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LAB 4 Hosting dynamic website in aws 24-08-2023

Go to EC2 service

Launch instance:

- name & tags (tag is local identifier & it is in key value pair form)

- Application & OS images (AMI - Amazon Machine Image)

- ubuntu 22.04

- instance type  $\Rightarrow$  t2.micro, size family name generation

- Key pair login: select vockey

- $\Rightarrow$  download pem key for ubuntu, ppk for windows

- Network settings:

Security group  $\Rightarrow$  set of rules that determine what kind of traffic allowed into system and out of system

inbound rule  
outbound rules  $\Rightarrow$  it is allowed to anywhere

- allow SSH traffic ie 0.0.0.0/0

- allow HTTP

- Configure storage (EBS - Elastic block storage service)

- 8 - gp2

In instance connect and copy (ssh -i)

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In terminal

cd Downloads

- $\Rightarrow$  sudo chmod 400 labsuser.pem

- $\Rightarrow$  ssh -i labsuser.pem ubuntu@ \_\_\_\_\_

key

Public dns from instance

ubuntu@

- $\Rightarrow$  sudo apt-get update

- $\Rightarrow$  sudo apt-get install apache2 libapache2-mod-php php php-mysql mysql-server mysql-client

- $\Rightarrow$  sudo systemctl status apache2

check in browser using public dns

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In terminal

cd Downloads

⇒ sudo chmod 400 labsuser.pem

⇒ ssh -i labsuser.pem ubuntu@\_\_\_\_\_

key

Public dns from instance

ubuntu@\_\_\_\_\_

⇒ sudo apt-get update

⇒ sudo apt-get install apache2 libapache2-mod-php  
php php-mysql mysql-server mysql-client

⇒ sudo systemctl status apache2

check in browser using public dns

to copy data from local system to cloud securely  
in new terminal

⇒ cd /var/www/html ⇒ ls

⇒ scp -i /home/msis/Downloads/labsuser.pem -r

source file to copy ecommerce ubuntu@\_\_\_\_\_: /home/ubuntu/. destination  
copy here

copy

cloud user name

- again in cloud vm

sudo cp -r ecommerce /var/www/html/

⇒ cd /var/www/html ⇒ ls (ecommerce)

⇒ sudo vi /etc/apache2/sites-available/000-default.conf

Document Root /var/www/html/ecommerce

- sudo systemctl restart apache2

Setting up database :

⇒ similar to dynamic website hosting

⇒ This process of hosting website is not good becoz  
it has unmanaged database and both application  
and database is at same place

not managed by cloud provider

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## Module: 7 Storage

28-08-2023

- EBS
- S3
- EFS
- S3 Glacier - long time data archiving service

## Section 1: Elastic Block Storage

- It acts as virtual hard disk of a system
  - Its detachable, durable and persistent block storage for EC2
- volumes are replicated within same Availability zone (non-volatile)  
It holds data even if you turn off system & turn on after long time

## AWS Storage Options:

Block storage v/s

Object Storage

- change one block (piece of file) that contains the character
- entire file has to be updated
- If huge data has to be stored

EBS: process data at low latency, high performance

enables to create individual storage volume and attach them to Amazon EC2 instance

- To replicate volume, Snapshots can be used
- It can be backed up automatically to Amazon S3 through Snapshots, can be copied from one region to another

Uses include

- Boot volume (to store OS) and storage for Amazon EC2 instance
- Data storage for File System
- Database
- Enterprise application.

