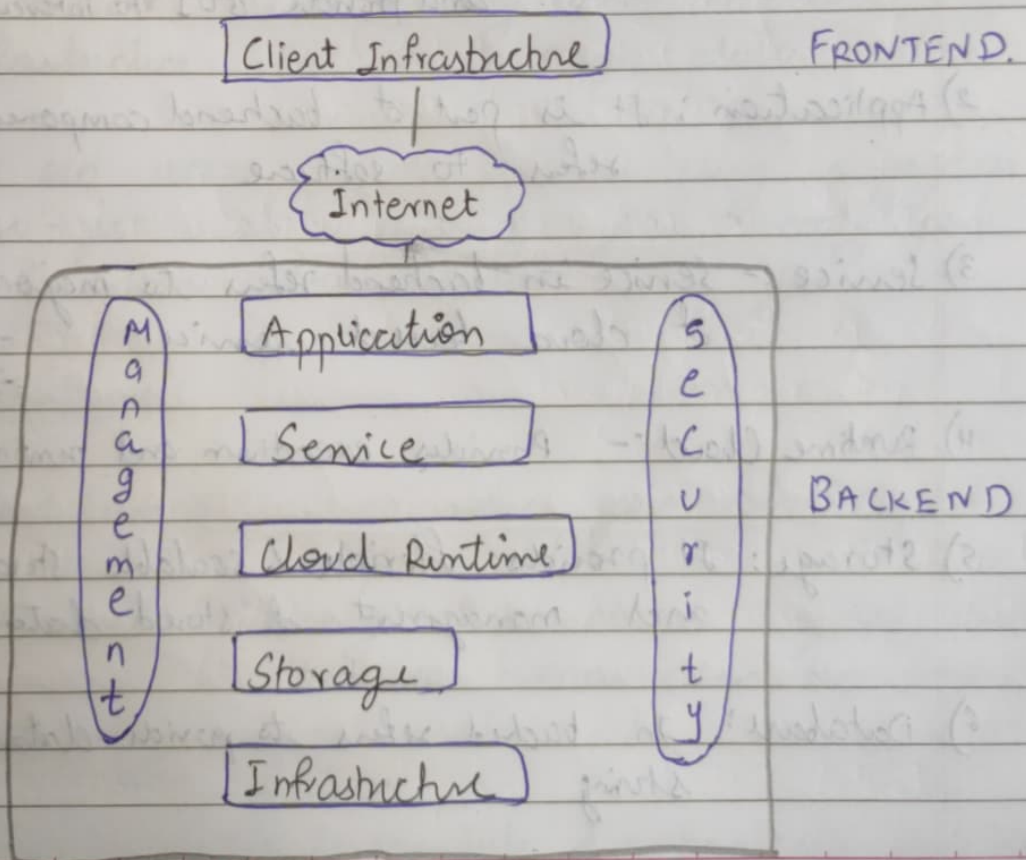


# Cloud Computing - Practical 1

## 1] Cloud Computing Architecture

- Cloud Computing means storing and accessing the data and programs on remote server that are hosted on the internet instead of computer hard drive or local server.
- It is a model of delivering computing services over the internet where resources such as server, storage, database, software and application are provided as a service to user on demand.
- The cloud architecture is divided into 2 parts
  - 1] Frontend
  - 2] Backend



1) Frontend:- It refers to the client side of cloud computing system. Means it contains all the user interface and application which are used by client to access the cloud computing resources.

2) Backend: It refers to cloud itself which is used by service provider. It contains the resources as well as manages the resources & provide security mechanism.

- Components of Cloud Computing Architecture.

1) Client Infrastructure: Part of frontend component and provide GUI to interact with cloud.

2) Application: It is part of backend component that refers to software.

3) Service:- Service in backend refers to major 3 types of cloud based service.

4) Runtime Cloud:- Provides execution and runtime platform.

5) Storage: It provides flexible & scalable storage service and management of stored data.

6) Database: In backend refers to provide databases for storing.



2] IaaS :- Infrastructure as a Service is a cloud computing model that provides on demand access to computing resources such as servers, storage, networking and virtualization.

