

# EC2 and EBS

## 1. Create an EC2 instance (Ubuntu 18.04, T3 nano).(instance A)

Created an EC2 instance(Rishabh)

	Ketan-Test-I...	i-03dca260e947300ab	t2.nano	us-east-1c		running		2/2 checks ...	None		ec2-52-90-21-234.0
	Rishabh	i-05a1f7c2550813206	t2.nano	us-east-1c		running		2/2 checks ...	None		ec2-18-205-158-22
	Rishabh-Test-A	i-08c470cf1f8743120	t2.nano	us-east-1c		terminated			None		

Instance ID	i-05a1f7c2550813206	Public DNS (IPv4)	ec2-18-205-158-222.compute-1.amazonaws.com
Instance state	running	IPv4 Public IP	18.205.158.222
Instance type	t2.nano	IPv6 IPs	-
Finding	You may not have permission to access AWS Compute Optimizer.	Elastic IPs	
Private DNS	ip-172-31-172-196.ec2.internal	Availability zone	us-east-1c
Private IPs	172.31.172.196	Security groups	launch-wizard-7, view inbound rules.

## Logging in through local system

```
rishabh@rishabh:Downloads$ ssh -i "rishabh.pem" ubuntu@ec2-18-205-158-222.compute-1.amazonaws.com
The authenticity of host 'ec2-18-205-158-222.compute-1.amazonaws.com (18.205.158.222)' can't be established.
ECDSA key fingerprint is SHA256:yFF9D7snSuvy19oOC5e6D7sqVzRDZSVd2JBHwMFC59Q.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-18-205-158-222.compute-1.amazonaws.com,18.205.158.222' (ECDSA) to the list of known hosts.
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-1057-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Wed Feb 19 15:07:50 UTC 2020

System load:  0.02          Processes:      88
Usage of /:   13.6% of 7.69GB   Users logged in:  0
Memory usage: 31%          IP address for eth0: 172.31.172.196
Swap usage:   0%

0 packages can be updated.
0 updates are security updates.

The programs included with the Ubuntu system are free software;
the exact distribution terms for each program are described in the
individual files in /usr/share/doc/*/copyright.

Ubuntu comes with ABSOLUTELY NO WARRANTY, to the extent permitted by
applicable law.

To run a command as administrator (user "root"), use "sudo <command>".
See "man sudo_root" for details.
```

## 2. Create AMI of above instance and launch it. (instance B)

Created AMI with the name Rishabh-AMI

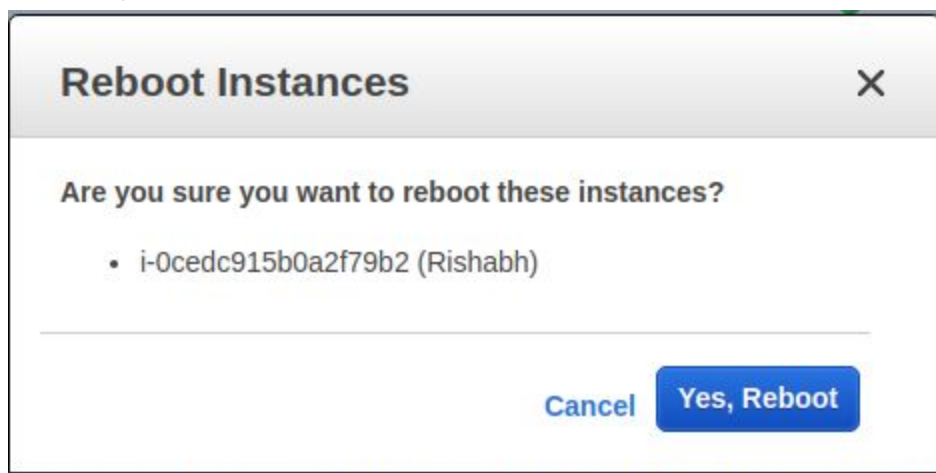




Already attached

```
Last login: Thu Feb 20 08:02:44 2020 from 182.71.160.186
ubuntu@ip-172-31-162-124:~$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
loop0        7:0      0 89.1M  1 loop /snap/core/8268
loop1        7:1      0  18M   1 loop /snap/amazon-ssm-agent/1480
xvda        202:0     0   8G   0 disk
└─xvda1     202:1     0   8G   0 part /
xvdf        202:80    0   8G   0 disk /home/rishabh/ebs
ubuntu@ip-172-31-162-124:~$
```