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EBS Volume Types :

- Volumes can be reconfigured without stopping EC2  
(SSD drives is mandatory for Boot volume)

EBS features

- Snapshots
- Encryption
- Elasticity  $\rightarrow$  increase capacity & change types (ie HDD, SSD)

Volumes, IOPS and pricing

General purpose SSD

Magnetic

Provisioned IOPS SSD

Data Transfer

(EC2  $\rightarrow$  unmanaged service)

Section 2 : Amazon Simple Storage Service (S3)

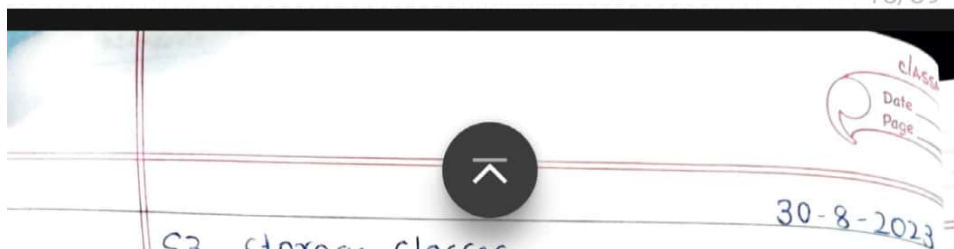
(It is abstract service : we don't have any knowledge of infrastructure or how it works)

- Object level storage
- to access data globally with end point this service can be used
- bucket is resource which holds objects
- data is stored as objects in buckets
- designed for 11 9's durability  $\therefore$  data is replicated in 3 availability zones in a particular region
- It is a managed service (ie. customer need not manage any infrastructure, storage, scaling)
- unlimited storage (single object limited to 5TB)

Data at rest

Data in transit

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## S3 Storage classes

## 1. Standard : 4 9's

⇒ offers high availability, durability, performance  
 applicat<sup>n</sup> has min downtime redundancy or no failure

⇒ choose if you have frequently accessing data and to process

⇒ best fit for designing CDN

⇒ has rapid processing time

## 2. Infrequent Access :

- infrequently access data, 3 9's availability
- offers high durability, low latency, high throughput
- can be used for long term storage, backups, disaster recovery
- low cost, high performance

## 3. One-Zone Infrequent access

- less frequently access, but requires rapid processing time
- no need of high durability, even if we loose data no worries
- used to store metadata of data
- store only in one-zone

## 4. Intelligent Tiering :

- don't know access pattern of data
- automatically moves data from one storage class to another (ie. standard or infrequent access) to optimize cost.
- pricing : according to when data is accessed

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5 Glacier



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## 5 Glacier

- low cost, secure, long time data archiving
- no worry of speed

3 types of retrieval methods.

- S3 bucket life cycle management → automatically move data on schedule (one method to upload data to glacier) first 30 days standard next 6 months one zone infrequent next move to glacier
- other method is directly upload to Glacier

## 6 Glacier Deep Archive

- long term data preservation. storing 8-10 years
- compliance or regulatory data to be stored
- Both offers high availability, low cost.

(Glacier + deep archive)

S3 bucket URLs

- to deploy static website → virtual hosted style url  
bucketname regioncode
- to objects → path-style URL  
regioncode bucketname

Access data anywhere:

1. Management console
2. AWS command line interface
3. SDKs

Common Use cases:

- Backup & storage
- application hosting
- Media hosting
- Software delivery

Storage Pricing:

depends on storage class  
requests, data transfers

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## Module 6 : Compute

## Section 1 : AWS Compute Services

- EC2 : resizable compute resource
- EC2 Auto scaling : automatically scale EC2 instances

## Categorizing compute services

scalability in terms of instances, servers

## EC2 : Elastic Compute Cloud

- replacement for on-premise traditional server resources to compute (ie require CPU, memory, disk)

## Nine key decisions to launch EC2

## 1. Select an AMI (Amazon Machine Image)

- it generally contains OS and few pre-installed softwares require to boot up the instance.

## - AMI choices → Quick start

My AMI

Marketplace AMI

Community AMI

## - Create my own AMI

## 2. Select an instance type

determines : memory (RAM)

Processing power (CPU)

Disk space and disk type (storage)

Network performance

## Instance type categories

## Instance type naming and size

Eg: t3.large

t → family name

3 → generation number

large is size

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NACL Not Allowed

- It is a rule that you can create to control traffic in and out of your VPC

- It acts as a firewall to control traffic in and out of your VPC

- It is a rule that you can create to control traffic in and out of your VPC

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