

AWS Cloud to Home

AWS Cloud to Home
Chapter 1

- Data centers distributed worldwide
- On demand delivery of IT resources
- Shared and dedicated resources

Benefits :-

economies of scale

account isolated at the hypervisor level

pay-as-you-go pricing

No up-front cost

Reduced maintenance & admin costs

Organised into product categories

(compute, storage, database, machine learning etc)

AWS Global Infrastructure

Geographic

Region	Availability Zone	Edge Locations
--------	-------------------	----------------

↓
North Virginia.

↑
at least

each region are divide into ^2 availability zone

- Each AWS Region has multiple physically isolated Availability Zones.

- Connected to each other with fast, private fiber optic networking.

100

More are 1 edge location that are used
for

PAGE NO.	
DATE	1/1/1

CloudFront CDN cached content at edge locations.

for high performance delivery of content.

Also provides DDoS protection.

high speed delivery
with low latency.

DDoS attacks

AWS Management Console.

- Web-based user interface to AWS
- Requires an AWS account
- Monitor costs
- AWS Console Mobile App

SDK & CLI Access.

Software Development Kits.

- Create applications that use AWS services.
- SDKs for Javascript, Node.js, Java, Python, .NET, PHP, Ruby, Go, C++.
- Mobile SDKs for Android, iOS, React Native, Unity, Xamarin.
- Application programming interface enables access to AWS using http calls.

Command Line Interface :-

- Control multiple AWS services from the command line and automate them through scripts.

check me		
	/	/

aws.amazon.com / certification

/ documentation ★★★

/ white papers ★★

/ products ★

/ news ★

→ Signup 12 month free tiers.

→ billing alert for notification

→ My Account

→ AWS Management Console

Cloud Computing Models :-

(IaaS)

(PaaS)

(SaaS)

Contains the basic building block for cloud IT
Eg: VPC, EC2, EBS

AWS manages the underlying infrastructure (usually hardware & OS)
Eg: RDS, EMR, Elasticsearch

Completed product that is run and managed by the service provider. Mostly refers to end-user applications.
Eg: Web based email
Office 365, Salesforce.com

Serverless Computing :- Allow you to build and run applications and services without thinking about servers.

- Also referred to as functions-as-a-service (FaaS) or Abstracted Service

~~AWS Lambda~~ Amazon Simple Storage Service

AWS Lambda

Amazon DynamoDB

Amazon SNS .

Storage

Amazon Simple Storage Service (S3)

We have to create bucket we upload object in bucket
bucket is unlimited.

Glacier Archive

long term arch of data

No access control to be archive

EBS Elastic Block Store

low latency

high block storage, attaching launch with AWS Lambda

EFS Elastci File System

Network attach storage

multiple access to datasource

Storage Gateways

on-premise data

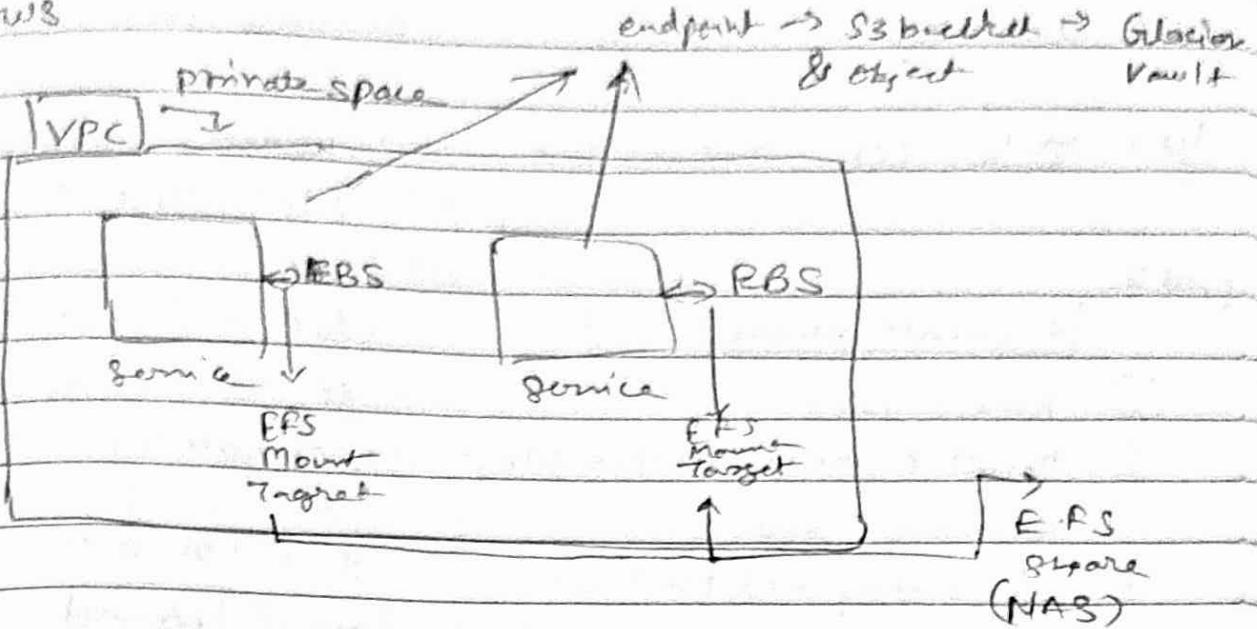
Caching frequently used data file storage data.

