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Placement Empowerment Program

Cloud Computing and DevOps Centre

Set Up a Virtual Machine in the Cloud Create a free-tier 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.

The screenshot shows the AWS Management Console Home page. At the top, there's a search bar and navigation links for 'Simple Notification Service' and 'Samya'. Below the search bar, there are sections for 'Recently visited' services (S3, CloudWatch, Lightsail, Simple Queue Service, Simple Notification Service, IAM, EC2, RDS, Amazon Comprehend, CloudFront, CloudFormation) and 'Welcome to AWS' (Getting started with AWS). On the right, there are sections for 'Applications' (0), 'AWS Health' (0 open issues, 0 scheduled changes), and 'Cost and usage' (\$3.16 current month costs, \$3 forecasted month end costs).

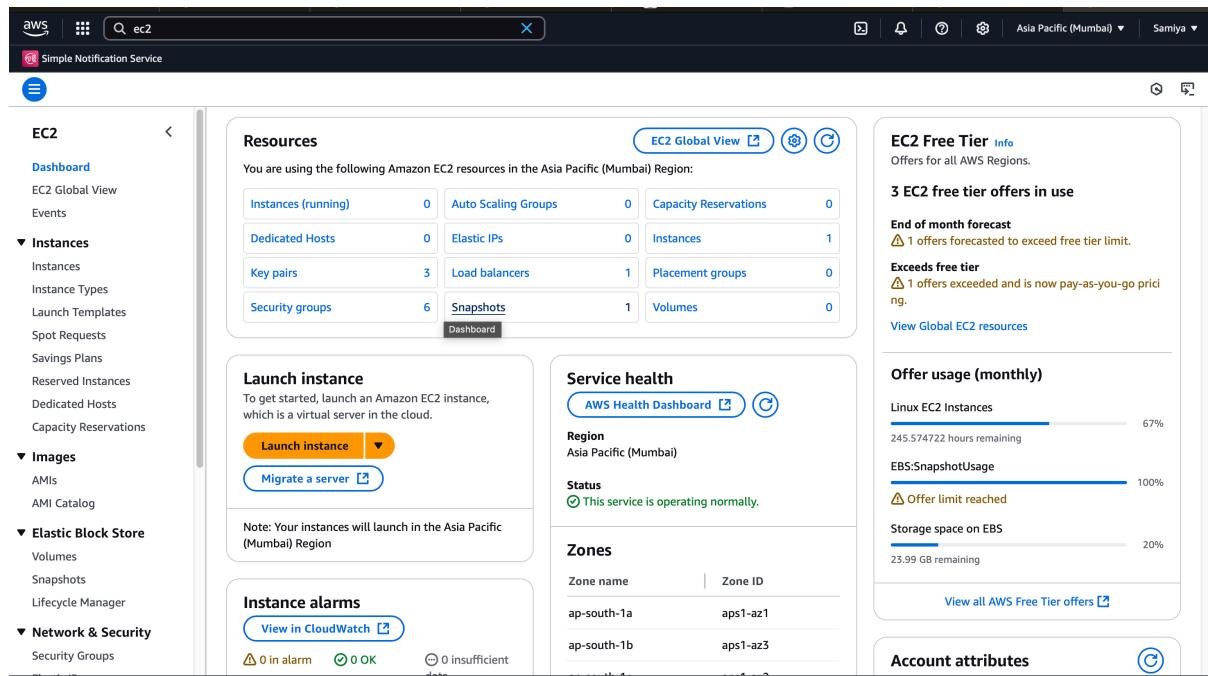
Step 2:

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

The screenshot shows the AWS Management Console Services search results for 'ec2'. The search bar at the top has 'ec2' typed into it. The results are categorized into 'Services', 'Features', and 'Resources'. Under 'Services', there are cards for EC2 (Virtual Servers in the Cloud), EC2 Image Builder (A managed service to automate build, customize and deploy OS images), and EC2 Global View (EC2 Global View provides a global dashboard and search functionality that lets you ...). Under 'Features', there are cards for Dashboard (EC2 feature), AMIs (EC2 feature), and EC2 Instances (CloudWatch feature). Under 'Resources', there is a section for 'Introducing resource search' with the note 'Enable to show cross-region resources for your account in search results. Takes less'.

Step 3:

Click **Launch Instances**.



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**.

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 Launch an instance Add additional tags

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.

