



**St. JOSEPH'S**  
GROUP OF INSTITUTIONS  
OMR, CHENNAI - 119



## Placement Empowerment Program

### *Cloud Computing and DevOps Centre*

*Set Up a Virtual Machine in the Cloud*  
*Create a free-tier AWS, Azure, or GCP account.*

*Launch a virtual machine and SSH into it.*

Name: Harshana Perianayaki B

Department : IT



## **INTRODUCTION**

Cloud computing has transformed IT infrastructure by providing on-demand computing resources without the need for physical hardware. Virtual Machines (VMs) allow users to deploy, test, and run applications in a scalable and flexible environment. Leading cloud providers such as **AWS, Azure, and Google Cloud Platform (GCP)** offer free-tier options, making it accessible for beginners and professionals to experiment with cloud-based solutions.

## **OVERVIEW**

- **Creating a free-tier account** with AWS, Azure, or GCP.
- **Launching a virtual machine** with an appropriate configuration.
- **Configuring networking and security settings** for remote access.
- **Connecting to the VM using SSH.**
- **Verifying the setup** and performing basic system checks.

These steps provide hands-on experience with **cloud infrastructure** and help build foundational skills in cloud computing.

## ***OBJECTIVES***

By this end, you will be able to:

- ✓ **Create a cloud account** and understand the free-tier limitations.
- ✓ **Deploy a virtual machine** on AWS, Azure, or GCP.
- ✓ **Configure security settings** to allow SSH access.
- ✓ **Establish a secure connection** to your VM via SSH.
- ✓ **Verify and interact with your cloud-based server** through basic commands.

## ***IMPORTANCE***

Setting up a virtual machine in the cloud is a fundamental skill for:

- ◆ **Cloud Computing & DevOps:** VMs form the backbone of cloud infrastructure.
- ◆ **Software Development & Testing:** Run and test applications in isolated environments.

- ◆ **Cybersecurity & Networking:** Learn about firewalls, access controls, and remote management.
- ◆ **IT Professionals & Students:** Gain practical experience in server administration.
- ◆ **Scalability & Cost Efficiency:** Reduce hardware costs by leveraging cloud-based solutions.

By mastering VM deployment, you lay the groundwork for **advanced cloud technologies**, such as containerization (Docker/Kubernetes), serverless computing, and cloud automation.

## ***STEP-BY-STEP OVERVIEW***

### ***Launch a Linux Virtual Machine***

#### ***AWS (EC2 Instance)***

1. **Log into AWS Console → Go to EC2 Service.**

The screenshot shows the AWS Console Home page. It features several cards: 'Recently visited' (empty), 'Applications (0)' (empty), 'Cost and usage' (showing current month costs of \$0.00), and 'Welcome to AWS' (Getting started with AWS). There are also links for 'View all services', 'Create application', and 'Go to myApplications'. The top navigation bar includes a search bar, a menu icon, and account information.

## 2. Click Launch Instance.

The screenshot shows the AWS EC2 Home page. The left sidebar has categories like Dashboard, Instances, Images, Elastic Block Store, and Network & Security. The main area has sections for 'Resources' (listing instances, auto scaling groups, etc.) and 'Launch instance' (with a prominent orange 'Launch instance' button). Other sections include 'Service health', 'Zones', and 'Explore AWS' (with a note about GuardDuty). The top navigation bar is identical to the previous screenshot.

Give the name (eg. web server)

us-east-1.console.aws.amazon.com/ec2/home?region=us-east-1#LaunchInstances:

EC2 > Instances > Launch an instance

**Launch an instance** [Info](#)

Amazon EC2 allows you to create virtual machines, or instances, that run on the AWS Cloud. Quickly get started by following the simple steps below.

**Name and tags** [Info](#)

Name  
Web Server

Add additional tags

**Summary**

Number of instances [Info](#)

1

**Software Image (AMI)**

Amazon Linux 2023 AMI 2023.6.2... [read more](#)  
ami-0c614dee691cbff37

### 3. Choose an AMI (Amazon Machine Image) → Select Ubuntu or Amazon Linux (free-tier eligible).

**Application and OS Images (Amazon Machine Image)** [Info](#)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Search our full catalog including 1000s of application and OS images

Recents Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Linux Debian

Amazon Machine Image (AMI)

Browse more AMIs

Including AMIs from AWS, Marketplace and the Community

### 4. Choose Instance Type → Pick t2.micro (Free-tier eligible).

**Instance type** [Info](#) | [Get advice](#)

Instance type

t2.micro

Family: t2 1 vCPU 1 GiB Memory Current generation: true

On-Demand Windows base pricing: 0.0162 USD per Hour

On-Demand Ubuntu Pro base pricing: 0.0134 USD per Hour

On-Demand SUSE base pricing: 0.0116 USD per Hour On-Demand RHEL base pricing: 0.026 USD per Hour

On-Demand Linux base pricing: 0.0116 USD per Hour

Free tier eligible

All generations

Compare instance types

Additional costs apply for AMIs with pre-installed software

## 5. Select **vockey** or Create a Key Pair (if you don't have one)

→ Download .pem file.

The screenshot shows the 'Key pair (login)' section of the AWS console. It includes a dropdown menu for 'Key pair name - required' containing the value 'vockey', and a button labeled 'Create new key pair'.

Go to Network Settings and choose Lab VPC

The screenshot shows the 'Network settings' section of the AWS console. It includes a dropdown menu for 'VPC - required' containing the value 'vpc-09f64b45cb5d17af6 (Lab VPC) 10.0.0.0/16', and a button labeled 'Create new subnet'.