Snowball

portable database, migrate data and then transfer launch data.

Optimize to .

AWS

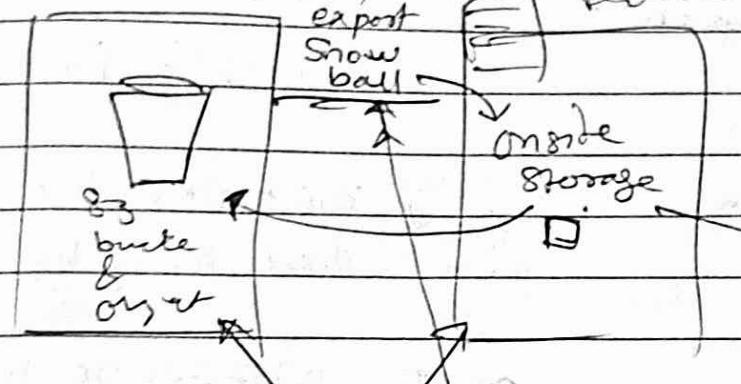


Hybrid Storage Disaster Recovery + Hfst.

AWS

import / export
Snow ball

Data center.



AWS

AWS

Management

Control

S3 bucket

aws sign in

lab1 S3 Services Search S3 → Upload

part II After uploading you can do
→ click

part I

+ Create bucket .]

Click on link and

① Name & Region

go to

② Bucket Name → Unique select → lab notes any file



③ Region → Select

You will get option of

④ Copy setting → X No select

[Open] [Download]

Next

II Configure options.

Click Download.

D Verifying : No select

Next

Successfully Download.

III

Set permission

No change

Next

if we click URL click Object URL file is direct seeing by browser.

part II Selected form go to back on bucket.

IV

Review

Create bucket

do to the bucket

part II After making bucket search it and

you made

→ Link to bucket .

Actions

See it.

Scroll down

+ upload] + Create folder .

delete

↓

Upload.

delete

① → drag and drop here .

with name. Confirm to delete.

now bucket is empty.

Next

Next No change

③ Stage class → Standard ✓

Next

Aws Database Services

Relational Database Service (RDS)

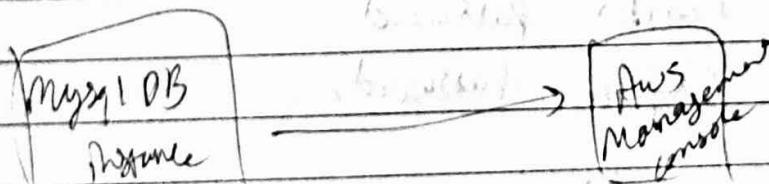
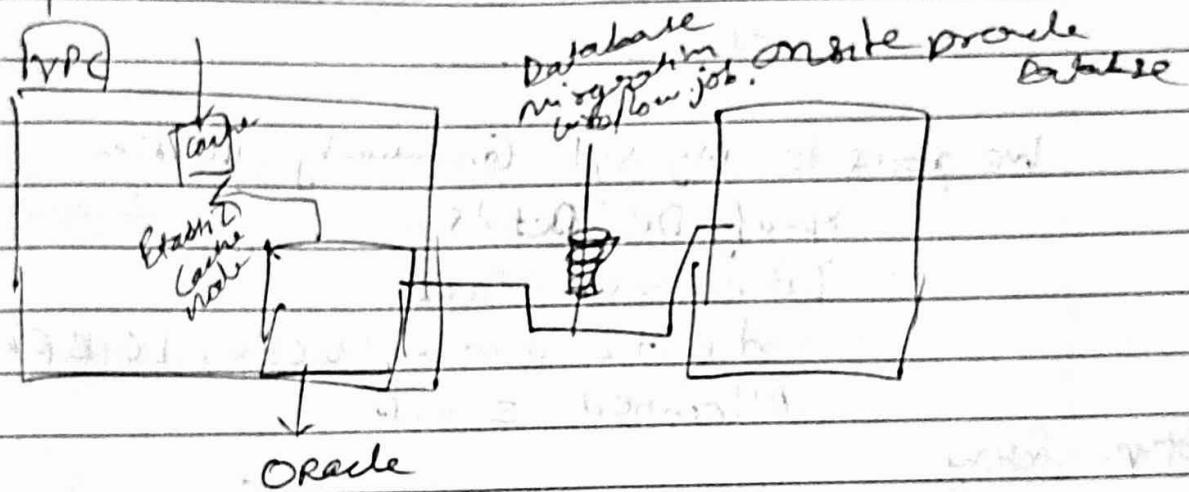
DynamoDB No SQL database serverless.

Redshift fast paytable type SQL.

Elastic Cache in memory.

Database Migration Service (DMS)

Neptune



On Website

Lab 2 Service

Step 1 Selezion Database → RDS

RDS Dashboard.

Instance → launch DB instance

Select the Database.

There are Amazon Aurora.

MySQL.

MariaDB

PostgreSQL.

ORACLE.

SQL Server.

We going to MySQL Community version,

Specify DB Details -

DB instance Class -

d.b.t2.micro - 1 vCPU, 1 GiB RAM

Allocated Storage

Step 2 Setting

DB resource [Default] None of Database

Master Username

Master Password

Confirm Password.

Step 3 Configuration Advanced Setting

We will keep default setting

Scroll down

Data Optim

Database Name | test

Launch DB instance

Successfully DB instance created.