Rebooting



EBS auto attached with instance

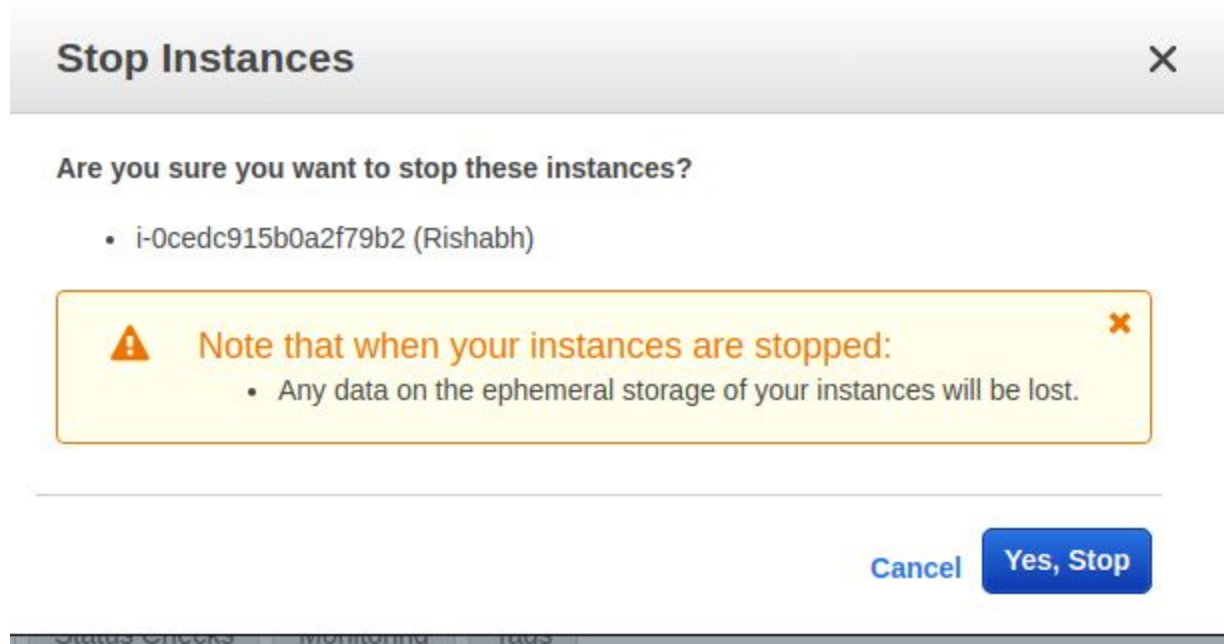
```
Last login: Thu Feb 20 08:11:34 2020 from 61.12.91.218
ubuntu@ip-172-31-162-124:~$ lsblk
NAME        MAJ:MIN RM  SIZE RO TYPE MOUNTPOINT
loop0        7:0      0 89.1M  1 loop /snap/core/8268
loop1        7:1      0  18M   1 loop /snap/amazon-ssm-agent/1480
xvda        202:0     0   8G   0 disk
└─xvda1     202:1     0   8G   0 part /
xvdf        202:80    0   8G   0 disk /home/rishabh/ebs
ubuntu@ip-172-31-162-124:~$
```

5. Make some mistake in fstab file, stop and start the instance, then troubleshoot it.

Entered EBS in fstab file and detached the volume from instance.

```
LABEL=cloudimg-rootfs / ext4 defaults,discard 0 0
UUID=78913bab-9154-4b21-b15b-191830a7f24a /home/rishabh/ebs ext4 defaults 0 0
```

Now stopping and starting the instance again



Started Again

<input type="checkbox"/>	Name	Instance ID	Instance Type	Availability Zone	Instance State	Status Checks	Alarm Status	Public DNS (IP)
<input type="checkbox"/>	Rishabh	i-0cedc915b0a2f79b2	t2.micro	us-east-1c	running	2/2 checks ...	None	ec2-3-94-179-...

