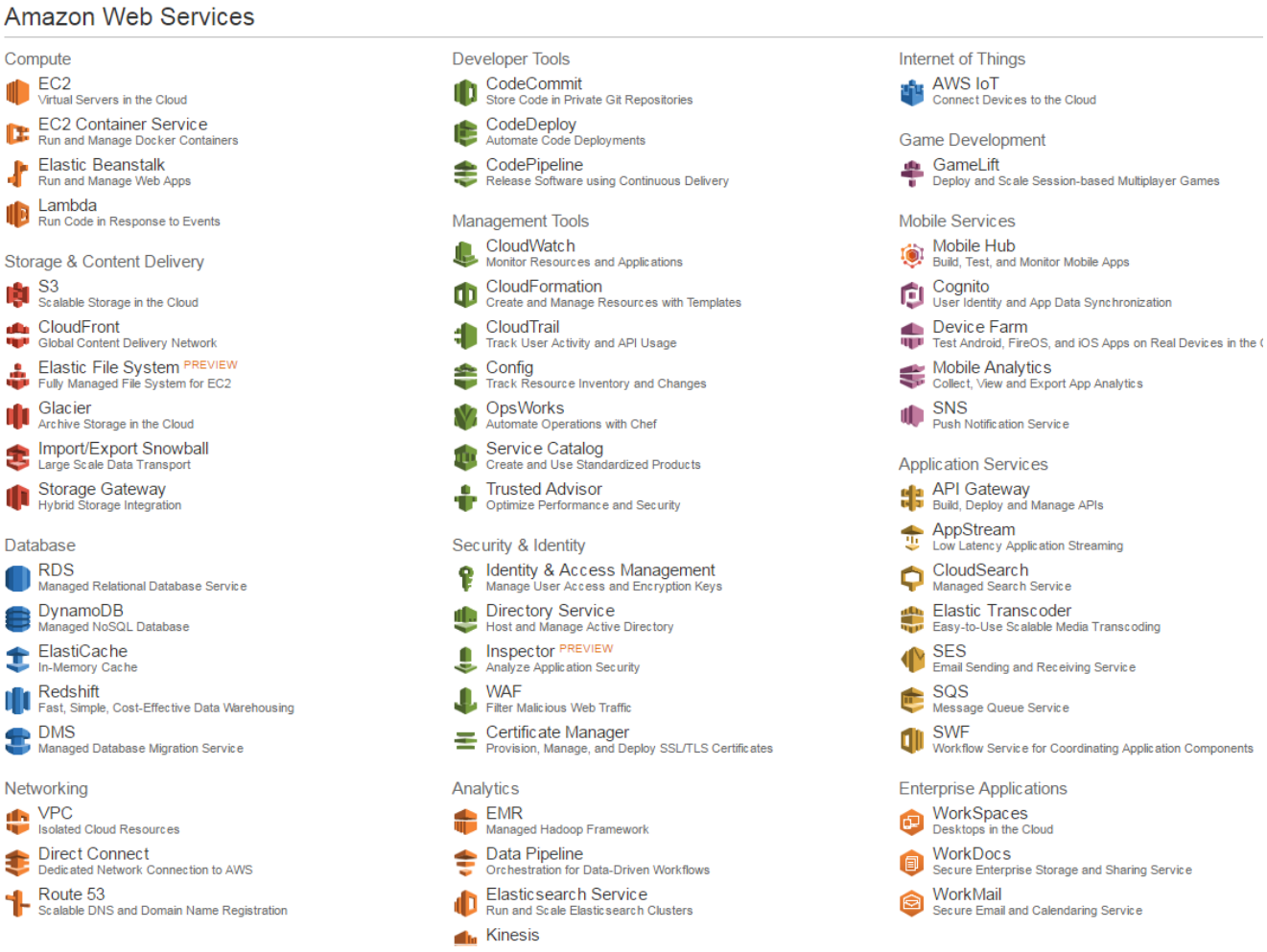
Managing Volumes using Elastic block storage(EBS) by *kvreddi*