After that copy endpoint
mysql.com downloaded in system.

Welcome to my SQL Workbench

Mysql connection. ① Just here

Connection Name : host-name [copy of endpoint here]
Username

Default database → admin, we have set in master

Test Connections

password : 1234567890

how to download MySQL Shell for windows

Connect admin@ endpoint past here. Command.

Enter the password : 1234567890

sql → switching to sql mode.

Show database;

↓

See the table

use mysql;

Show table;

delete & my D Instance Action → delete. I have
 Get file map that No
 Delete.
 Refresh screen.

~~EC~~ Compute Service.

1 Elastic Compute Cloud (EC2) I and 1000
 Instance provide VPC.

different you use.

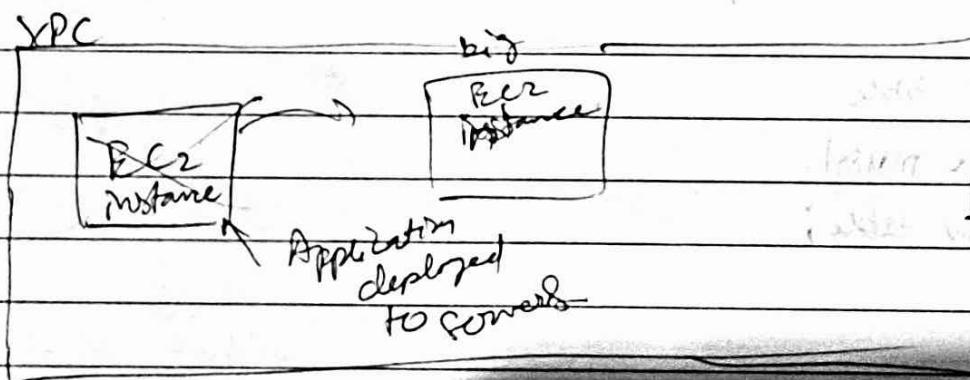
2 EC2 AutoScaling: help to Scaling up and down by on demand and health checkup.

3 Amazon Lightsail: virtual Service
 DNS management and server.

4 Elastic Container Service (ECS): Container management system.

5 AWS Lambda: run Code.
 upload the code and done.

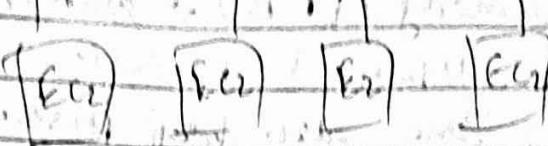
WebServer Example



SDC N

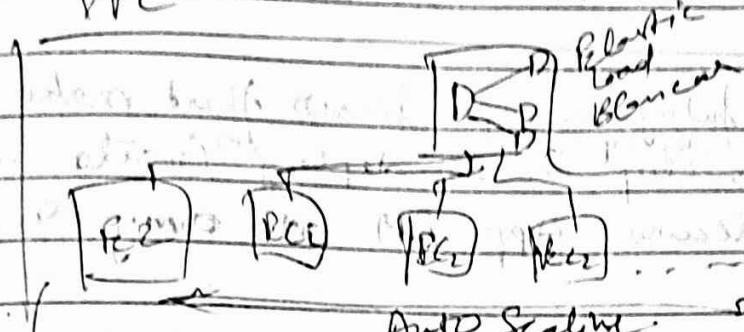
VPC

with 2021
of 2020 and when
to Migrating from and when
and distribute page no
in available
in available



VPC

connect to the cloud provider's network



Auto Scaling:

Automatically

Launch

the EC2 instance

as per demand

it can do health

check up automatically

Networking & Content Delivery.

① CloudFront → Global content Delivery network.

that secure delivery your requested service with 100 edge location.

low latency

high transfer speed.

protection over DDOS attack.

② Virtual Private Cloud (VPC); lets you provision

/ AWS platform → private space only you allow you use it for other.

3) Direct Connect : high speed network Connection private
connect

4) Elastic Load Balancing (ELB) → Automatic distribute the traffic to multiple RC2 instance and multiple Availability zone also bypasses the unhealthy instance.

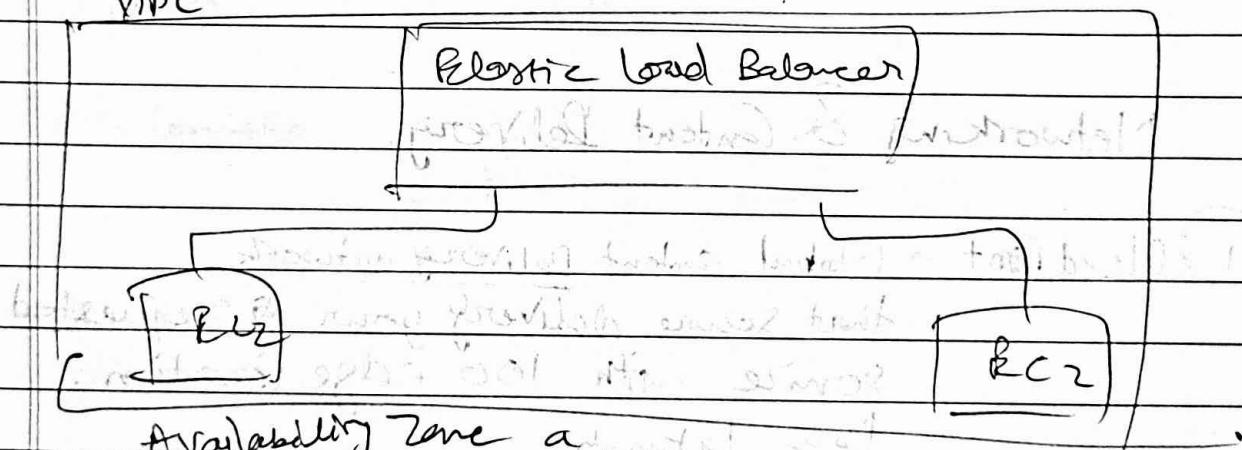
5) Route 53 : DNS, directly traffic from Domain Name direct to backend cloud server.