Choose subnet

The screenshot shows the 'Subnet' section of the AWS console. It displays a single subnet entry: 'subnet-0f43beb715c05fe8d' (PublicSubnet1), which is associated with 'vpc-09f64b45cb5d17af6', owner '612572944878', availability zone 'us-east-1a', and CIDR '10.0.1.0/28'. A button labeled 'Create new subnet' is also visible.

## 6. Security Group → Create Security group -> Give security group name (eg. web server security group) and Give Description (eg. Security group for my web server).

## 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

Security group name - **required**

Web Server security group

This security group will be added to all network interfaces. The name can't be edited after the security group is created. Max length is 255 characters. Valid characters: a-z, A-Z, 0-9, spaces, and \_-:/()#@+=;&!\$\*

## Description - **required** | [Info](#)

Security group for my web server

## Fill the Inbound security group rules

### Inbound Security Group Rules

No security group rules are currently included in this template. Add a new rule to include it in the launch template.

[Add security group rule](#)

### ► Advanced network configuration

#### ▼ Configure storage [Info](#)

[Advanced](#)

1x

8

GiB

gp3



Root volume 3000 IOPS (Not encrypted)

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

X

[Add new volume](#)

## Set Termination protection as Enable

### Termination protection | [Info](#)

Enable



Give the User data as,

---

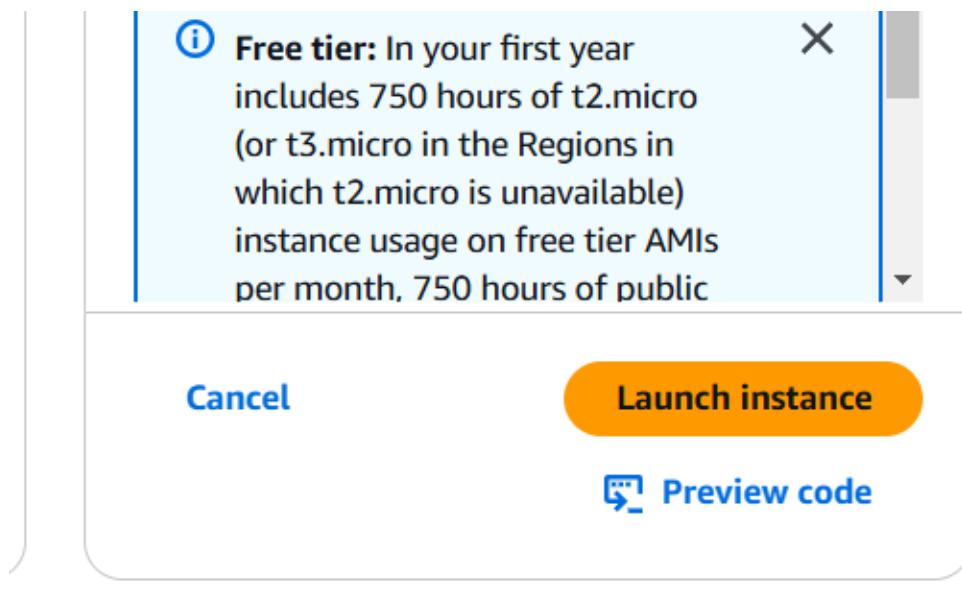
**User data - optional** | [Info](#)

Upload a file with your user data or enter it in the field.

 [Choose file](#)

```
#!/bin/bash
dnf install -y httpd
systemctl enable httpd
systemctl start httpd
echo '<html><h1>Hello From Your Web Server!</h1></html>' >
/var/www/html/index.html
```

## 7. Click **Launch Instance** and wait for it to start.



**Maximu**

The maxin hour that you do not maximum specified i the launch specify a n charged th the On-De

The screenshot shows the AWS EC2 Instances Launch an instance page. At the top, there is a green success message: "Success Successfully initiated launch of instance (i-060f5d3a7af278997)". Below this, there is a "Launch log" button. A "Next Steps" section follows, containing six cards:

- Create billing and free tier usage alerts**: To manage costs and avoid surprise bills, set up email notifications for billing and free tier usage thresholds. Includes a "Create billing alerts" button.
- Connect to your instance**: Once your instance is running, log into it from your local computer. Includes a "Connect to instance" button.
- Connect an RDS database**: Configure the connection between an EC2 instance and a database to allow traffic flow between them. Includes a "Connect an RDS database" button.
- Create EBS snapshot policy**: Create a policy that automates the creation, retention, and deletion of EBS snapshots. Includes a "Create EBS snapshot policy" button.

On the right side, there are sections for "Advanced details", "Purchasing option" (with a note about Spot Instances), and "Maximum price".

## Find the Public IP:

- Go to **EC2 Dashboard** → Select your instance → Check **Public IPv4 Address**.

The screenshot shows the AWS EC2 Instance Details page for an instance with ID i-060f5d3a7af278997. The "Details" tab is selected. The "Networking" section displays the following network information:

	Value	Action
Public IPv4 address	3.237.106.146	<a href="#">open address</a>
Private IPv4 addresses	10.0.1.7	
Public IPv4 DNS	ec2-3-237-106-146.compute-1.amazonaws.com	<a href="#">open address</a>

## Connect via SSH:

```
ssh -i your-key.pem ubuntu@<Public_IP>
```

You have successfully set up and connected to a **cloud-based VM!**

### ***OUTCOME***

- Successfully **launch a virtual machine** in AWS, Azure, or GCP.
- Securely connect via SSH** and interact with the remote system.
- Verify system functionality** by executing basic commands.
- Understand cloud-based networking & security configurations.**
- Be prepared to explore **advanced cloud services**, such as deploying applications or automating workflows.