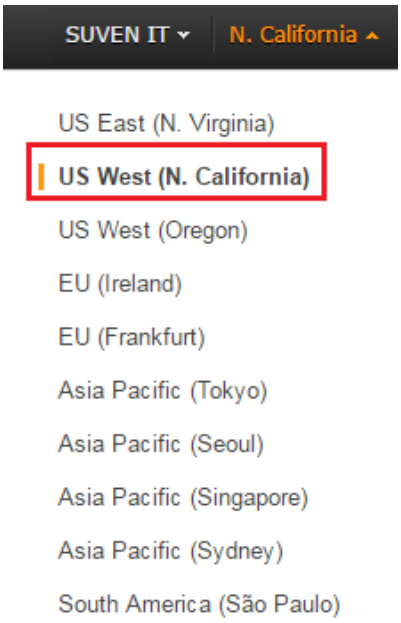
STEP#1: Login to Amazon Web Service Console



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

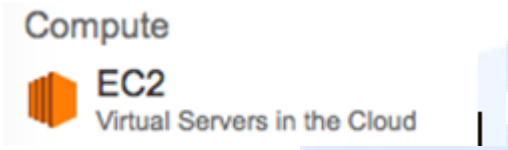
STEP#2: Select the right AWS Region

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 those best suits your business needs to optimize your customer's experience



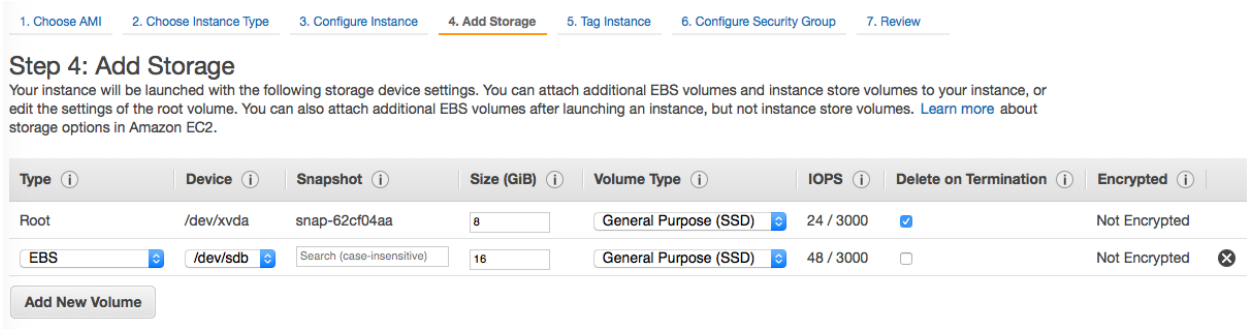
STEP#3: Create an EC2 instance with an additional Elastic Block Storage (EBS)

You can launch an EC2 instance using the EC2 launch wizard.
Select the EC2 service from the Management Console dashboard:



From the dashboard, click **Launch Instance**.