6) API Gateway : fully manage layer that make it easy to ^{developer} develop and deploy to Create and deploy secure App API at ~~any~~ scale.

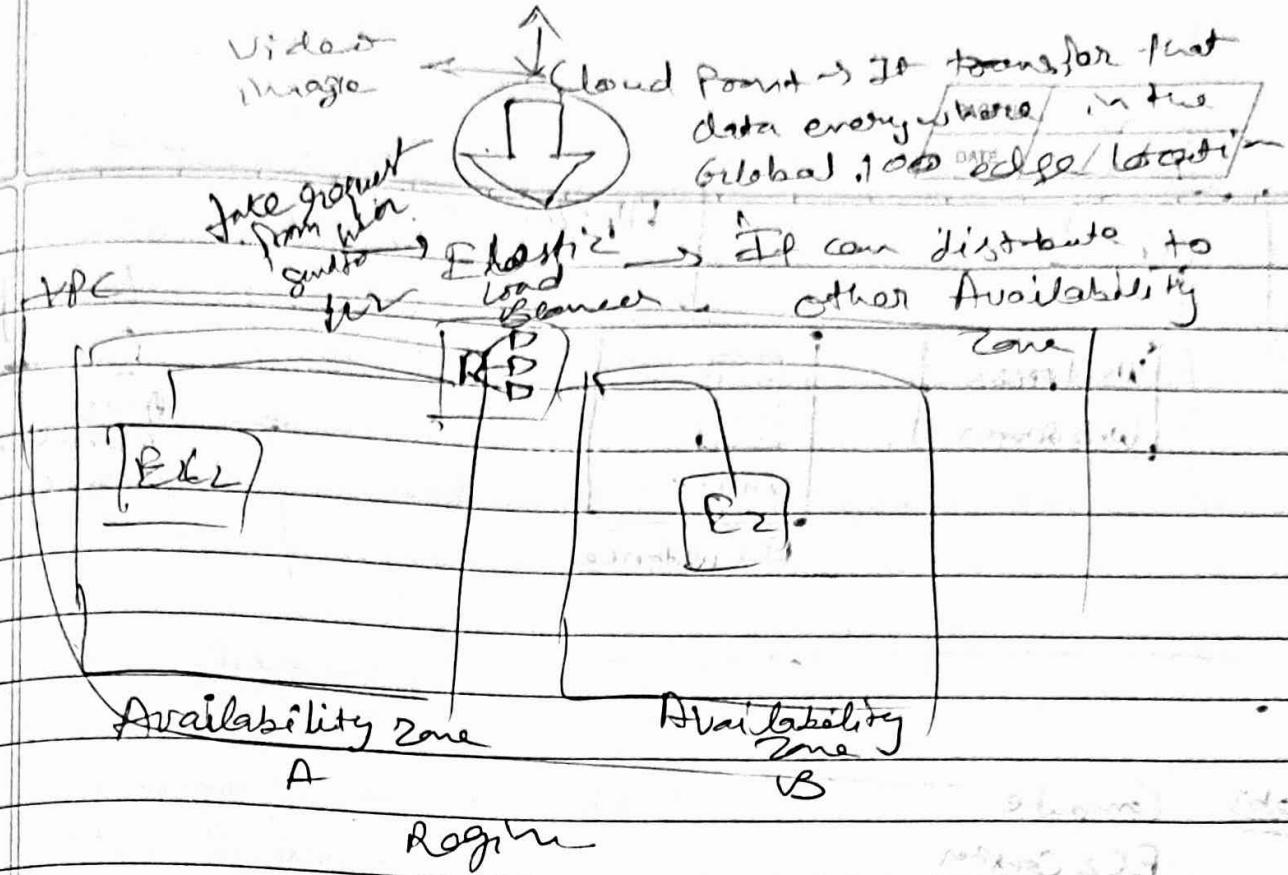
API Serverless

Networking Example

VPC



one goes down other can depend on
other



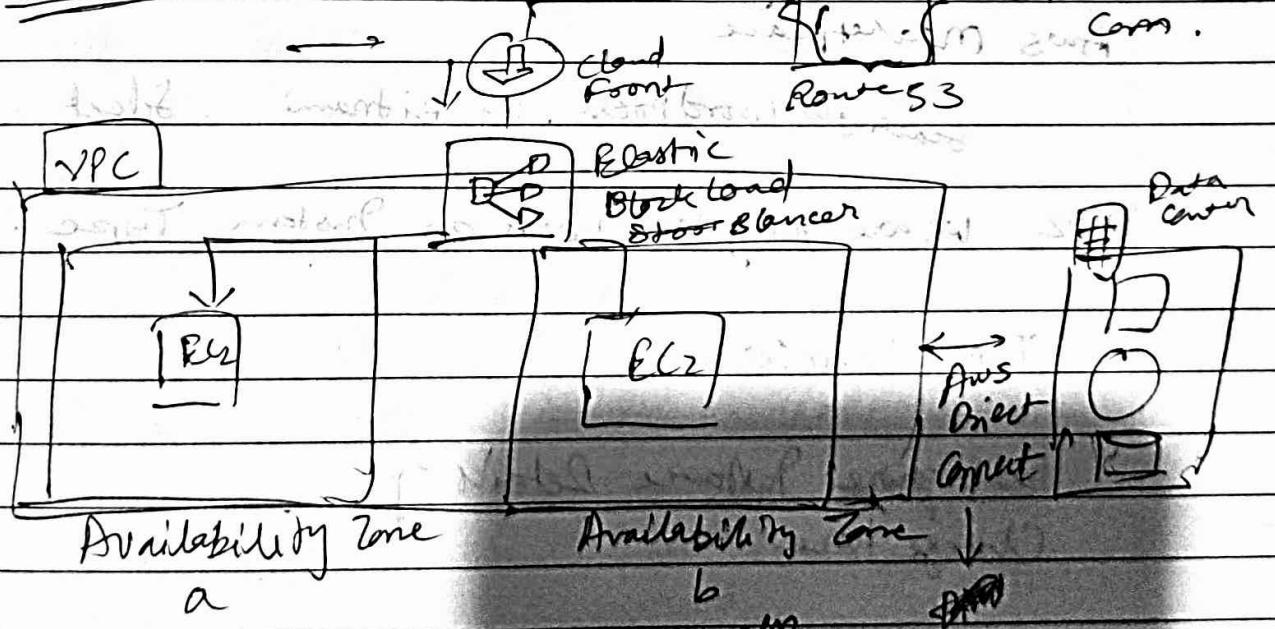
CDN

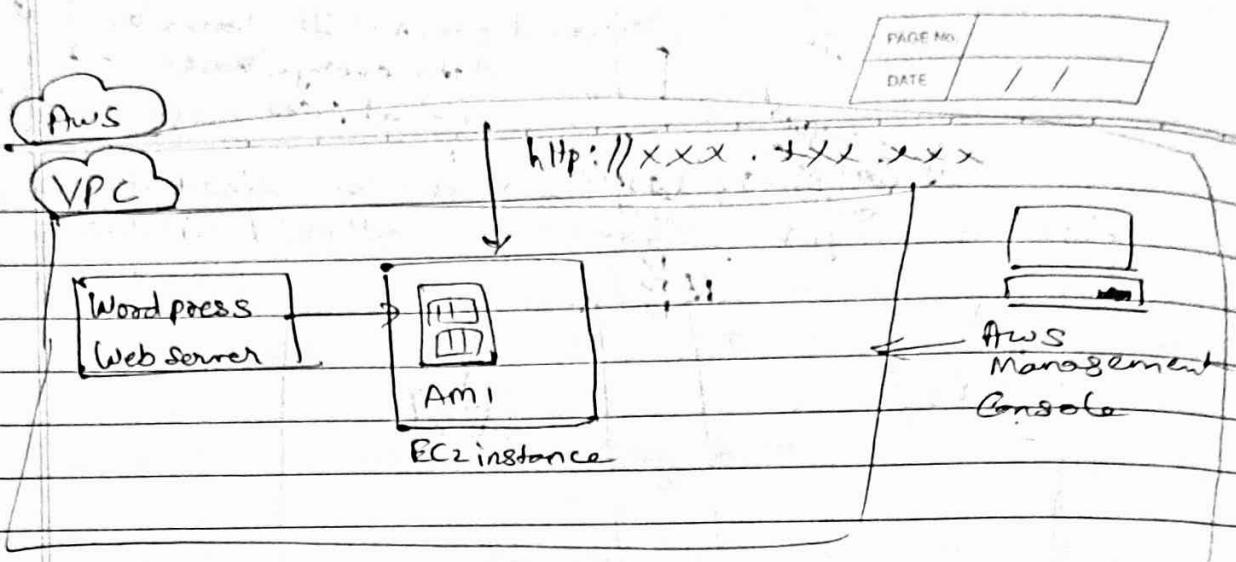
Content Delivery Network (CDN) stores local content

CloudFront → will have its own DNS name and we can put into browser and directly access it.

we have problem of CF type.com.

Direct Connect





Lab3 Compute

EC2 Consoer

Dashboard

Instances -

(T)

Launch Instances -

Step 1 Choose (AMI) Amazon Machine Image like
Image of windows Linux.

Aws Linux Amazon Linux Select

We can use My AMIs or we can use
aws marketplace

Search for Wordpress by Bitnami Select

Step 2 we are going to choose on Instance Type:

- Type t2.micro

Configure Instance Details ↴

Change here

Review and Launch

Select an existing key pair or create a new key pair.

Choose an existing key pair

Create a new key pair

✓ Proceed without a key pair. for now ✓

Key pair is used to directly connect with Bitnami server.

Launch Instances.

Successfully instances is launch.

View Instances.

Pending → Instance State starting

after some time it will be running.

If we select the instance down we can see the details of it.

We will see IPv4 Public IP .54.224.242.55

and open it on browser and you will see your website there on that.