No response on doing SSH now

```
rishabh@rishabh:Downloads $ ssh -i "rishabh.pem" ubuntu@ec2-3-94-179-156.compute-1.amazonaws.com
```

Now detach the root /dev/sda1 from the instance A and attach it to another instanceB



Size	8 GiB 
Created	February 20, 2020 at 1:22:56 PM UTC+5:30
State	in-use
Attachment information	<a href="#">i-0cedc915b0a2f79b2</a> ( <a href="#">Rishabh</a> ):/dev/sda1 (detaching)
Volume type	gp2
Product codes	-

Size	8 GiB
Created	February 20, 2020 at 1:22:56 PM UTC+5:30
State	in-use
Attachment information	<a href="#">i-03f80857a0c02cf27</a> ( <a href="#">Rishabh</a> <a href="#">b</a> ):/dev/sdf (attached)
Volume type	gp2

Now login to instance B and mount the new attached volume to fix the /etc/fstab file

```
ubuntu@ip-172-31-105-104:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            481M   0  481M   0% /dev
tmpfs           99M   756K  98M   1% /run
/dev/xvdf1      7.7G  1.1G  6.7G  14% /
tmpfs           492M   0  492M   0% /dev/shm
tmpfs           5.0M   0   5.0M   0% /run/lock
tmpfs           492M   0  492M   0% /sys/fs/cgroup
/dev/loop0      90M   90M   0 100% /snap/core/8268
/dev/loop1      18M   18M   0 100% /snap/amazon-ssm-agent/1480
tmpfs           99M   0   99M   0% /run/user/1000
/dev/xvdf1      7.7G  1.1G  6.7G  14% /home/ubuntu/ebs
ubuntu@ip-172-31-105-104:~$ cd ebs
ubuntu@ip-172-31-105-104:~/ebs$ ls
bin  dev  home  initrd.img.old  lib64  media  opt  root  sbin  srv  tmp  var
boot  etc  initrd.img  lib  lost+found  mnt  proc  run  snap  sys  usr  vmlinu
Terminator
ubuntu@ip-172-31-105-104:~/ebs$ sudo vi /etc/fstab
sudo: unable to resolve host ip-172-31-105-104: Resource temporarily unavailable
ubuntu@ip-172-31-105-104:~/ebs$ sudo vi etc/fstab
sudo: unable to resolve host ip-172-31-105-104: Resource temporarily unavailable
ubuntu@ip-172-31-105-104:~/ebs$ sudo vi etc/fstab
sudo: unable to resolve host ip-172-31-105-104: Resource temporarily unavailable
ubuntu@ip-172-31-105-104:~/ebs$ sudo umount /dev/xvdf1
sudo: unable to resolve host ip-172-31-105-104: Resource temporarily unavailable
umount: /home/ubuntu/ebs: target is busy.
ubuntu@ip-172-31-105-104:~/ebs$ cd ..
ubuntu@ip-172-31-105-104:~$ sudo umount /dev/xvdf1
sudo: unable to resolve host ip-172-31-105-104: Resource temporarily unavailable
```

Make the changes

```

LABEL=cloudimg-rootfs / ext4 defaults,discard 0 0
UUID=78913bab-9154-4b21-b15b-191830a7f24a /home/rishabh/ebs ext4 defaults 0 0
~
~
~
~