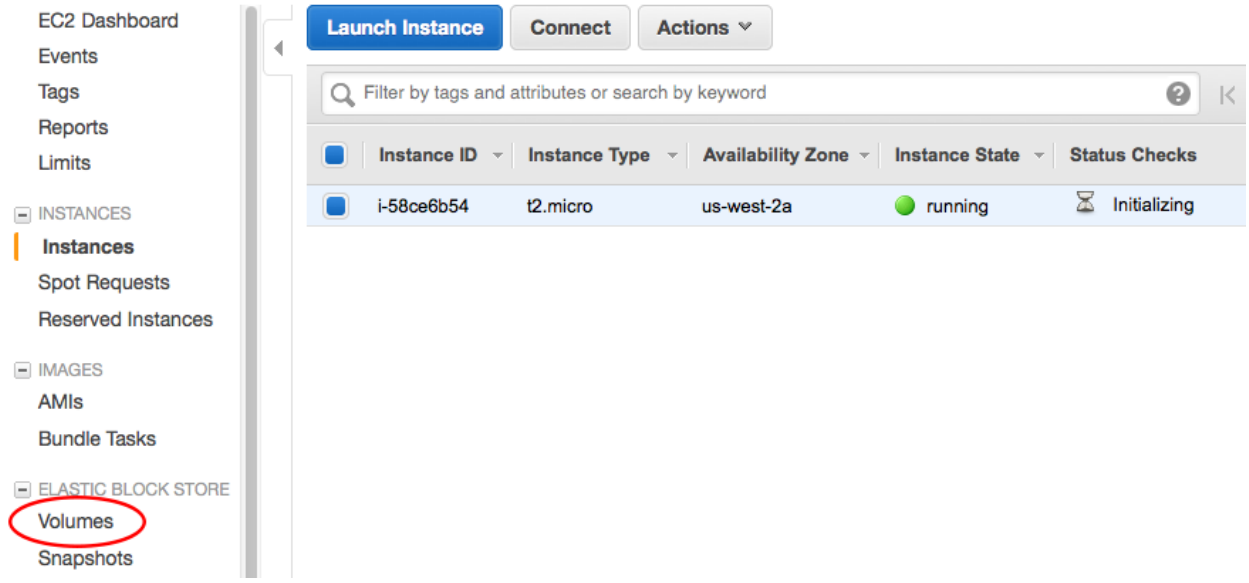
1. The Select an Amazon Machine Image (AMI) page displays a list of basic configurations called Amazon Machine Images (AMIs) that serve as templates for your instance. Select the 64-bit Amazon Linux AMI.
2. On the Select an Instance Type page, do not change any option and click on "Next, Configure Instance Details"
3. On the 3. Configure Instance tab, do not change any option and click "Next, Add Storage".
4. On the 4. Add Storage tab, you can add more 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 and an optional snapshot that will be restored during the creation process.



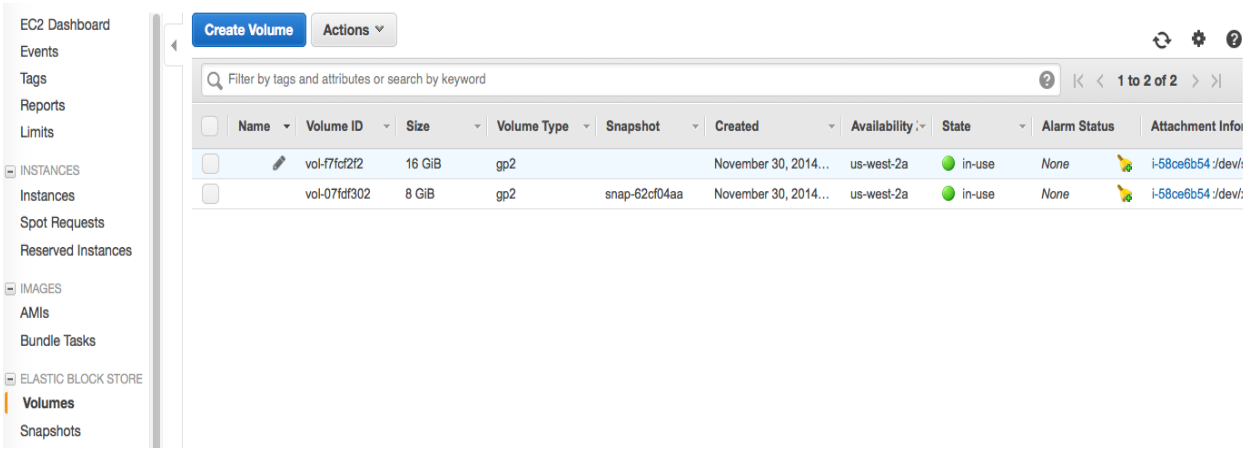
5. On the Review Instance Launch page, click Launch.
6. In the Select an existing key pair or create a new key pair dialog box, select Create a new key pair, then choose a KeyPair name and download it.
7. Select the acknowledgment check box, and then click Launch Instances.
8. A confirmation page will let you know that your instance is launching. Click View Instances to close the confirmation page and return to the console.

On the Instances screen, you can view the status of your instance. It will take a short time for your instance to be launched. When you launch an instance, its initial state is **pending**. After the instance starts, 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 **Volumes** menu item, you will see the EBS volumes used by the previously created EC2 instance.

