

# Elastic Cloud Compute

# Introduction

Provides scalable computing service

Key pair consist of public and private key & the public key is with AWS stores and private key with users.(i.e, public-key cryptography)

- We can launch as many virtual server as we need by use of ec2.
  - Ec2 instance login can be performed with key pair.
  - With EC2 we only pay for what we use.
  - We can have 5000 key-pair per region.
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# Key-pair formats

1. OpenSSH
2. PuTTY

If we do not set these permission then we can not connect to the instance.

1. To create key which is compatible with OpenSSH we use **.pem** format.
2. To create key which is compatible with PuTTY we use **.ppk** format.

## NOTE:

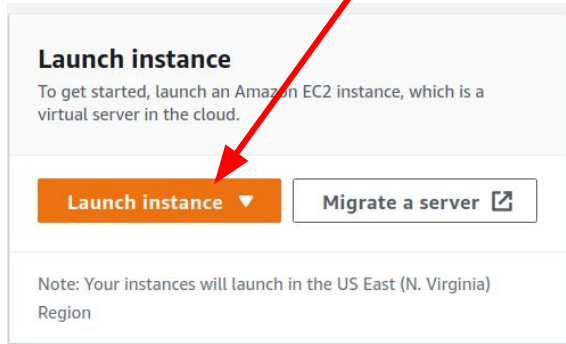
If we use an SSH client on a macOS or Linux computer to connect to our Linux instance, we use the following command to set the permissions of our private key file so that only we can read it.

## Command:

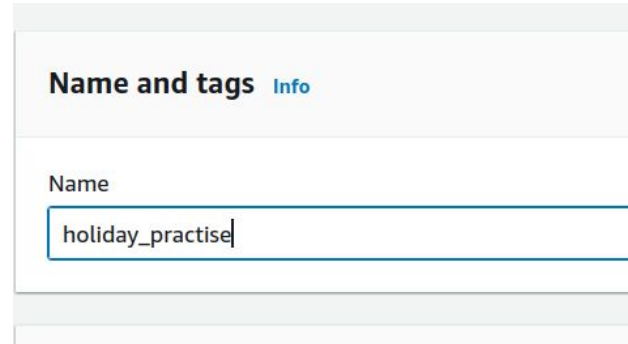
**chmod 400 key-pair-name.pem**

# STEP 1: Launching a linux instance:

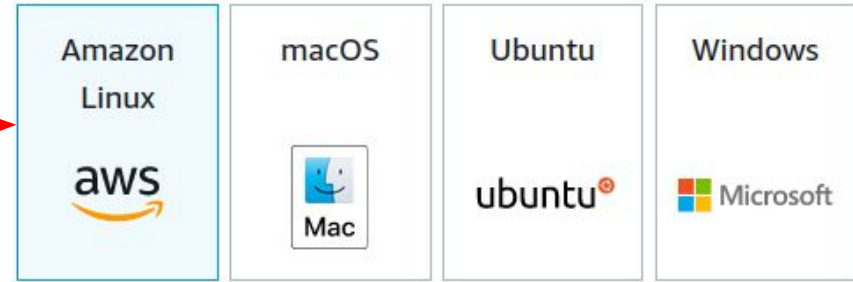
1. Go to EC2 service and click on



2. Naming the instance



3. Under AMI choose



Amazon Machine Image (AMI)

Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type

4. Choose instance type

### ▼ Instance type [Info](#)

#### Instance type

**t2.micro**

Family: t2    1 vCPU    1 GiB Memory

On-Demand Linux pricing: 0.0116 USD per Hour

On-Demand Windows pricing: 0.0162 USD per Hour


## 5. Create key-pair

**▼ Key pair (login)** [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - *required*

holiday\_practise ▼

 [Create new key pair](#)

## 6. Security groups

**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

## 7. Configure storage

▼ **Configure storage** [Info](#)

1x  GiB  Root volume

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage

Add new volume

0 x File systems

## 8. Some advanced settings

▼ **Advanced details** [Info](#)

Purchasing option [Info](#)

☐ Request Spot Instances

Request Spot Instances at the Spot price, capped at the On-Demand price

Domain join directory [Info](#)

Create new directory

IAM instance profile [Info](#)

Create new IAM profile

9. Click in launch instance option

An orange rectangular button with the text "Launch instance" in white. To the right of the button is a thin vertical grey line.

**Launch instance**



## Instance types naming:

Instance type are named based on:

1. Family
2. Generation
3. Additional capabilities
4. Size

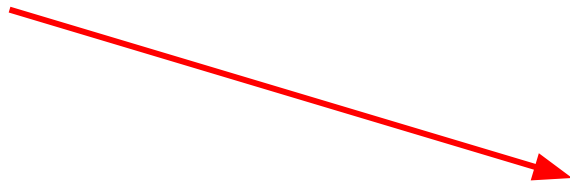


# Instance types:

1. **General purpose instance:** They provide a balance of compute, memory, and networking resources
2. **Burstable performance instance(T instance):** General purpose do not need high CPU performance so there is the chance of CPU wastage. These instances provide baseline CPU performance and can burst its ability whenever needed.
3. **Compute optimized instance:** This instance is ideal for compute-bound application that benefit from high speed processor.
4. **Memory optimized:** Delivers fast performance to workloads that process large dataset in a memory.
5. **Storage optimized:** Designed for workloads that need high, sequential write and read access to very large data set on local storage. Deliver low latency and random I/O operation/sec.
6. **Accelerated computing:** Uses co-processor or hardware accelerators to perform some function with more parallelism.

