

## ❖ Configure instance details with all default settings.

The screenshot shows the 'Configure Instance Details' step of the EC2 Launch Instance Wizard. It includes fields for Number of Instances (1), Purchasing option (Request Spot instances), Network (vpc-9610c2f2 (default)), Subnet (No preference (default subnet in any Availability Zone)), Auto-assign Public IP (Use subnet setting (Enable)), IAM role (None), Shutdown behavior (Stop), Enable termination protection (Protect against accidental termination), Monitoring (Enable CloudWatch detailed monitoring), and Tenancy (Shared - Run a shared hardware instance). A 'Launch into Auto Scaling Group' button is also present.

► Advanced Details

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Storage](#)

The screenshot shows the 'Add Storage' step of the EC2 Launch Instance Wizard. It lists a single volume entry for the Root device: /dev/sda1, using a snapshot named snap-f711c830, with a size of 8 GiB, a General Purpose SSD (GP2) volume type, and a throughput of 100 / 3000 MB/s. The volume is marked for deletion on termination and is not encrypted. A 'Delete on Termination' checkbox is checked. A 'Not Encrypted' status is shown. A 'Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage.' message is displayed in a box.

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Tags](#)

The screenshot shows the 'Review and Launch' step of the EC2 Launch Instance Wizard. It displays the summary of the instance configuration, including the AMI, instance type, number of instances, and selected options. Buttons for 'Cancel', 'Previous', 'Review and Launch', and 'Next: Add Tags' are visible at the bottom.

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**Step 5: Add Tags**  
A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. [Learn more about tagging your Amazon EC2 resources.](#)

Key	(127 characters maximum)	Value	(255 characters maximum)
Name	elitestproj-web1		

Add another tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

❖ **Security Group:** We have to create the security group in order to control the traffic to your instance.

**Step 6: Configure Security Group**  
A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more about Amazon EC2 security groups.](#)

Assign a security group:  Create a new security group  Select an existing security group

Security group name: elitestproj-SG  
Description: elitestproj-SG

Type	Protocol	Port Range	Source
SSH	TCP	22	My IP: XXXXXXXXXX
HTTP	TCP	80	Anywhere: 0.0.0.0/0, ::0

Add Rule

Cancel Previous Review and Launch

## ❖ Launch Instance: Review your instance configuration and choose "Launch".

**Step 7: Review Instance Launch**

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

**AMI Details**

CentOS 6 (x86\_64) - with Updates HVM  
Free tier eligible  
CentOS Linux 6 x86\_64 HVM EBS 1602  
Root Device Type: ebs Virtualization type: hvm

Hourly Software Fees: \$0.00 per hour on t2.micro instance (Additional taxes may apply).  
Software charges will begin once you launch this AMI and continue until you terminate the instance.

By launching this product, you will be subscribed to this software and agree that your use of this software is subject to the pricing terms and the seller's End User License Agreement

**Instance Type**

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

**Security Groups**

elbtestproj-SG  
elbtestproj-SG

Type Protocol Port Range Source

**Launch**

❖ Create a key pair: Select "Create a new key pair" and assign a name. The key pair file (.pem) will download automatically - save this in a safe place as we will later use this file to log in to the instance. Finally, choose "Launch Instances" to complete the set up.

**Step 7: Review Instance Launch**

Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

**AMI Details**

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**Instance Type**

Instance Type	ECUs	vCPUs
i2.micro	Variable	1

**Security Groups**

elbtestproj-SG

**Select an existing key pair or create a new key pair**

Create a new key pair  
Key pair name: elbtestproj-ncalifornia  
Download Key Pair

You have to download the private key file (.pem file) before you can continue. Store it in a secure and accessible location. You will not be able to download the file again after it's created.

**Launch Instances**

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## Adding user in centos ec2 instance with sudo privileges:

- ❖ Login to ec2 instance, switch to root user & create one user and open sudoers file as shown below:

```
imran@DevOps:~/keys$ ssh -i elbtestproj-ncalifornia.pem centos@54.215.249.185
The authenticity of host '54.215.249.185 (54.215.249.185)' can't be established.
RSA key fingerprint is SHA256:t79U8qI3X7oonppHac7puSDusdY256jcSBhxblibFbk.
Are you sure you want to continue connecting (yes/no)? yes
Warning: Permanently added '54.215.249.185' (RSA) to the list of known hosts.
[centos@ip-172-31-13-138 ~]$ sudo -i
[root@ip-172-31-13-138 ~]# useradd devops
[root@ip-172-31-13-138 ~]# passwd devops
Changing password for user devops.
New password:
BAD PASSWORD: it is too simplistic/systematic
Retype new password:
Sorry, passwords do not match.
New password:
BAD PASSWORD: it is based on a dictionary word
Retype new password:
passwd: all authentication tokens updated successfully.
[root@ip-172-31-13-138 ~]# visudo
```