It is attractive because acquiring computing resources to run application or store data the traditional way require time & capital.

IaaS working : It cloud computing is when you rent access to cloud infrastructure resources as individual services from a cloud service provider (CSP), including servers, virtual machine and storage.

It helps eliminate much of complexity and costs associated with building and maintaining physical infrastructure in on premises data center.

You can access IaaS resources using a pay-as-you-go basis, allowing you to only pay to consume the resources that you need.

### Advantages :

- 1) Cost Saving : Helps reduce your upfront capital expenditure.
- 2) Increased Efficiency : Resources are regularly available to business when they need them.
- 3) Reliability : IaaS platforms have no single pt of failure.
- 4) High scalability : Capable of automatically scale resources.

### 3] AWS

Amazon Web Services is a comprehensive cloud computing platform provided by Amazon that offer a wide range of services for computing, storage, networking, databases and more.

AWS is made up of many different cloud computing products and services.

AWS can be broken into three main products: EC2, a low cost cloud storage service and S3, amazon storage system.

Features of AWS :-

- 1) Infrastructure as Service (IaaS): AWS provides Virtual machine, storage & networking resources that can be scaled up/down.
- 2) Platform as a Service (PaaS): AWS offers pre configured platform for developing and deploying application such as AWS Lambda for serverless computing.
- 3) Software as a Service (SaaS): AWS provides software application such as Amazon chime for video conferencing and Amazon Work Docs for Document management.



Common Use Cases :-

- 1) Web and Mobile Application : Build and deploy scalable web & mobile apps.
- 2) Data Analytics : Process and analyse large dataset and build machine learning model.

AWS offers many different tools & products for enterprise and software developers in 245 countries & territories. It is important because it provides a range of offerings for individuals as well as public & private sector.

#### 4) Amazon EC2

Amazon Elastic Compute Cloud (EC2) provides on demand scalable computing capacity in AWS Cloud.

Using EC2 reduces hardware cost so you can use Amazon EC2 to ~~low~~ develop and deploy application faster.

EC2 instance is a virtual server in AWS cloud. When you launch an EC2 instance, the instance type that you specify determines hardware available to your instance.

## → Features of Amazon EC2.

- 1) Instances: Virtual servers.
- 2) Amazon Machine Images (AMIs): Preconfigured template for your instance that package the components you need for your server.
- 3) Instance Type: Various conf of CPU, memory, storage, networking capacity etc.
- 4) Amazon Instance Store Volumes: Storage volume for temp data that is deleted when you stop or terminate your instance.

