



Placement Empowerment Program

Cloud Computing and DevOps Centre

Set Up a Virtual Machine in the Cloud Create a freetier AWS account. Launch a virtual machine and SSH into it.

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Introduction

The objective of this Proof of Concept (POC) is to explore the process of setting up a virtual machine in the cloud using the AWS Free Tier. A virtual machine (VM) is a crucial component in cloud computing, enabling users to deploy and manage scalable computing resources without requiring physical hardware. This POC serves as a foundational exercise for understanding cloud infrastructure and using AWS EC2 to create a simple and cost-effective computing environment.

Overview

This POC demonstrates the step-by-step process to:

1. Create a free AWS account.
2. Launch a virtual machine using AWS EC2.
3. Configure and secure the instance with a key pair and a security group.
4. Connect to the VM using SSH from a Windows system.

The project covers basic tasks that are essential for beginners in cloud computing, offering hands-on experience with AWS infrastructure.

Objectives

1. **Learn AWS EC2 Basics:** Understand how to create, configure, and launch an EC2 instance.
2. **Practice Secure Connections:** Use SSH to securely connect to the instance.
3. **Gain Practical Experience:** Explore the AWS Management Console to manage and interact with cloud resources.
4. **Understand Free Tier Usage:** Work within the AWS Free Tier to avoid unnecessary costs.

Importance

1. Foundation for Cloud Computing: Understanding how to launch and manage virtual machines is a fundamental skill for cloud practitioners.

Skill Development: This POC builds hands-on skills in AWS, including instance management, security configurations, and connecting via SSH.

Scalability and Flexibility: Demonstrates how cloud infrastructure allows for rapid deployment of resources compared to traditional setups.

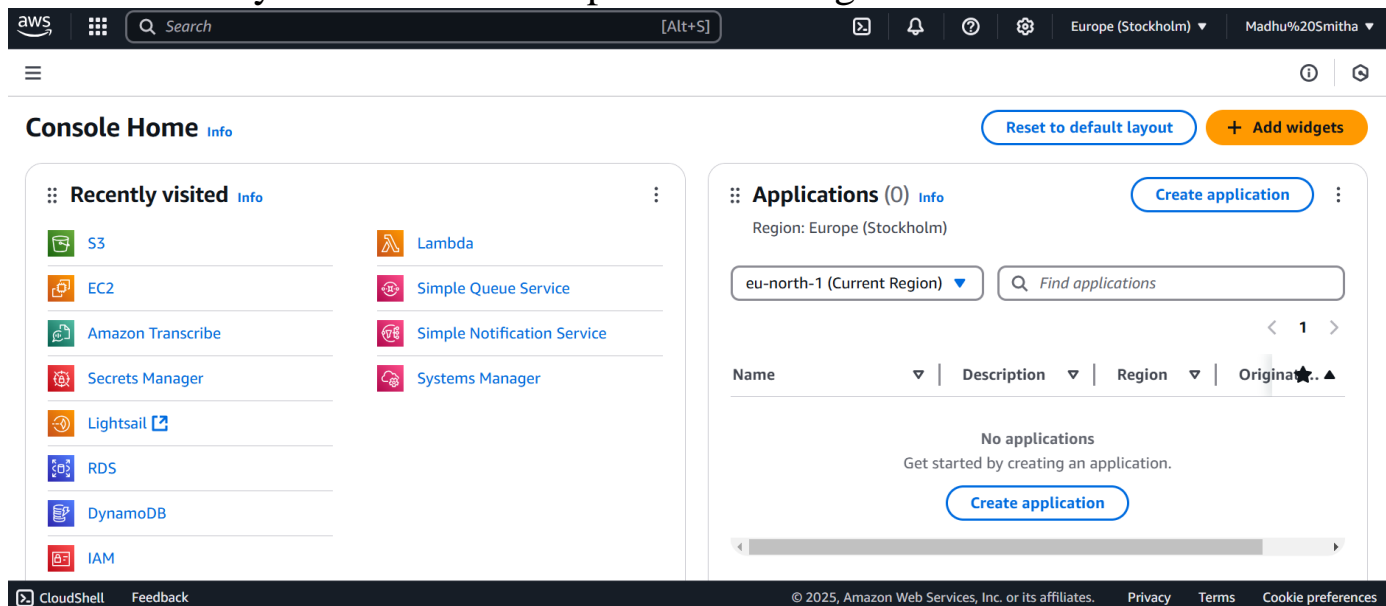
Cost-Effective Learning: Using AWS Free Tier enables users to explore cloud computing without financial investment.

Career Relevance: Knowledge of setting up virtual machines in AWS is highly valuable for careers in IT, cloud computing, and DevOps.

Step-by-Step Overview Step

1:

1. Go to [AWS Management Console](#).
2. Enter your username and password to log in.



Step 2:

Navigate to the AWS Management Console and search for **EC2**.