Recent AMIs My AMIs Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat SUSE Linux Debian Browse more AMIs

Summary

Number of instances Info

1

Software Image (AMI)
Amazon Linux 2023 AMI 2023.6.2... read more
ami-0d682f26195e9ec0f

Virtual server type (instance type)
t3.micro

Firewall (security group)
New security group

Storage (volumes)
1 volume(s) - 8 GiB

Free tier: In your first year of opening an AWS account, you get 750 hours per month of t2.micro instance usage (or t3.micro where t2.micro isn't available) when used with free tier AMIs, 750 hours per month of public IPv4 address usage, 30 GiB of EBS storage, 2 million I/Os, 1 GB of snapshots, and 100 GB of

Cancel Launch instance

Step 5:

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

EC2

- Dashboard
- EC2 Global View
- Events
- Instances**
 - Instances
 - Instance Types
 - Launch Templates
 - Spot Requests
 - Savings Plans
 - Reserved Instances
 - Dedicated Hosts
 - Capacity Reservations
- Images
- AMIs
- AMI Catalog
- Elastic Block Store
- Volumes
- Snapshots
- Lifecycle Manager
- Network & Security
- Security Groups

Instances (1/2) Info

Last updated less than a minute ago Connect Instance state Actions Launch instances

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone
<input checked="" type="checkbox"/> Virtual-Machine	i-0f7f9c91bdbbc7150	Running	t3.micro	Initializing	View alarms +	ap-south-1c
<input type="checkbox"/> My Monitoring...	i-0dc2c8d577bcf9ee6	Terminated	t3.micro	-	View alarms +	ap-south-1c

i-0f7f9c91bdbbc7150 (Virtual-Machine)

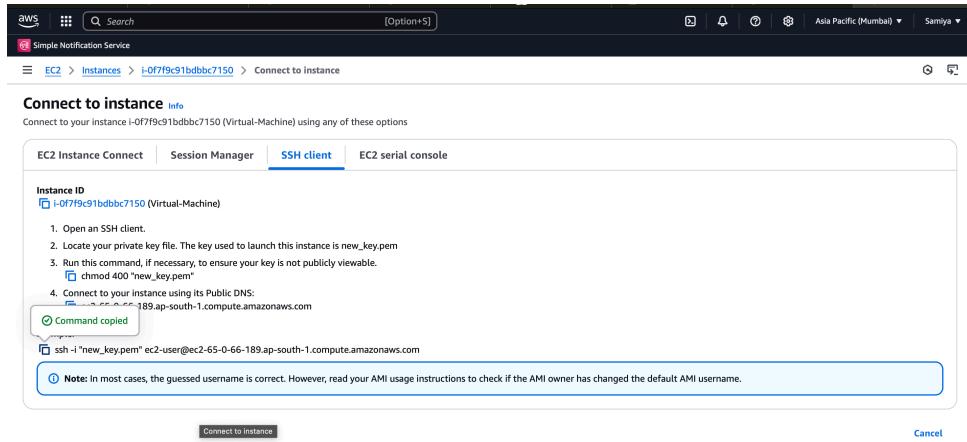
Details Status and alarms Monitoring Security Networking Storage Tags

Instance summary Info

Instance ID <input type="checkbox"/> i-0f7f9c91bdbbc7150	Public IPv4 address <input type="checkbox"/> 65.0.66.189 open address	Private IPv4 addresses <input type="checkbox"/> 172.30.2.147
IPv6 address -	Instance state Running	Public IPv4 DNS <input type="checkbox"/> ec2-65-0-66-189.ap-south-1.compute.amazonaws.com open address

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 (e.g., new.pem), press Enter, and type yes when prompted.

```
ec2-user@ip-172-31-85-161:~ + ~
Windows PowerShell
Copyright (C) Microsoft Corporation. All rights reserved.

Install the latest PowerShell for new features and improvements! https://aka.ms/PSWindows

PS C:\Users\Hi> cd downloads
PS C:\Users\Hi\downloads> ssh -i "newkey.pem" ec2-user@ec2-54-159-219-240.compute-1.amazonaws.com
The authenticity of host 'ec2-54-159-219-240.compute-1.amazonaws.com (54.159.219.240)' can't be established.
ED25519 key fingerprint is SHA256:+R5mMBxvk8YyUex7xxGS4KCYBTITH/7debTztVzthzQ.
This key is not known by any other names.
Are you sure you want to continue connecting (yes/no/[fingerprint])? yes
Warning: Permanently added 'ec2-54-159-219-240.compute-1.amazonaws.com' (ED25519) to the list of known hosts.

#_
~\_ #####_      Amazon Linux 2023
~~ \#####
~~ \##|
~~ \#/ ___> https://aws.amazon.com/linux/amazon-linux-2023
~~ \~'`-'>
~~ .-'`-'/
~~ /`-'/
~/m/`-'/
[ec2-user@ip-172-31-85-161 ~]$ |
```

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.