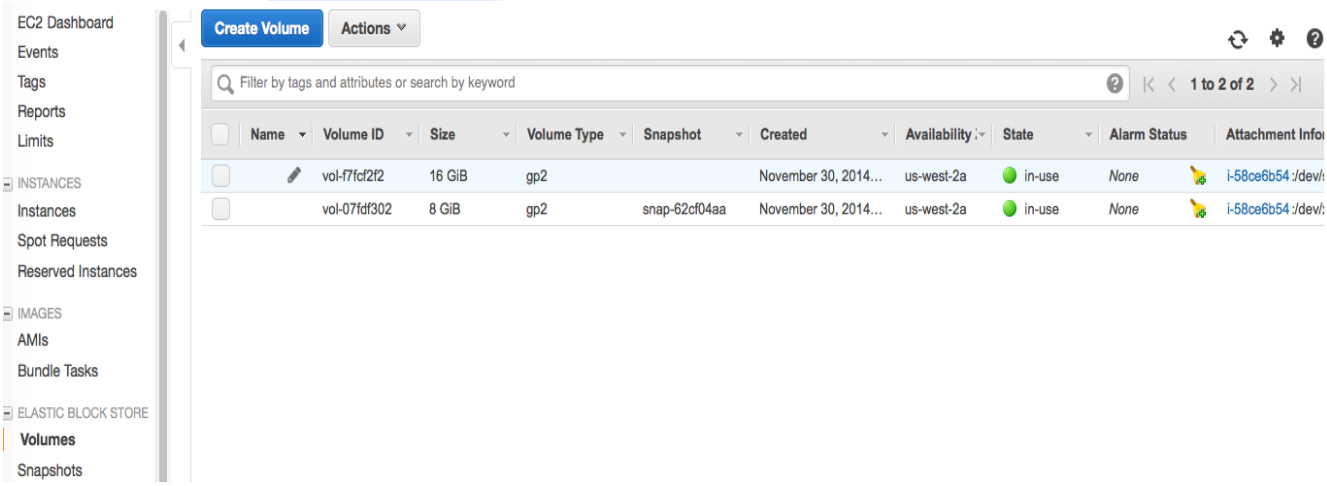


All EBS volumes are listed here, you can check their statuses, attach or detach them to/from the available EC2 instances or destroy them. You can also choose a name for each EBS in order to faster recognize them during future maintenance tasks. Move your mouse cursor near the **Name** cell of the desired volume and a small pencil will appear, then click on the pencil and start writing a meaningful name (for example "OS disk" or "Data Disk").