```

Unmount it

```

ubuntu@ip-172-31-105-104:~$ df -h
Filesystem      Size  Used Avail Use% Mounted on
udev            481M   0    481M   0% /dev
tmpfs           99M   756K   98M    1% /run
/dev/xvdf1      7.7G  1.1G   6.7G   14% /
tmpfs           492M   0    492M   0% /dev/shm
tmpfs           5.0M   0    5.0M   0% /run/lock
tmpfs           492M   0    492M   0% /sys/fs/cgroup
/dev/loop0      90M   90M    0 100% /snap/core/8268
/dev/loop1      18M   18M    0 100% /snap/amazon-ssm-agent/1480
tmpfs           99M   0    99M   0% /run/user/1000
ubuntu@ip-172-31-105-104:~$

```

Now go back to console and detach it from instance B and attach it back to instance A

Size	8 GiB
Created	February 20, 2020 at 1:22:56 PM UTC+5:30
State	in-use
Attachment information	i-03f80857a0c02cf27 (Rishabh b):/dev/sdf (detaching)
Volume type	gp2
Product codes	-

Attach it back to Instance A

Volume attached

Now we can login back to the instance A

File is fixed now

## 6. Resize the EBS from 8 to 10GB



## Resizing

### Modify Volume

Volume ID

vol-0430f701e78b3b536

Volume Type

General Purpose SSD (gp2)

Size

10

(Min: 1 GiB, Max: 16384 GiB)

iopts

100 / 3000

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

Cancel

Modify

## Asking for permission

### Modify Volume

Are you sure that you want to modify volume vol-0430f701e78b3b536?

It may take some time for performance changes to take full effect.

You may need to extend the OS file system on the volume to use any newly-allocated space.

Learn more about resizing an EBS volume on [Linux](#) and [Windows](#).

Cancel

No

Yes

## Volume Resized

<div><div><div><div></div><div>search : i-09959208de52780b0</div></div><div><div>Add filter</div></div></div><div><div>?</div><div>&lt;&lt;</div><div>&lt;</div><div>1 to 2 of 2</div><div>&gt;</div><div>&gt;&gt;</div></div></div>									
<div><div></div></div>	<div>Name</div>	<div>Volume ID</div>	<div>Size</div>	<div>Volu</div>	<div>IOP</div>	<div>Snapshot</div>	<div>Created</div>	<div>Availability Zone</div>	<div>State</div>
<div><div></div></div>	Rishabh	vol-0430f701...	10 GiB	gp2	100		February 19, 2020 at 8:52:53 PM U...	us-east-1c	<div><div></div>in-use</div>
<div><div></div></div>		vol-0c2d961...	8 GiB	gp2	100	snap-0fb4fd56...	February 19, 2020 at 8:44:08 PM U...	us-east-1c	<div><div></div>in-use</div>

## 7. SSH from one instance A to instance B.

First scp rishabh.pem file from local system to instance A. Login into instance A and check the file is present or not

```
rishabh@rishabh:Downloads$ scp -i "rishabh.pem" rishabh.pem ubuntu@18.205.158.222:~
rishabh.pem
rishabh@rishabh:Downloads$ ssh -i "rishabh.pem" ubuntu@ec2-18-205-158-222.compute-1.amazonaws.com
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-1057-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Wed Feb 19 15:56:14 UTC 2020

System load:  0.0               Processes:    87
Usage of /:   13.8% of 7.69GB   Users logged in:  0
Memory usage: 29%              IP address for eth0: 172.31.172.196
Swap usage:   0%

0 packages can be updated.
0 updates are security updates.

Last login: Wed Feb 19 15:52:11 2020 from 103.83.127.156
ubuntu@ip-172-31-172-196:~$ ls
rishabh.pem
ubuntu@ip-172-31-172-196:~$
```

Now ssh from instance A to instance B using the pem file.

```
ubuntu@ip-172-31-172-196:~$ ssh -i "rishabh.pem" ubuntu@ec2-54-166-117-71.compute-1.amazonaws.com
Welcome to Ubuntu 18.04.3 LTS (GNU/Linux 4.15.0-1057-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Wed Feb 19 15:57:38 UTC 2020

System load:  0.0               Processes:    87
Usage of /:   13.8% of 7.69GB   Users logged in:  0
Memory usage: 29%              IP address for eth0: 172.31.204.42
Swap usage:   0%

0 packages can be updated.
0 updates are security updates.

Last login: Wed Feb 19 15:47:14 2020 from 103.83.127.156
ubuntu@ip-172-31-204-42:~$
```