## → Advantages

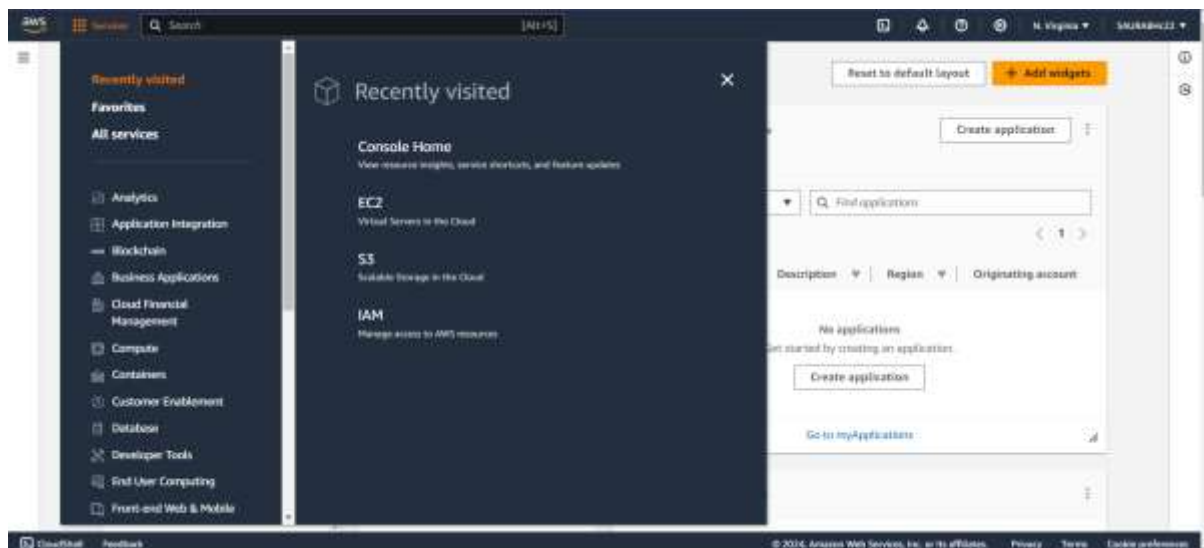
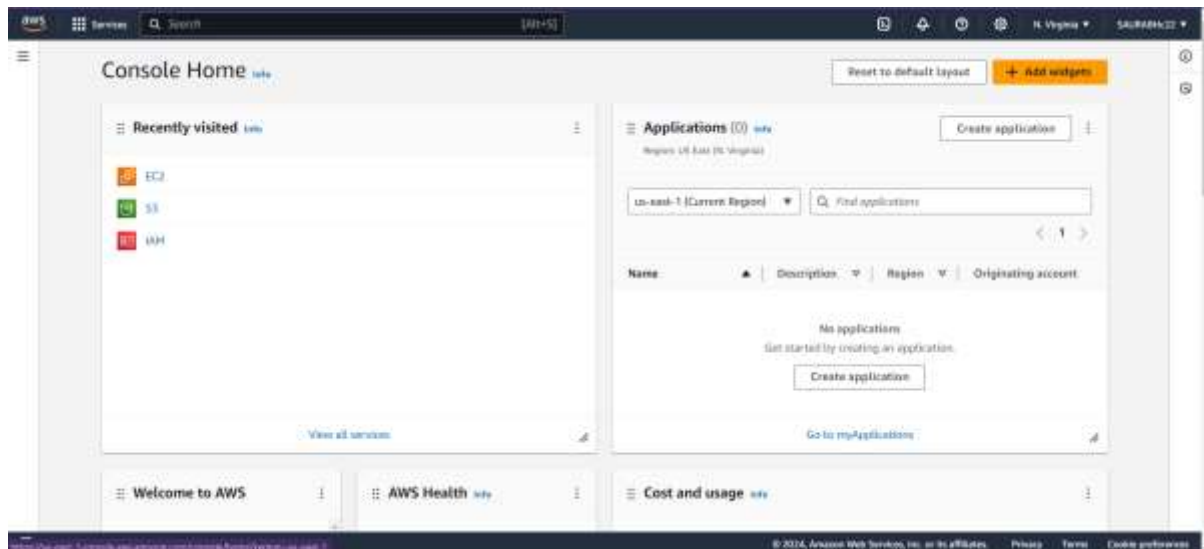
- 1) Scalability: EC2 allows you to quickly scale your instance up or down to match demand.
- 2) Cost Effective: EC2 provides as pay as you go pricing model, which can help you save money compared to running own data center.
- 3) Security: EC2 provides a range of security feature to help protect your instance and data.
- 4) Integration: EC2 integrates with a range of other AWS services including S3, RDS etc.

# Cloud Computing Practical 1

Name: Saurabh Chaudhari

Roll no:- A005

MSc SDS 2<sup>nd</sup> Year





EC2 Dashboard

EC2 Global View

Events

Console-to-Code

Review

Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Capacity Reservations

Images

AMIs

AMI Catalog

Elastic Block Store

Volumes

Resources

EC2 Global View

You are using the following Amazon EC2 resources in the US East (N. Virginia) Region:

Instances (pending)	0	Auto Scaling Groups	0	Dedicated Hosts	0
Elastic IPs	0	Instances	0	Key pairs	0
Load balancers	0	Placement groups	0	Security groups	1
Snapshots	0	Volumes	0		

Launch Instance

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

Launch instance

Migrate a server

Note: Your instances will launch in the US East (N. Virginia) Region.

Service health

AWS Health Dashboard

Region: US East (N. Virginia)

Status: This service is operating normally.

Zones

EC2 Free Tier

Offers for all AWS Regions

0 EC2 free tier offers in use

End of month forecast: 0 offers forecasted to exceed free tier limit.

