANCE VOLUMES USING EBS

STEP 1: Log In to the Amazon Web Service Console

This laboratory experience is about Amazon Web Services and you will use the AWS Management Console in order to complete all the lab steps.

The AWS Management Console is a web control panel for managing all your AWS resources, from EC2 instances to SNS topics. The console enables cloud management for all aspects of the AWS account, including managing security credentials, or even setting up new IAM Users.

Log in to the AWS Management Console

In order to start the laboratory experience, open the Amazon Console by clicking this button:

[Open AWS Console](#)

Log in with the username **xxxxx** and the password **xxxxx**.



Account:

User Name:

Password:

 I have an MFA Token [\(more info\)](#)

Sign In

[Sign in using root account credentials](#)

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Select the right AWS Region

Amazon Web Services is available in different regions all over the world, and the console lets you provision resources across multiple regions. You usually choose a region that best suits your business needs to optimize your customer's experience, but you must use the region **US West (Oregon)** for this laboratory.

You can select the **US West (Oregon)** region using the upper right dropdown menu on the AWS Console page.

Antonio Ang ▾ Oregon ▾ Support ▾

US East (N. Virginia)

| **US West (Oregon)**

US West (N. California)

EU (Ireland)

EU (Frankfurt)

Asia Pacific (Singapore)

Asia Pacific (Tokyo)

Asia Pacific (Sydney)

South America (São Paulo)

STEP 2: Create an EC2 instance with an additional EBS

You can launch an EC2 instance with multiple storage volumes using the EC2 launch wizard.

Select the EC2 service from the Management Console dashboard:

Compute



EC2
Virtual Servers in the Cloud

From the dashboard, click Launch Instance.

The Choose an Amazon Machine Image (AMI) page displays a list of basic configurations called Amazon Machine Images (AMIs) that serve as templates for your instance. Select the 64-bit Amazon Linux AMI.

On the Choose an Instance Type page, do not change any options and click Next: Configure Instance Details

On the Configure Instance Details tab, do not change any options and click Next: Add Storage.

On the Add Storage tab, you can add additional storage volumes to the launching instance. Click on Add New Volume to add a second EBS to your EC2 instance (the first one is used by the Operating System). You can choose the volume size, the volume type (Magnetic disk, SSD, or Provisioned IOPS), the termination policy, and an optional snapshot that will be restored during the creation process.

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Tag Instance 6. Configure Security Group 7. Review

Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and Instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. Learn more about storage options in Amazon EC2.

Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Delete on Termination	Encrypted
Root	/dev/xvda	snap-62cf04aa	8	General Purpose (SSD)	24 / 3000	<input checked="" type="checkbox"/>	Not Encrypted
EBS	/dev/sdb	Search (case-insensitive)	16	General Purpose (SSD)	48 / 3000	<input type="checkbox"/>	Not Encrypted

[Add New Volume](#)

Create a 16GB General Purpose (SSD) that should not be deleted on instance termination and then click the Review and Launch button.

On the Review Instance Launch page, click Launch.

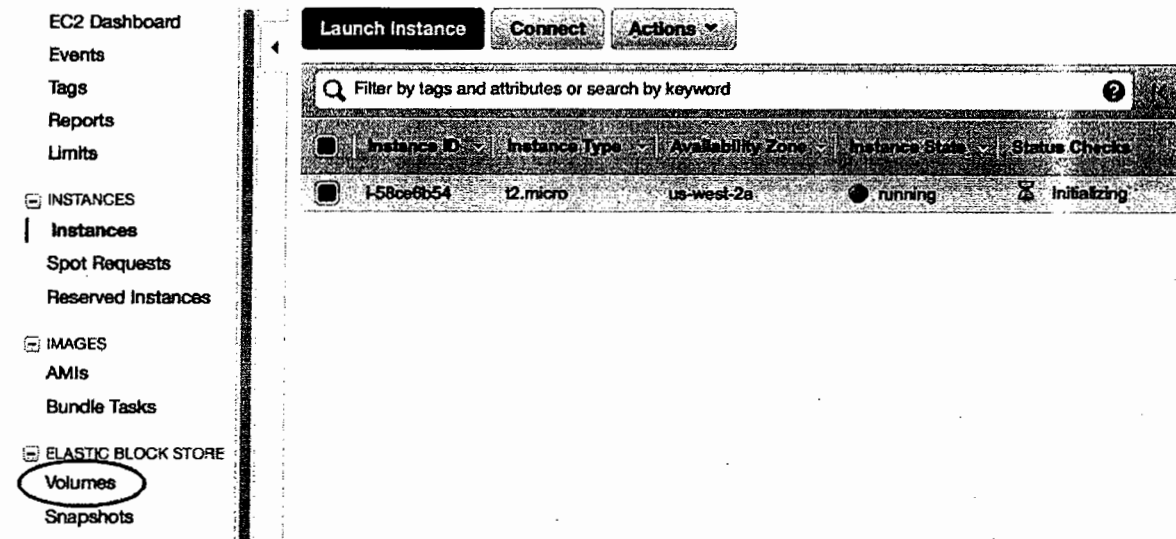
In the Select an existing key pair or create a new key pair dialog box, select Create a new key pair, then type a key pair name (e.g., TestKeys) and Download Key Pair.