## 8. Copy the EBS in different region( oregon).

Created the snapshot of that EBS

Owned By Me Filter by tags and attributes or search by keyword 1 to 7 of 7

Name	Snapshot ID	Size	Description	Status	Started
<input type="checkbox"/>	snap-010de9183bb...	8 GiB	Created by CreateImage(i-0df9d9af8109c4b4a) for ami-0d8558...	completed	February 19, 20
<input type="checkbox"/>	snap-08da938fa64b...	8 GiB	Created by CreateImage(i-03dca260e947300ab) for ami-08925...	completed	February 19, 20
<input type="checkbox"/>	snap-0b748bba03c...	10 GiB	Created by CreateImage(i-0ac45881f26ced5af) for ami-0066ec...	completed	February 19, 20
<input type="checkbox"/>	snap-0c4683fd84e7...	8 GiB	Created by CreateImage(i-0df9d9af8109c4b4a) for ami-0d8558...	completed	February 19, 20
<input checked="" type="checkbox"/>	rishabhsnap	10 GiB	instanceBsnap	completed	February 19, 20
<input type="checkbox"/>	snap-0f8e45b03e43...	8 GiB	Created by CreateImage(i-0ac45881f26ced5af) for ami-0066ec...	completed	February 19, 20
<input type="checkbox"/>	snap-0fb4fd56d566...	8 GiB	Created by CreateImage(i-05a1f7c2550813206) for ami-08c4cc...	completed	February 19, 20

Snapshot: snap-0ddff1594cae5634a (rishabhsnap)

Description Permissions Tags

Snapshot ID: snap-0ddff1594cae5634a Progress: 100%  
Status: completed Capacity: 10 GiB

Copy the snapshot to Oregon

### Copy Snapshot

This snapshot, **snap-0ddff1594cae5634a (rishabhsnap)**, will be copied to a new snapshot. Set the new snapshot settings below:

**Destination Region**

**Description**

**Encryption** ☐ Encrypt this snapshot

Cancel Copy

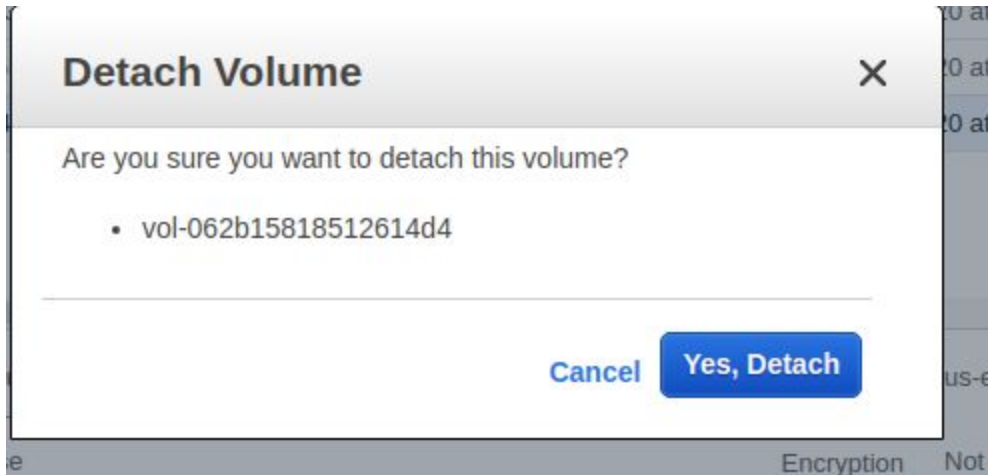
Now we can check the snapshot in Oregon region and create another copy of the volume in that region.

9. Deattach the root EBS, create its snapshot, than create the AMI and run it as instance such that nginx should be preinstalled at the boot time of instance.