Exceeds free tier: 0 offers exceeded and is now pay-as-you-go (pay-as-you-go)

View Global EC2 resources

View all AWS Free Tier offers

Account attributes

Default VPC

vpc-0c88f6bf80125c0e

Settings

View account and security

CloudShell

Feedback

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EC2 > Instances > Launch an instance

Launch an instance

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

Name: EC2\_practical

Add additional tags

Application and OS Images (Amazon Machine Image)

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

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

Quick Start

Summary

Number of instances: 1

Software Image (AMI): Amazon Linux 2023 AMI 2023.5.2...read more

Virtual server type (Instance type): t2.micro

Firewall (security group): New security group

Storage (volumes): 1 volume(s) - 8 GB

Free tier: In your first year, includes 750 hours of t2.micro (or v1.micro) in the Region in which you launch.

Launch instance

CloudShell

Feedback

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

Quick Start

Amazon Linux

macOS

Ubuntu

Windows

Red Hat

SUSE Linux

Browse more AMIs

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type

Description: Ubuntu Server 24.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Supports available from Canonical (https://www.ubuntu.com/roadmap/services).

Architecture: 64-bit (x86)

AMI ID: ami-0461a995ec15520

Free tier eligible

Summary

Number of instances: 1

Software Image (AMI): Canonical, Ubuntu, 24.04 LTS...read more

Virtual server type (Instance type): t2.micro

Firewall (security group): New security group

Storage (volumes): 1 volume(s) - 8 GB

Free tier: In your first year, includes 750 hours of t2.micro (or v1.micro) in the Region in which you launch.