Select Bitnami → Admin

→ Instance Setting

→ Get System Log.

From here copy Bitnami password.

Go back to browser and put S2-47/admin

[User]

[paste the password]

[Login.]

Delete instance

Stop the instance

→ Run

→ Instance state

→ Terminate

Yes, terminated. It has been terminated.

AWS Management Tools

Management Service

Provisioning. , drives infrastructure deployment

Monitoring and logging. , monitors system health

Operations management. , helps manage the platform

Configuration Management! , helps with configuration

①

monitoring service

Cloud Watch Service to implement a billing alert on our account.

→ verin controls for budget alert

② Cloud Formation allows you to use a text file to define your infrastructure and, to use this text file to deploy resource on the AWS Cloud. This allows you the defining of your infrastructure as code and you can manage your infrastructure as code with the same version control tools that you use to manage your code.

③ AWS Service Catalog : catalog catalogue resources → deploying service

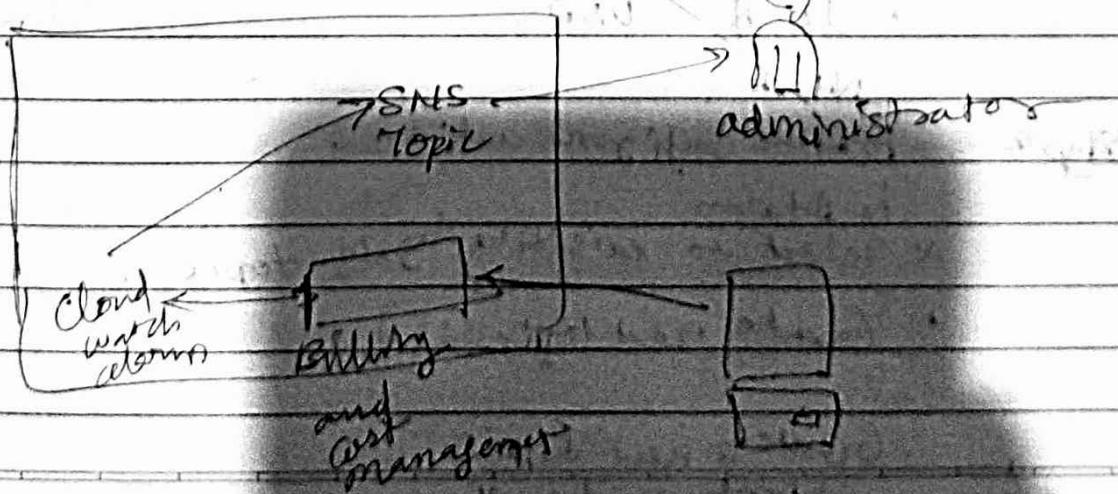
④ AWS Systems Manager : unified user to view operational data from multiple AWS

1st - 3rd
years
3rd year
course

M.A.C.

help to detect operation problems

- (5) Aws CloudTrail: monitors and logs AWS account activity including actions taken through the AWS management console, the AWS software development kits, the command-line tools and other AWS services.
- (6) Aws Config: enable you to access audit and evaluate the configurations of your AWS resources.
→ auditing, security analysis, change management control and also operation troubleshooting
- (7) Aws Opsworks: provide managed instances of chef and puppet. chef and puppet can be used to to SSL or HTML value, configure and automate the deployment of AWS resources.
- (8) Aws trusted advisor: is an online expert system that can analyze your AWS account and the resources inside it and then advise you on how to achieve high security and best performance from those resources.



(lab4) My Billing Dashboard

- ① Billing preference Create topic's
 Receive PDF invoice by Email. Next
 Receive Billing Alerts Step 3

Save

Define

Alarm description

② Services -

Cloud Watch.

Create alarm.

Alarms Step successfully created.

Create Alarm

Select metric

6 hours it will take to show on main page.

Billing.

Total Estimated charge

.VSD

metric

Step 1 Specify metric condition and how often

Condition : Strictly

Greater

10 \$ USD.

Next

Step 2 Actions Configure actions

in Alarm

& Select an existing SNS topic

• Create new topic

Create a new topic

None and email

Order No.	
Date	1/1

6 Application Integration & Consumer engagement.

- 1) Step Function: → distributed applications
 - parallel to command and micro services.
 - second function will follow the output of first function.

2) Simple workflow: Similar to step function.

Service integrations by coordinating many applications

(Srv.F) using intermediate

binding services

with decoupling of app.

3) SNS → messaging service.