- ❖ Find entry for root user, below that add similar entry for your user.

```
Defaults    secure_path = /sbin:/bin:/usr/sbin:/usr/bin

## Next comes the main part: which users can run what software on
## which machines (the sudoers file can be shared between multiple
## systems).
## Syntax:
##
##       user      MACHINE=COMMANDS
##
## The COMMANDS section may have other options added to it.
##
## Allow root to run any commands anywhere
root      ALL=(ALL)      ALL
devops   ALL=(ALL)      ALL

## Allows members of the 'sys' group to run networking, software,
## service management apps and more.
# %sys  ALL = NETWORKING, SOFTWARE, SERVICES, STORAGE, DELEGATING, PROCESSES, LOCATE, DRIVERS

## Allows people in group wheel to run all commands
# %wheel      ALL=(ALL)      ALL

## Same thing without a password
```

❖ Open SSHD\_CONFIG file for Enabling password authentication.

```
[root@ip-172-31-13-138 ~]# vi /etc/ssh/sshd_config
```

```
# For this to work you will also need host keys in /etc/ssh/ssh_known_hosts
#RhostsRSAAuthentication no
# similar for protocol version 2
#HostbasedAuthentication no
# Change to yes if you don't trust ~/.ssh/known_hosts for
# RhostsRSAAuthentication and HostbasedAuthentication
#IgnoreUserKnownHosts no
# Don't read the user's ~/.rhosts and ~/.shosts files
#IgnoreRhosts yes

# To disable tunneled clear text passwords, change to no here!
#PasswordAuthentication no
#PermitEmptyPasswords no
PasswordAuthentication yes

# Change to no to disable s/key passwords
#ChallengeResponseAuthentication yes
ChallengeResponseAuthentication no

# Kerberos options
#KerberosAuthentication no
#KerberosOrLocalPasswd yes
#KerberosTicketCleanup yes
#KerberosGetAFSToken no
```

- ❖ Restart SSHD service. And now you can login to your user.

```
[root@ip-172-31-13-138 ~]# vi /etc/ssh/sshd_config
[root@ip-172-31-13-138 ~]# service sshd restart
Stopping sshd:                                     [  OK  ]
Starting sshd:                                     [  OK  ]
[root@ip-172-31-13-138 ~]# █
```



## 9. Amazon EBS

Amazon Elastic Block Store (Amazon EBS) provides persistent block storage volumes for use with Amazon EC2 instances in the AWS Cloud. Each Amazon EBS volume is automatically replicated within its Availability Zone to protect you from component failure, offering high availability and durability. Amazon EBS volumes offer the consistent and low-latency performance needed to run your workloads. With Amazon EBS, you can scale your usage up or down within minutes, all while paying a low price for only what you provision.

Some of the key **features and benefits** that EBS volumes have to offer:

- High performance volumes
- Availability
- Encryption capabilities
- Snapshot capabilities
- Access Management
- Elastic Volumes

**Note:** EBS volumes cannot be copied from one AWS region to another. To make a volume available outside of the Availability Zone, you can create a snapshot and restore that snapshot to a new volume anywhere in that region. You can copy snapshots to other regions and then restore them to new volumes there, making it easier to leverage multiple AWS regions for geographical expansion, data centre migration, and disaster recovery.

### Amazon EBS Volume Types:

There are three different types of EBS volumes, each with their own sets of performance characteristics and associated costs:

**General purpose volumes (SSD):** This volume provides base performance of 3 IOPS/GiB, with the ability to burst to 3,000 IOPS for extended periods of time. Gp2 volumes are ideal for a broad range of use cases such as boot volumes, small and medium-size databases, and development and test environments. Gp2 volumes support up to 10,000 IOPS and 160 MB/s of throughput.

**Provisioned IOPS volumes (SSD):** With Provisioned IOPS SSD (io1) volumes, you can provision a specific level of I/O performance. Io1 volumes support up to 20,000 IOPS and 320 MB/s of throughput. This allows you to predictably scale to tens of thousands of IOPS per EC2 instance.

**Magnetic volumes:** Magnetic volumes are backed by magnetic drives and are suited for workloads where data is accessed infrequently, and scenarios where low-cost storage for small volume sizes is important. These volumes deliver approximately 100 IOPS on average, with burst capability of up to hundreds of IOPS, and they can range in size from 1 GiB to 1 TiB.