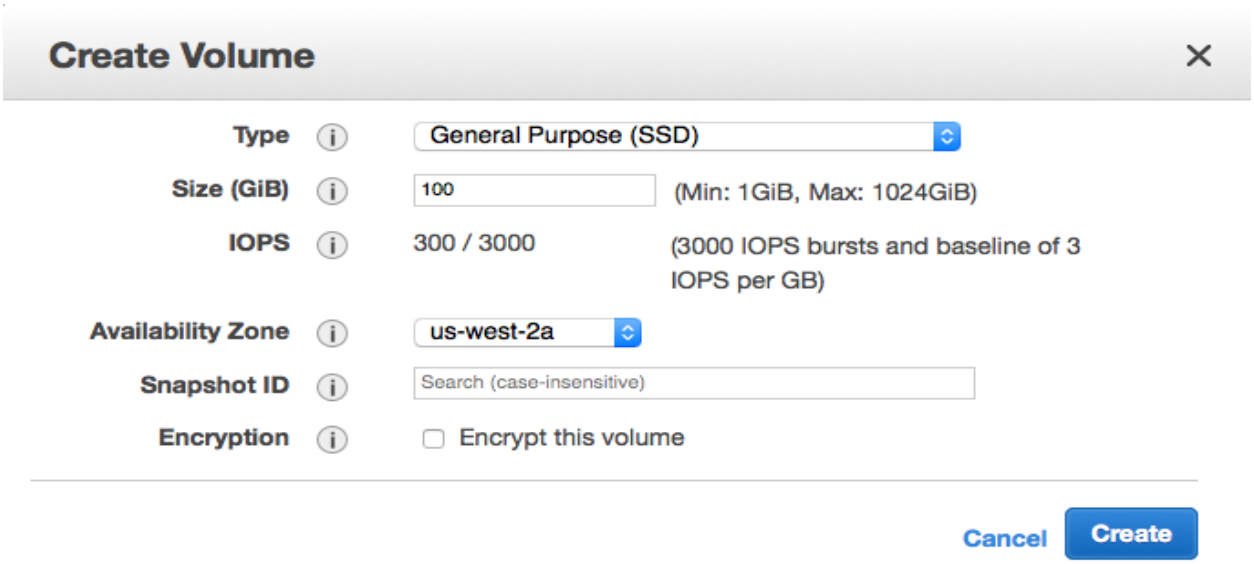
Create a new EBS volume

Open the **Volumes** listing Page, click on the "**Create Volume**" blue button and then a small popup will appear.



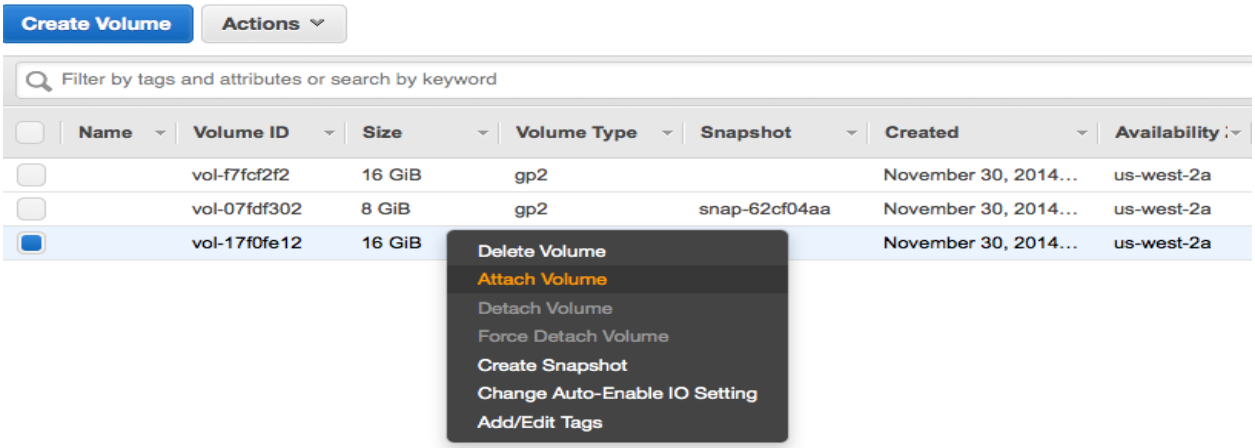
The popup shows you a simple form where you can select the volume **type**, choose the volume **size**, the **Availability Zone**where it will be created, an optional **snapshot image** to be restored after the creation process and if the disk data should be encrypted. Create a new general purpose SSD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

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

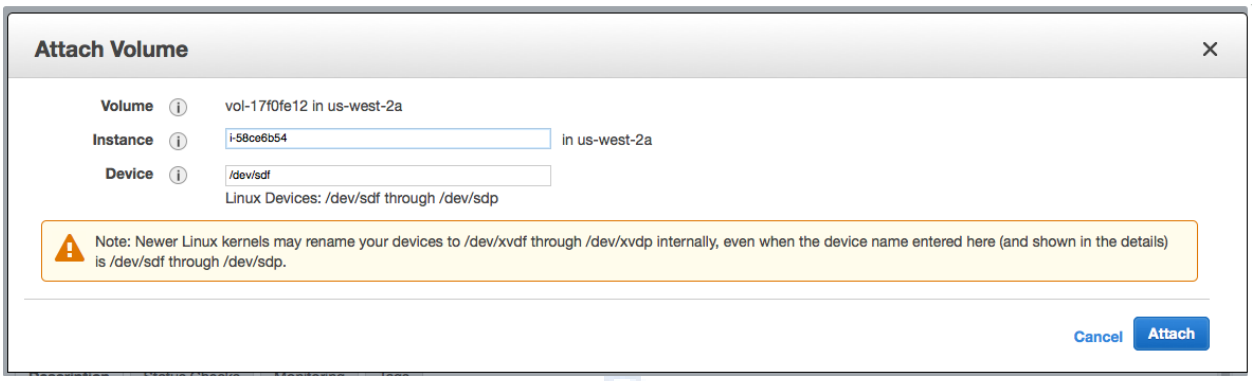


Attach and Detach an EBS volume

In order to use a new EBS volume, you have to **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.