The screenshot shows the AWS Management Console 'Resources' page for the Europe (Stockholm) region. The left-hand navigation menu includes 'Dashboard', 'EC2 Global View', 'Events', 'Instances' (with sub-items like Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, and Capacity Reservations), and 'Images' (with sub-items like AMIs and AMI Groups). The main content area is titled 'Resources' and states 'You are using the following Amazon EC2 resources in the Europe (Stockholm) Region:'. It features a grid of resource counts: Instances (running) 2, Capacity Reservations 0, Elastic IPs 0, Key pairs 1, Placement groups 0, Snapshots 0, Auto Scaling Groups 0, Dedicated Hosts 0, Instances 2, Load balancers 0, Security groups 2, and Volumes 2. Below this grid are two cards: 'Launch instance' (with a 'Launch instance' button) and 'Service health' (with an 'AWS Health Dashboard' button). On the right, there is an 'EC2 Free Tier' section showing '2 EC2 free tier offers in use' and an 'Offer usage (monthly)' section for Linux EC2 Instances showing 2% usage (736 hours remaining).

Step 3:

Click **Launch Instances**.

The screenshot shows the 'Launch instance' page in the AWS Management Console. The left-hand navigation menu is the same as in the previous screenshot. The main content area has a 'Launch instance' button and a 'Migrate a server' button. Below these buttons is a note: 'Note: Your instances will launch in the Europe (Stockholm) Region'. There is also an 'Instance alarms' section with a 'View in CloudWatch' button. The 'Service health' section shows the region as Europe (Stockholm) and the status as 'This service is operating normally.' The 'Zones' section lists two zones: eu-north-1a (Zone ID: eun1-az1) and eu-north-1b (Zone ID: eun1-az2). On the right, the 'Offer usage (monthly)' section shows 2% usage for Linux EC2 Instances (736 hours remaining) and 0% usage for Storage space on EBS (29.9 GB remaining). Below this is the 'Account attributes' section showing the 'Default VPC' as vpc-0305256a38ee38991.

Step 4:

1. Choose **Amazon Linux 2023 Free Tier AMI** or **Ubuntu Free Tier AMI**.

2. Select the **t2.micro** instance type (free tier).

3. Configure security group:

Allow **SSH** (Port 22) from your IP.

4. Add a key pair:

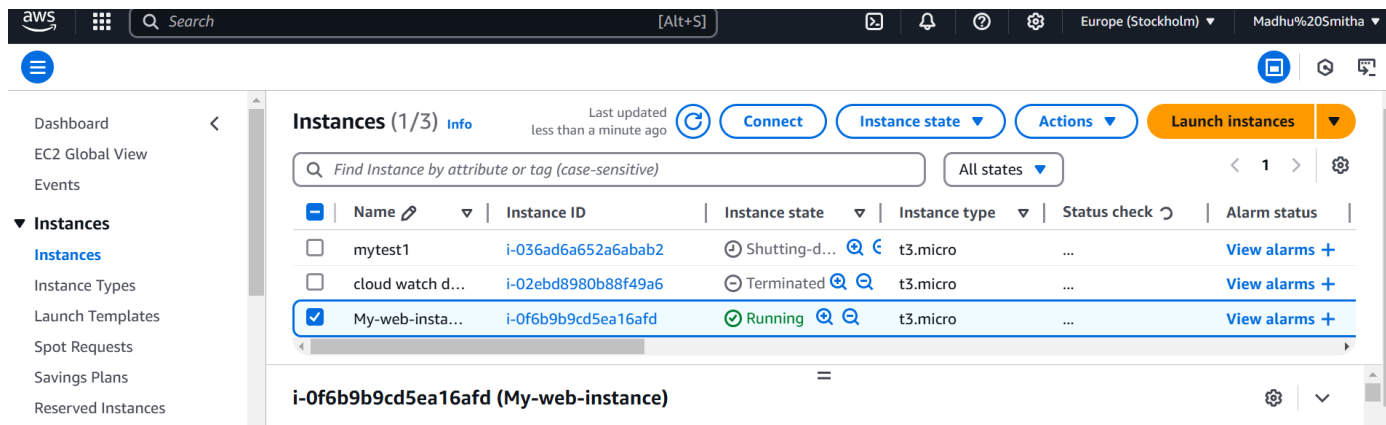
If you don't have one, create a new key pair and download it as a .pem file.