Select the acknowledgment check box, and then click Launch Instances.

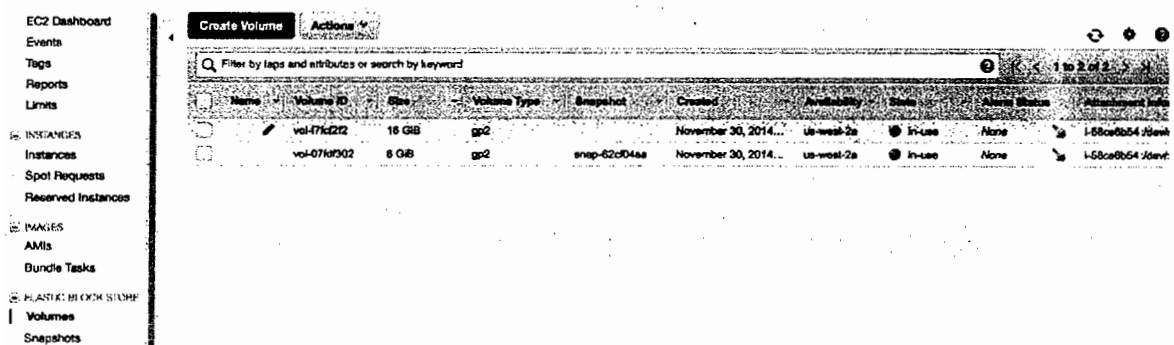
A confirmation page will let you know that your instance is launching. Click View Instance to close the confirmation page and return to the console.

You can view the status of your instance on the Instances screen. It will take a short time for your instance to launch. When you launch an instance, its initial state is *pending*. After the instance successfully boots, its state changes to *running*, and it receives a public DNS name.

Now you are ready to explore the Elastic Block Store section of the EC2 service. By clicking on the Volumes menu item, you will see the EBS volumes used by the newly created EC2 instance.

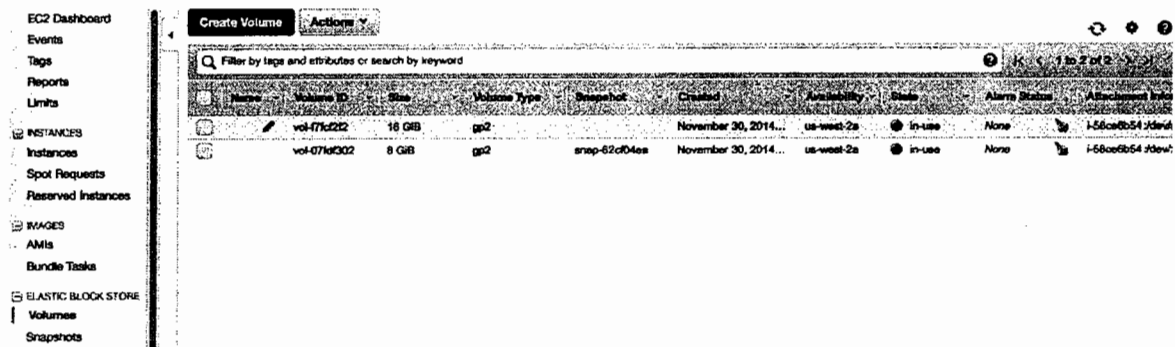


All EBS volumes are listed here. You can check their statuses, attach or detach them to/from the available EC2 instances, or destroy them. You should choose a name for each EBS for easier recognition during future maintenance. Move your cursor near the Name cell of the desired volume and a small pencil will appear, then click the pencil and type a meaningful name (e.g., "OS disk" or "Data Disk").