## STEP 2: Connecting to instance using SSH client

1. Choose the instance created and click on



Instances (1/2) [Info](#)

Find instance by attribute or tag (case-sensitive)

Connect

Instance s



<div><div></div></div>	Name	Instance ID	Instance state	Instance type	Status check
<div><div></div></div>	Bastion Host	i-04f6b85617b31e137	<div><div></div>Running</div>	t2.micro	<div><div></div>2/2 checks passed</div>
<div><div></div></div>	holiday_practise	i-03cbe4d56232d20ff	<div><div></div>Running</div>	t2.micro	<div><div></div>2/2 checks passed</div>

In order to connect using a SSH client, we use the ssh command to connect to the instance in a terminal. We specify **the path and file name of the private key (.pem)**, **the user name for our instance**, and **the public DNS name or IPv6 address for our instance**.


2. Enter the **code(@)** in the terminal window


Instance ID

 i-009c1ec987cfa913b (holiday)

1. Open an SSH client.
2. Locate your private key file. The key used to launch this instance is holiday.pem
3. Run this command, if necessary, to ensure your key is not publicly viewable.  
 `chmod 400 holiday.pem`
4. Connect to your instance using its Public DNS:  
 `ec2-18-206-55-171.compute-1.amazonaws.com`

Example:

 `ssh -i "holiday.pem" ec2-user@ec2-18-206-55-171.compute-1.amazonaws.com`

 **Note:** In most cases, the guessed user name is correct. However, read your AMI usage instructions to check if the AMI owner has changed the default AMI user name.

### 3. Connection established

```
root@MORALES:/home/morales/Downloads# ssh -i "holiday.pem" ec2-user@ec2-18-206-55-171.compute-1.amazonaws.com
_ _ | _ _ | _ )
_| ( _ _ / Amazon Linux 2 AMI
_ _ | \ _ _ | _ _ |

https://aws.amazon.com/amazon-linux-2/
[ec2-user@ip-172-31-83-101 ~]$
```

# Fleet

Group of instance controlled by single command

In a single API call a fleet can launch multiple instances

1. EC2 fleet
  2. Spot fleet
-

# Monitoring EC2

Monitoring is an important part of maintaining the reliability, availability, and performance of your Amazon Elastic Compute Cloud (Amazon EC2) instances.

Status check performed every minute.

1. Automated monitoring
    - A. System status check
    - B. Instance status check
    - C. Amazon cloud watch alarms
    - D. Amazon event bridge
    - E. Cloud watch event
  2. Manual monitoring
-

# EC2 instance IP addressing

EC2 supports both IPv4 & IPv6 addressing protocols.

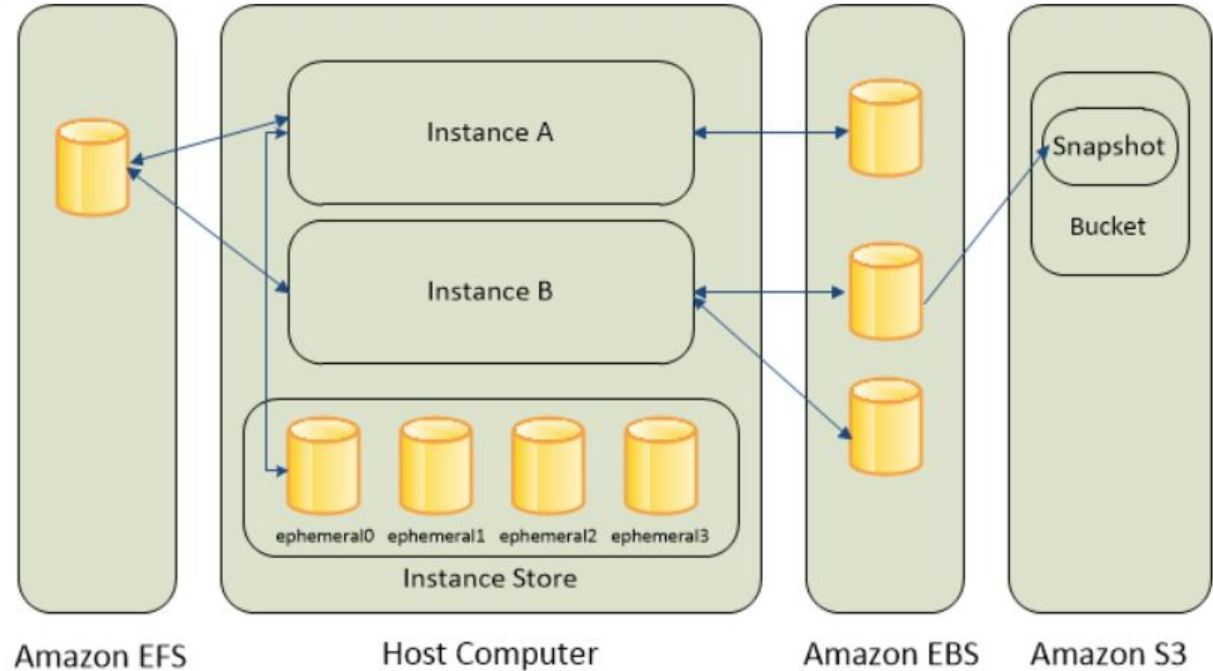
By default private IPv4 addressing.

1. We can assign both IPv4 and IPv6 address on our instance.
  2. Each private IPv4 address can be associated with a single EIP.
  - 3.
-



## Storage option in instance

1. **Amazon EBS:** Recommended storage when we run a database on an instance.
2. **Instance store:** Temporary block level storage for instance. Data on an instance persist only during life of instance.
3. **EFS file system:** Provides scalable file storage to Amazon EC2.
4. **Amazon S3:** EC2 uses S3 to store EBS snapshots & instance store backed AMIs.



Multiple Volume  
to an instance