5. Click **Launch Instance**.

The screenshot shows the AWS Management Console interface for launching an EC2 instance. The top navigation bar includes the AWS logo, a search bar, and user information. The breadcrumb trail indicates the path: EC2 > Instances > Launch an instance. The main content area is titled 'Launch an instance' with an 'Info' link. Below the title, a brief description of Amazon EC2 is provided. The 'Name and tags' section has a text input field containing 'My-web-instance' and an 'Add additional tags' link. The 'Application and OS Images (Amazon Machine Image)' section includes a search bar with the placeholder text 'Search our full catalog including 1000s of application and OS images'. On the right side, a 'Summary' panel displays the configuration: 'Number of instances' set to 1, 'Software Image (AMI)' as 'Amazon Linux 2023 AMI 2023.6.2...' with a 'read more' link, 'Virtual server type (instance type)' as 't3.micro', and 'Firewall (security group)' as 'New security group'. At the bottom of the summary panel are 'Cancel' and 'Launch instance' buttons, along with a 'Preview code' link. The footer of the console shows 'CloudShell', 'Feedback', and copyright information for Amazon Web Services, Inc. or its affiliates, along with links for 'Privacy', 'Terms', and 'Cookie preferences'.

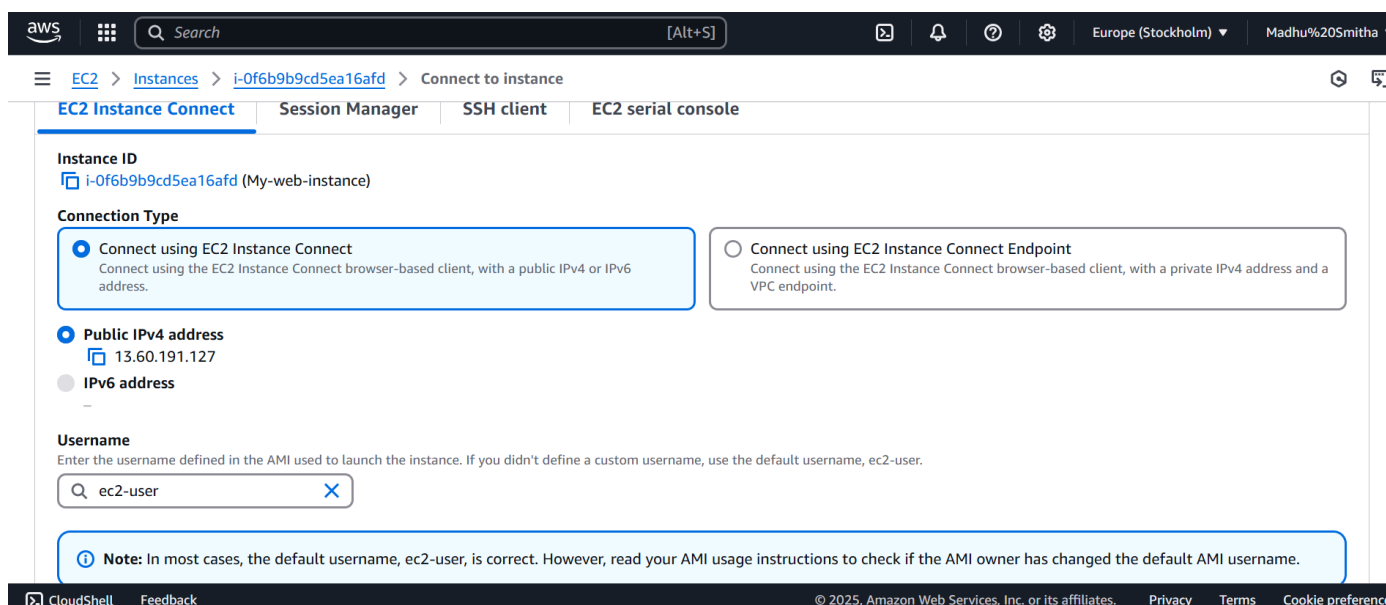
Step 5:

Check your running instance in the Instances section . Select your Instance and click the Connect Option.



Step 6:

Go to the SSH client section, and copy the command provided under the 'Example' section.



Step 7:

Open PowerShell, navigate to the Downloads folder. Run the SSH command from the EC2 Connect section, replace the key name with your downloaded key, press Enter, and type yes when prompted.

```
ED25519 key fingerprint is SHA256:RdWq0ML8dfZXc8B1hsVJV11o+c0HLa7+cFPSfLQ+m8U.  
This key is not known by any other names.  
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes  
Warning: Permanently added 'ec2-13-201-187-19.ap-south-1.compute.amazonaws.com' (ED25519) to the list of known hosts.
```

Successfully completed the setup of a virtual machine in AWS.

Outcome

By completing this PoC of setting up a virtual machine in AWS, you will:

1. Create and configure a free AWS account to use cloud resources within the Free Tier.
2. Launch an EC2 instance with Amazon Linux or Ubuntu as the operating system.
3. Generate and manage a secure key pair for SSH access to your EC2 instance.
4. Configure a security group to allow SSH connections to your instance from your IP address.
5. Successfully connect to the EC2 instance via SSH using the public IP address.

6. Gain hands-on experience with AWS EC2 and foundational cloud computing concepts.