Installed nginx on one instance

```
ubuntu@ip-172-31-172-196:~$ nginx -v
nginx version: nginx/1.14.0 (Ubuntu)
ubuntu@ip-172-31-172-196:~$
```

Detached volume after stopping the machine



Creating the snapshot of that volume

Create Snapshot

Volume vol-062b15818512614d4 ⓘ

Description Rishabh Snapshot of instance 1 with nginx ⓘ

Encrypted Not Encrypted ⓘ

Key (128 characters maximum)	Value (256 characters maximum)
owner	rishabh
purpose	for creating ami and new instance with nginx pre installed

Add Tag 48 remaining (Up to 50 tags maximum)

\* Required Cancel Create Snapshot

Creating image from the snapshot

Create Image from EBS Snapshot

Name Rishabh Ami Nginx

Architecture ⓘ x86\_64

Root device name ⓘ /dev/sda1

RAM disk ID ⓘ Use default

Description Ami with nginx pre installed

Virtualization type ⓘ Hardware-assisted virtualization

Kernel ID ⓘ Use default


Block Device Mappings

Volume Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Throughput (MB/s) ⓘ	Delete on Termination ⓘ	Encrypted ⓘ
Root	/dev/sda1	snap-03d0b579a8426c59f	8	General Purpose S	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

Add New Volume

## Creating new instance from the AMI created

▼ AMI Details [Edit AMI](#)

 **Rishabh Ami Nginx - ami-0e2be8d8ff66e06bb**  
Ami with nginx pre installed  
Root Device Type: ebs    Virtualization type: hvm


▼ Instance Type [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.nano	Variable	1	0.5	EBS only	-	Low to Moderate

▼ Security Groups [Edit security groups](#)

[Cancel](#) [Previous](#) [Launch](#)

## Instance created with the saved AMI

<input checked="" type="checkbox"/>	Rishabh-Test	i-065896489e7ed0e01	t2.nano	us-east-1c	<span>running</span>	 Initializing	None
Secondary private IPs							
VPC ID		vpc-d38d68b7 (default)					
Subnet ID		subnet-06680a5b651f104dc					
Scheduled events				No scheduled events			
AMI ID				Rishabh Ami Nginx (ami-0e2be8d8ff66e06bb)			
Platform				-			

## Logging in the new instance and checking the nginx version. It is pre-installed.

```
ubuntu@ip-172-31-172-196:~$ nginx -v
nginx version: nginx/1.14.0 (Ubuntu)
ubuntu@ip-172-31-172-196:~$ logout
Connection to ec2-174-129-57-162.compute-1.amazonaws.com closed.
rishabh@rishabh:Downloads$ ssh -i "rishabh.pem" ubuntu@ec2-54-173-242-107.compute-1.amazonaws.com
The authenticity of host 'ec2-54-173-242-107.compute-1.amazonaws.com (54.173.242.107)' can't be
ECDSA key fingerprint is SHA256:YZZBtCqdMvcsEVuQi56bvIVN9hFUjBlm1NFP9ALie4E.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added 'ec2-54-173-242-107.compute-1.amazonaws.com,54.173.242.107' (ECDSA)
Welcome to Ubuntu 18.04.4 LTS (GNU/Linux 4.15.0-1060-aws x86_64)

 * Documentation:  https://help.ubuntu.com
 * Management:    https://landscape.canonical.com
 * Support:       https://ubuntu.com/advantage

System information as of Wed Feb 19 17:51:00 UTC 2020

System load:  0.18           Processes:           93
Usage of /:   19.9% of 7.69GB Users logged in:     0
Memory usage: 32%           IP address for eth0: 172.31.50.116
Swap usage:   0%

0 packages can be updated.
0 updates are security updates.

Last login: Wed Feb 19 17:25:56 2020 from 103.83.127.158
ubuntu@ip-172-31-50-116:~$ nginx -v
nginx version: nginx/1.14.0 (Ubuntu)
ubuntu@ip-172-31-50-116:~$
```