### Creating, attaching, formatting & mounting EBS Volume to an EC2 instance:

Before we start knowing how to create Volume, let us create an EC2 instance of CentOS 6.

To view and access your account's EBS Volumes using **AWS Management Console**, simply select the Volumes option from the EC2 dashboard's navigation pane.

Click Volumes in the left pane, we can see Volume Management Dashboard. From that select the **Create Volume** option. This will pop up the Create Volume Dashboard as shown below:

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Snapshot	Created	Availability Zone	State	Alarm Status
vol-0120e9ad...	March 5, 2017 at 7:5...	us-west-1a	in-use	None
vol-0c091c40...	March 5, 2017 at 7:4...	us-west-1a	in-use	None
vol-f711c830	March 5, 2017 at 7:4...	us-west-1a	in-use	None

- ❖ Fill in the details as required in the Create Volume dialog box. Here I created a sample 5-GB general purpose volume.
- ❖ After filling the configuration settings, select Create to complete the volume creation process. The new volume will take a few minutes to be available for use as shown in the below figure. Once the volume is created, we can now attach this volume to your running instance.

Name	Volume ID	Size	Volume Type	IOPS	Snapshot	Created	Availability Zone	State	Alarm Status
vol-0922de55a25743279	5 GiB	gp2	100 / 3000		snap-f711c830	March 5, 2017 at 7:4...	us-west-1a	available	None
vol-0c091c40...	8 GiB	gp2	100 / 3000			March 5, 2017 at 7:4...	us-west-1a	in-use	None

- ❖ The created volume is available for use. We will tag the volume by a name which is used for future identification.

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The screenshot shows the AWS EC2 Management Console with the 'Volumes' section selected. A volume named 'vp-web01-vol1' is selected. The 'Tags' tab is active, showing a single tag 'Name' with value 'vp-web01-vol1'. The 'Actions' tab is also visible.

- ❖ Finally attach the volume to ec2 instance. We can attach multiple volumes to a single instance at a time, with each volume having a unique device name. Some of these device names are reserved, for example, /dev/sda1 is reserved for the root device volume.
- ❖ To attach a volume, select the volume which is available for use from the Volume Management dashboard. Then select the Actions tab and click on the Attach Volume option. This will pop up the Attach Volume dialog box, as shown below:

The screenshot shows the AWS EC2 Management Console with the 'Volumes' section selected. A volume named 'vp-web01-vol1' is selected. An 'Attach Volume' dialog box is open, showing the selected volume 'vp-web01-vol1', the instance 'i-0d1cd9517fa97c28d (vp-web01) (running)', and the device '/dev/sdf'. The 'Attach' button is highlighted.

Type your instance ID in the Instance field and provide a suitable name in the Device field as shown. Here, I provided the recommended device name of /dev/sdf to this volume. Click on Attach

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once you given the details. The volume attachment process takes a few minutes to complete. You are now ready to make the volume accessible from your instance.

### Mounting Volume to the instance:

After the volume is attached to an instance, you can format it and use it like other block device. Here I'm using the same EC2 instance (CentOS6) that we created earlier. To get started, login to the running instance using SSH.

As it is a CentOS machine by default it will login to the centos user. So, run the following command to login to the root user and run the command to list the partitions of your instance. You should see a default /dev/xvda partition along with its partition table and an unformatted disk partition with the name /dev/xvdf as shown in the following screenshot. The /dev/xvdf command is the newly added EBS volume that need to be formatted.

```
Last login: Sun Mar  5 14:13:03 2017 from 183.82.216.42
[centos@ip-172-31-11-88 ~]$ clear
[centos@ip-172-31-11-88 ~]$ sudo -i
[root@ip-172-31-11-88 ~]# fdisk -l

Disk /dev/xvda: 8589 MB, 8589934592 bytes
255 heads, 63 sectors/track, 1044 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00057cbb

      Device Boot      Start        End      Blocks   Id  System
/dev/xvdal    *          1       1045     8387584   83  Linux

Disk /dev/xvdf: 5368 MB, 5368709120 bytes
255 heads, 63 sectors/track, 652 cylinders
Units = cylinders of 16065 * 512 = 8225280 bytes
Sector size (logical/physical): 512 bytes / 512 bytes
I/O size (minimum/optimal): 512 bytes / 512 bytes
Disk identifier: 0x00000000

[root@ip-172-31-11-88 ~]#
```

Now create new partition with the available disk partition as shown below.

# **fdisk /dev/xvdf**

Use **m** to list out various options that can be used in fdisk.

Use **p** to list out the partition information first and

Use **n** to create a new partition.

Follow the steps as shown in the below screenshot.