Simple Notification Service

Service

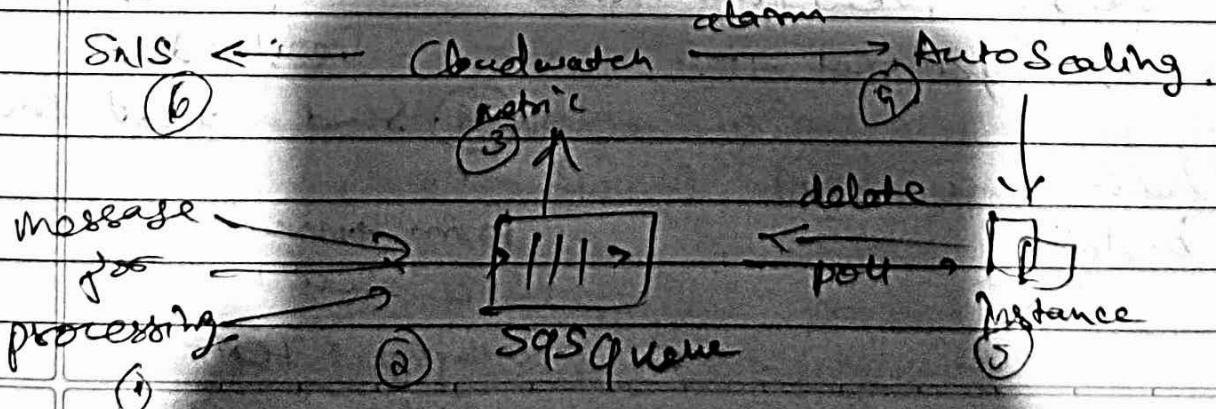
c) SQS

Simple Queue Service → Message Queue Service.

Service

Process Decoupling Eng:

- If average demand exceeds processing capacity, queue will grow indefinitely.
- SQS can provide Cloudwatch metrics that can be used with autoScaling.



Customer engagement

- ① Amazon Connect : - pay as you go
drag-and-drop
graphic interface like word process press.
Any code we do not want here.
- ② Amazon Pinpoint : Allow send email SMS
pin point and mobile push messages
for targeted marketing.
Campaigns -
and direct message, also.
- ③ Simple Email Service (SES) :
Cloud-based bulk
email sending service
and Coming up next &
we're going to be

Services -
Messaging -

② Confirmation

① SES - New email address
Email Address.

③ SES

Verify New Email Address . See your email is
Verified it is Verified.

④ Send a test email.

⑤ Check your email
body:

From Email

To aman

Subject : Test

Body

Send

PAGE NO.	
DATE	11

With SES we can send bulk message email in no time.

- Check on left side sending statistics → Request a sending limit increase.
- Regional based. → Click on it. It will take you to.

Grade case

None

Account

Regarding after short end.

7 Analytics & Machine learning

(1) Amazon EMR : AWS short is AWS Hadoop framework as a service. we can run often framework in Amazon EMR that integrate with Hadoop such as Apache Spark, HBase, Presto and Flink. Data can be analyzed by EMR in number of AWS data stores including S3 & DynamoDB.

(2) Amazon Athena : allow to analyze data stored in an Amazon S3 bucket using standard SQL statement. Amazon Blazit search is a fully managed service for service for some auto.

(3) Amazon Plastic Search Service : elasticsearch's elastic search framework this allow high-speed querying and analysis of data that is stored on AWS Amazon Kinesis allow you to collect.

(4) Kinesis : allow to collect, process, analyze & Real time streaming for my data.

⑤ QuickSight :- provides business intelligence reporting tool similar to tableau or if you're a Java programmer similar to BIRT and is fully managed by AWS.

⑥ Machine learning :-

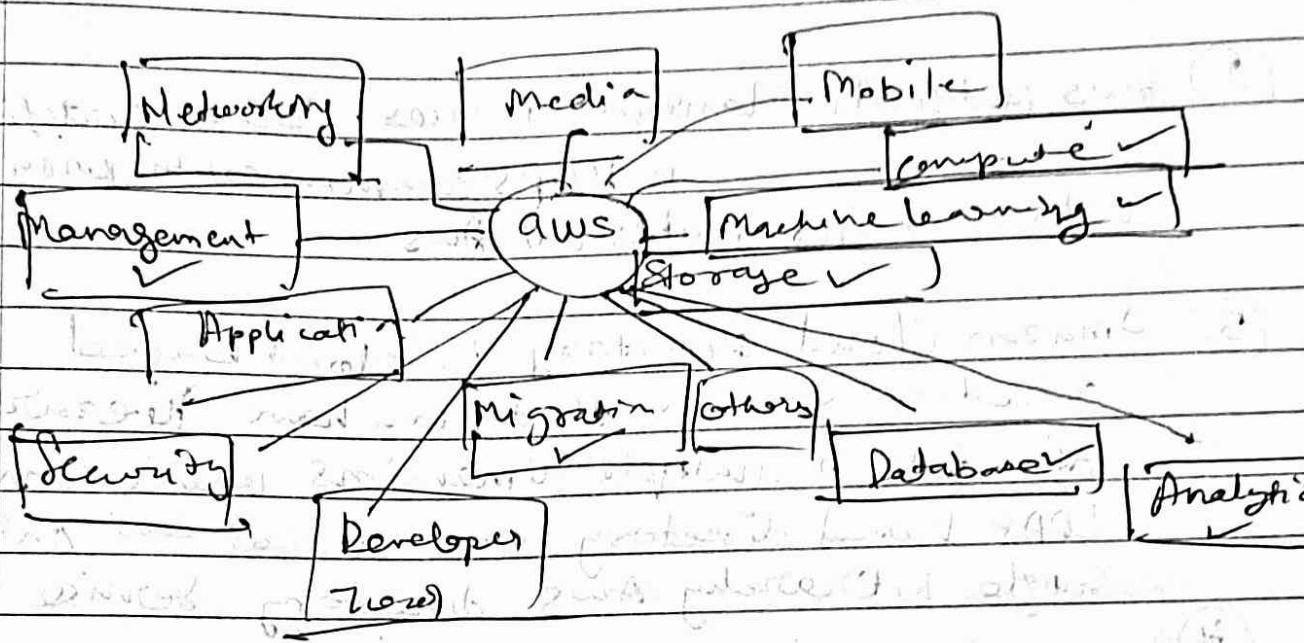
- 1) DeepLens :- A is deep learning enabled video camera, it has a deep learning software development kit that allow you to create advanced vision system applications.
- 2) SageMaker : Aws's flagship machine learning project product it allow you to build and train your own machine learning models and then deploy them to the Aws cloud and use them as a back-end for your applications.
- 3) Amazon Recognition : deep learning based analysis of video and images
- 4) Amazon Lex : allow you to build conversational chatbots, these can be used in many applications such as first-line support for customers.
- 5) Amazon Polly provides : natural sounding text-to-speech
- 6) Amazon Comprehend : can use deep learning to analyze text for insights and relationships - this can be used for customer analysis or for advanced searching of documents.