STEP 3: Create a new EBS volume

Open the Volumes listing page and click on the blue Create Volume button. A small popup will appear.



The popup shows you a simple form where you can select the volume type and choose the volume size. It shows the Availability Zone (where the volume will be created) and an optional snapshot image (to be restored after the creation process and if the disk data should be encrypted). Create a new general purpose SSD volume in the same Availability Zone as the previously created instance and volumes, and then wait until the volume status is *available*.

Please note: if you don't create the volume in the same availability zone used by the EC2 instance where it should be used, you will not be able to attach it!

Create Volume

Type

General Purpose (SSD)

Size (GiB)

100

(Min: 1GiB, Max: 1024GiB)

IOPS

300 / 3000

(3000 IOPS bursts and baseline of 3 IOPS per GB)

Availability Zone

us-west-2a

Snapshot ID

Search (case-insensitive)

Encryption

☐ Encrypt this volume

Cancel

Create

STEP 4: Attach and Detach an EBS volume

In order to use a new EBS volume, you must *attach* it to one of the available EC2 instances. You can attach an available volume by right-clicking on it and selecting the Attach Volume action.

Create Volume

Actions

Filter by tags and attributes or search by keyword

	Name	Volume ID	Size	Volume Type	Snapshot	Created	Availability
<input type="checkbox"/>		vol-f7fcd2f2	16 GiB	gp2		November 30, 2014...	us-west-2a
<input type="checkbox"/>		vol-07fdf302	8 GiB	gp2	snap-62cf04aa	November 30, 2014...	us-west-2a
<input checked="" type="checkbox"/>		vol-17f0fe12	16 GiB			November 30, 2014...	us-west-2a

Delete Volume

Create Snapshot

Change Auto-Enable IO Setting

Add/Edit Tags

Select the EC2 instance from the drop-down menu, assign a device mapping for the drive (/dev/sdf for this lab), and click Attach.

Attach Volume [X]

Volume ⓘ vol-17f0fe12 in us-west-2a

Instance ⓘ i-58ce8b54 in us-west-2a

Device ⓘ /dev/sdf
Linux Devices: /dev/sdf through /dev/sdp

Note: 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

After a few minutes, your new EBS volume is will be ready for formatting and data storage.

Detaching an EBS volume

You can detach an Amazon EBS volume from an instance explicitly or by terminating the instance. However, if the attached instance is running, you must unmount the volume (from the instance) before you detach it. If an Amazon EBS volume is the root device of an instance, you must stop the instance before you can detach the volume.

To detach a volume you must select the volume, then click Detach Volume and, in the confirmation dialog box, click Yes, Detach.

STEP 5: Create a filesystem on an EBS Volume

New EBS volumes have no filesystem, so you can't start storing data immediately after attaching them to a specific instance.

Initializing a volume with a specific filesystem type is easy using Linux and can be done by issuing the following commands.

1. Issue the following command to create an ext3 filesystem on the new volume:

```
sudo mkfs -t ext4 /dev/sdf
```

2. Make the directory for mounting the new storage:

```
sudo mkdir /mnt/ebs-store
```

3. Mount the new volume:

```
sudo mount /dev/sdf /mnt/ebs-store
```

4. To configure the Linux instance to mount this volume on boot, open /etc/fstab in an editor by typing the following:

```
sudo nano /etc/fstab
```

5. Append the following line to /etc/fstab:

```
/dev/sdf /mnt/ebs-store ext4 defaults,noatime 1 2
```

6. In the text editor, hit Ctrl+O, then Ctrl+X to save the file and exit the editor.

STEP 6: Create an EBS snapshot

After writing data to an Amazon EBS volume, you can periodically create a snapshot of the volume to use as a baseline for new volumes or for data backup. If you make periodic snapshots of a volume, the snapshots are incremental so that only the blocks on the device that have changed after your last snapshot are saved in the new snapshot. Even though snapshots are saved incrementally, the snapshot deletion process is designed so that you need to retain only the most recent snapshot in order to restore the volume.