Launch instance

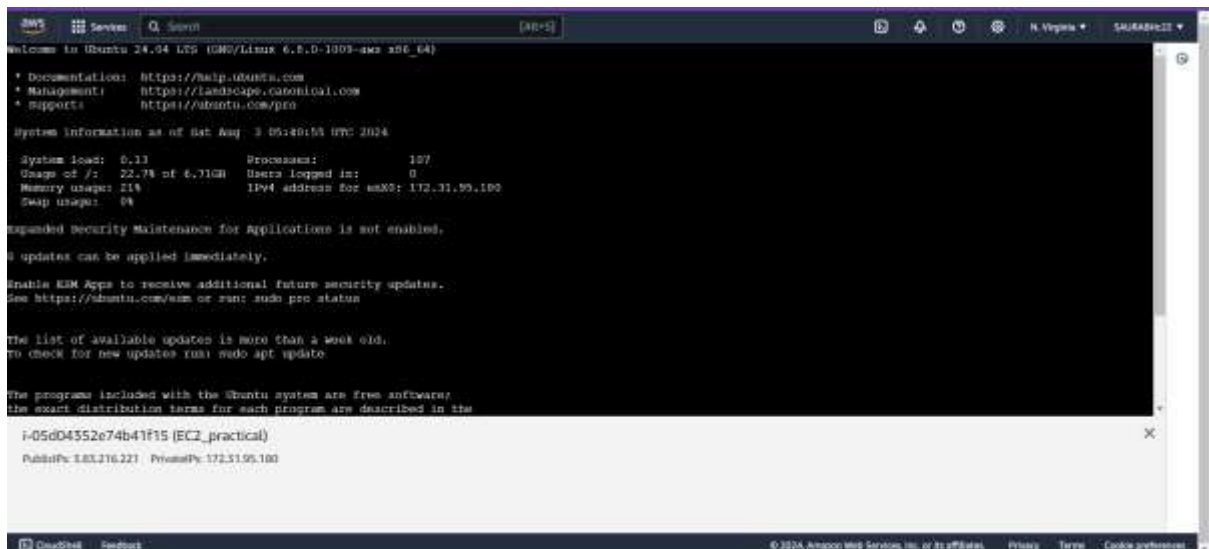
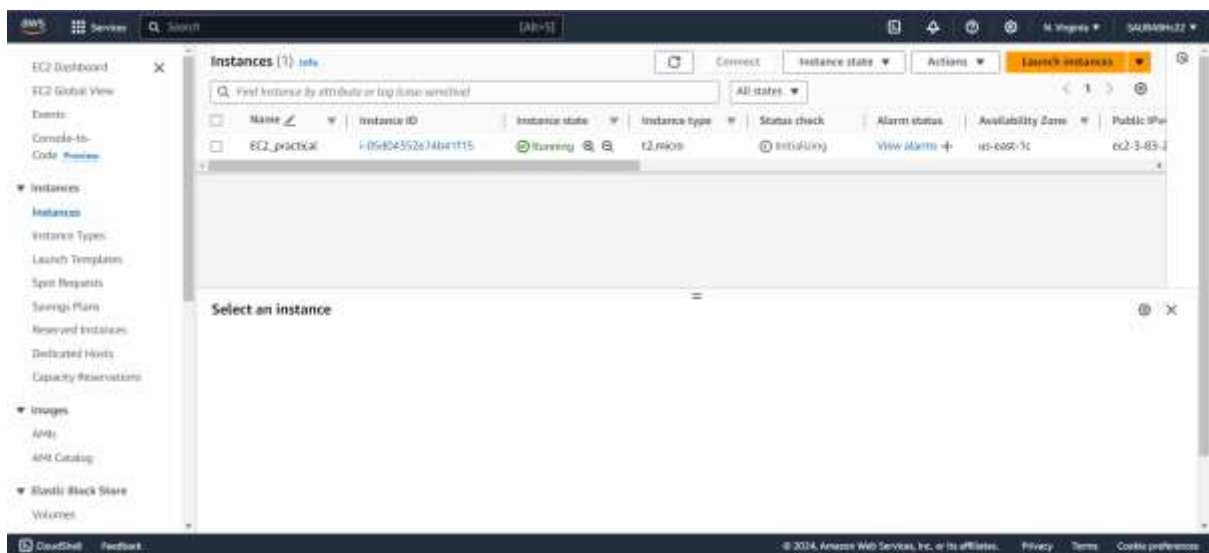
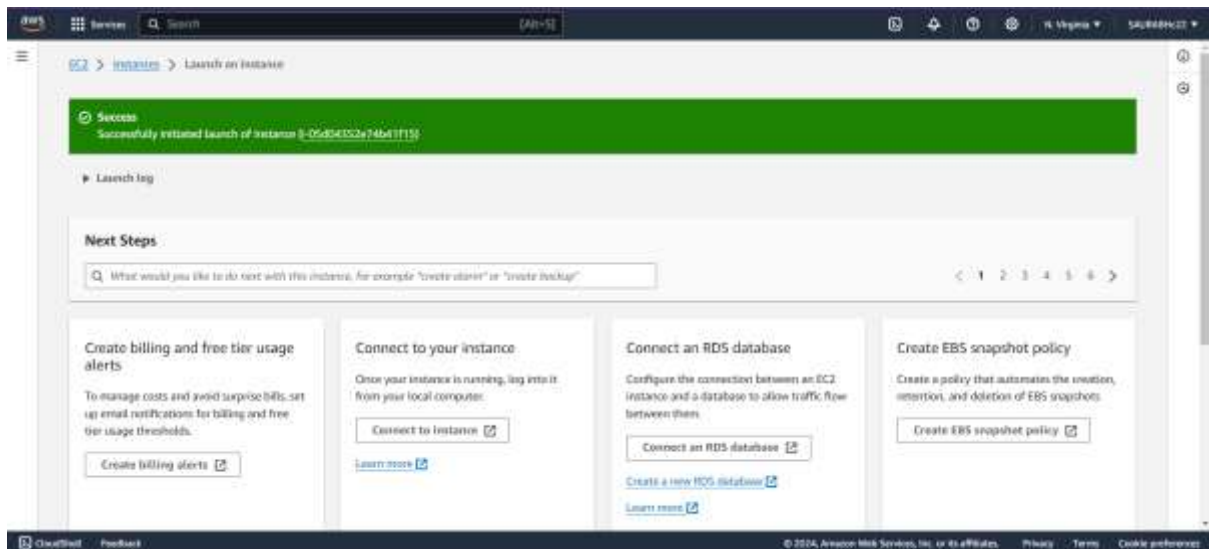
CloudShell

Feedback

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