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



After some seconds your new EBS volume is ready to be formatted and used for storing data.

Note: We can attach the volume in the same region, which we created.

Detaching an EBS volume

You can detach an Amazon EBS volume from an instance explicitly or by terminating the instance. However, if the instance that the volume is attached to 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.

The detach a volume you have to select the volume, then click Detach Volume and in the confirmation dialog box, click Yes, Detach.

Create a filesystem on a EBS Volume

New EBS volumes haven't any filesystem, so you cannot start storing data immediately after attaching them to a specific instance.

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

1. Issue the following command to create an ext3 file system 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

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.

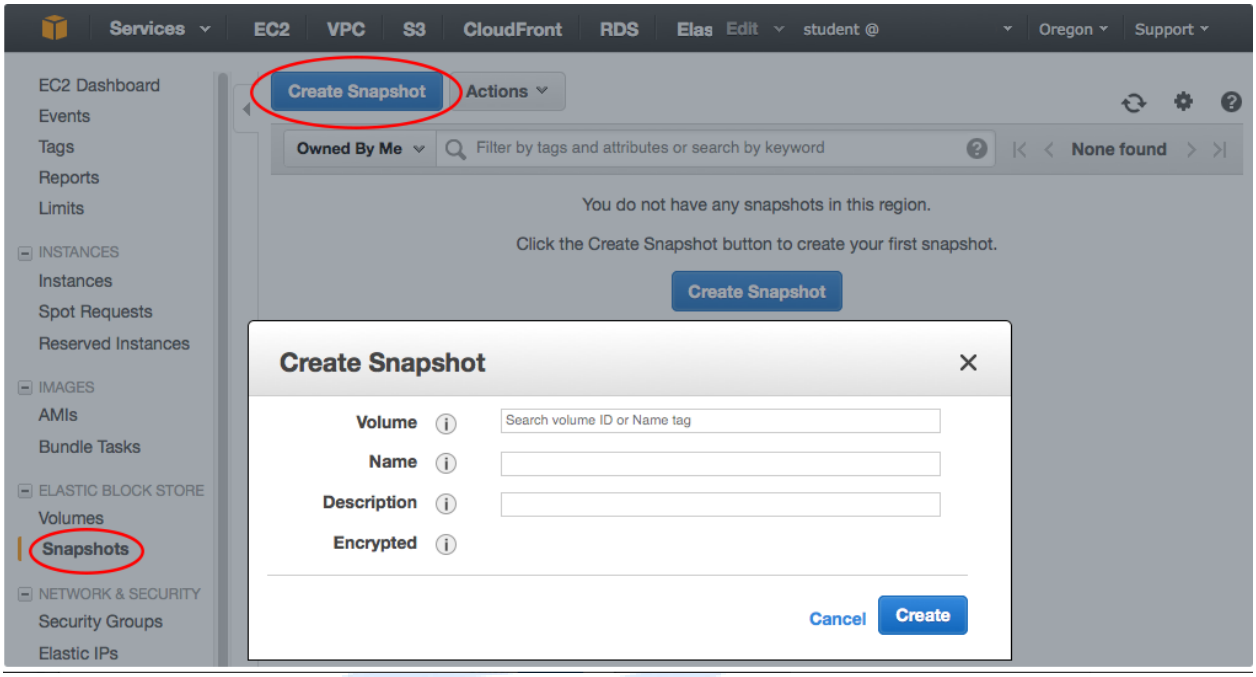
You can take a snapshot of an attached volume that is in use. However, snapshots only capture data that has been written to your Amazon EBS volume at the time the snapshot command is issued. This might exclude any data that has been cached by any applications or the operating system. If you can pause 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 to create a snapshot for, and 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 line up backup expectations with the point-in-time the snapshot is running. Snapshots of databases, for example, 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 immediately.

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