Snapshots occur asynchronously and the status of the snapshot is "pending" until the snapshot is complete.

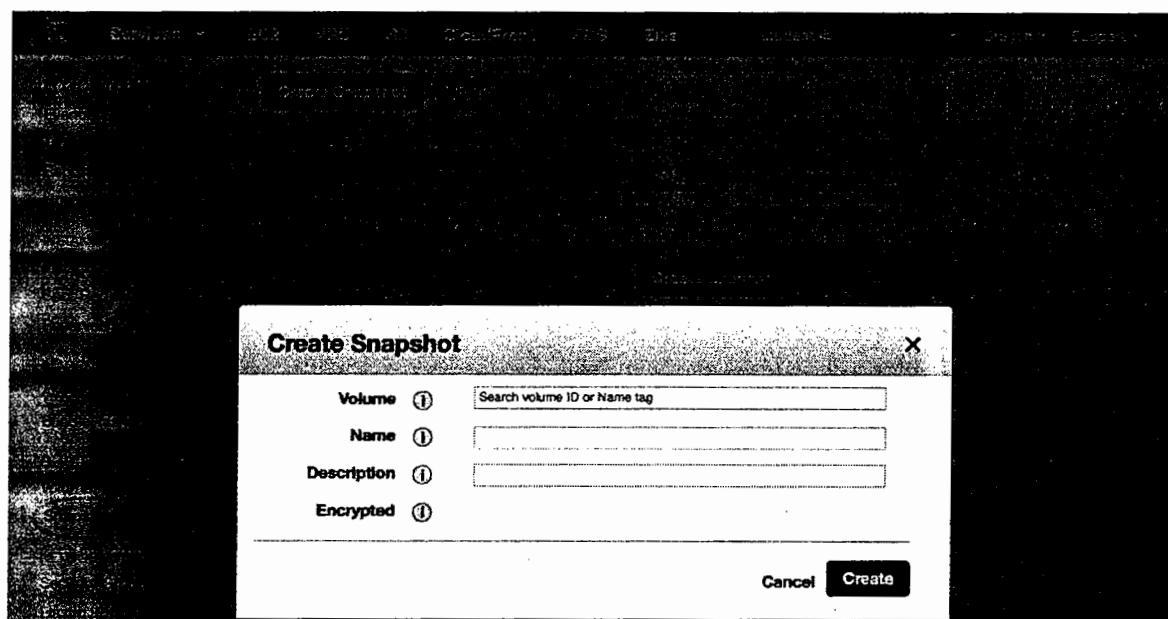
You can take a snapshot of an attached volume that is in use. However, snapshots only capture data that has been written to your Amazon EBS volume at the time the snapshot command is issued. This might exclude any data that has been cached by any applications or the operating system. If you can pause any file writes to the volume long enough to take a snapshot, your snapshot should be complete. However, if you can't pause all file writes to the volume, you should unmount the volume from within the instance, issue the snapshot command, and then remount the volume to ensure a consistent and complete snapshot. You can remount and use your volume while the snapshot status is "pending".

To create a snapshot for Amazon EBS volumes that serve as root devices, you should stop the instance before taking the snapshot.

To unmount the volume in Linux, use the following command:

```
umount -d device_name
```

To create a snapshot using the AWS console, click Snapshots in the navigation pane, click Create Snapshot.



In the Create Snapshot dialog box, select the volume you want to create a snapshot for, then click Create.

Note: Although snapshots occur asynchronously, minimizing the amount of data changes during the snapshot is recommended to increase the snapshot speed and to more easily align backup expectations with the point-in-time the snapshot is running. Snapshots of databases are often taken from a readreplica that temporarily suspends replication activities during the snapshot, and resumes after the snapshot has finished:

Restore a volume snapshot

To restore data from the snapshot, locate the desired snapshot from the Snapshots Console link, right-click on the "Create Volume from Snapshot" link, then select the desired volume type, size, Availability Zone, and click "Yes, Create".

After the data has been restored to a new volume, you can attach it to an instance and mount the storage as per the previous steps. Since the new volume has previous data, do not create a new file system (mkfs in Linux). Simply mount the volume (Linux) and start using the existing file system and data.