A 4 50115-5
 B 2
 C 4
 D 3
 E 6
 F 1
 G 4

M 6
 P 10 CS 4
 B 2 OP
 D 3 T 1 OP
 O P G 3 Total 22

2) Amazon Translate : number of different languages
 → Amazon

3) Transcribe : is an automatic speech recognition service. that can analyze audio files that we stored in Amazon S3 and then return that transcribed. The best, ok so let's have a look at using one of these machine



Lab 6 Services

2) Recognition

→ Try Demo

→ Objects and scene detection

→ uploaded image (will detect objects in image)

→ Face. It will analyze image (will detect faces)

→ Image moderation (will detect inappropriate content)

→ Facial analysis

→ Celebrity recognition

→ Face comparison

→ Text in image

⑧ Security, Identity & Compliance

- ① AWS Artifact is an online portal that provides access to AWS security and compliance documentation and that documentation can be readily available when needed for auditing and compliance purposes. AWS Certificate Manager issues SSL.
- ② AWS Certificate Manager issues SSL certificates for HTTPS communication with your website if integrated with AWS.
- ③ Amazon Cloud Directory is cloud-based directory services that can have hierarchies of data in multiple dimensions unlike conventional LDAP based directory services that can only have single hierarchy. AWS directory service is a
- ④ AWS Directory Service is a fully managed Microsoft Active Directory service in the AWS Cloud AWS Cloud HSM.
- ⑤ AWS HSM is a dedicated hardware security module in the AWS Cloud. This allows you to achieve corporate and regulatory compliance while at the same time, greatly reducing your costs over using your own HSM in your own infrastructure.
- ⑥ Amazon Cognito provides sign in and sign up capability for your web and mobile application. You can also integrate that sign up process with

With external OAuth providers such as Google and Facebook and also SAML 2 providers as well

- ⑦ AWS Identity and Access Management (IAM) allows you to manage user access to your AWS services and resources in your account. Users and groups of users have individual permissions that allow or deny access to your resources.
- ⑧ AWS Organizations provides policy-based management for multiple AWS accounts. This is great for large organizations that have multiple accounts and they want to manage those and the users that use those accounts centrally Amazon.
- ⑨ Amazon Inspector is an automated security assessment service it can help to identify vulnerabilities or areas of improvement in this your AWS account
- ⑩ AWS Key Management Service (KMS): easy to create and control encryption keys for your encrypted data and it also uses hardware security modules to secure your keys. It's integrated well with AWS services such as S3, Redshift and EBS ~~and Shield~~
AWS
- ⑪ AWS Shield provided protection against distributed denial of service or DDoS for short protection against DDoS attacks. The standard version of a double shield is implemented automatically on all AWS accounts.

17) Web Application Firewall or where for most is a web application firewall that sits in front of your website to provide additional protection against common attack such as SQL injection and Cross-site Scripting it has different set of rule that can be used for different applications.

Lab 2

Users

Add users

User Name : test

Programmable access

AWS Management Console access

Create password

Custom password

Require password reset

Next permissions

Add user

Set permissions for test

Add user to group

(Copy)

Drop down
policy

Select any policy

Next Review

Review &

Create user

Success sign in Apps in AWS
Download CSV from excel.

in IAM user name

Password

Sign in.

will see all things we

Shortcuts : adding the only one

My Account

User Management console

My Security News

Custom Security Credentials

Password

Change password

Update password

Save change

for more security

9) Developer Tools

- ① AWS Cloud 9 is an integrated development environment running in the AWS Cloud. It allows you to deploy servers directly to AWS from an integrated development environment. We will use Cloud 9 extensively if you go on to the developer associate

pathway with HashiCorp's 'acdk'.

- (2) AWS CodeStar or makes it easy to develop and deploy applications to AWS if you can manage the entire CI/CD pipeline by you it has project management dashboard including and integrated issue tracking capability powered by Atlassian JIRA software

- (3) AWS X-Ray : analyse and debug applications performance

(4) AWS CodeCommit : is Git hub repository.

- (5) AWS CodePipeline : continuous integration and continuous integration delivery service or CI/CD for short it can build test and then deploy your code everytime a code change occurs.

- (6) AWS CodeBuild : your source code runs build compile your source source code run tests and then produces software packages that are ready to deploy on AWS.

- (7) AWS CodeDeploy : is a service that automates a variety of compute services including Amazon EC2 & AWS Lambda and even instances that are running on premises we will be using Code pipeline CodeBuild and CodeDeploy together but you're going to do the developer associate pathway with CI/CD pipeline that will automatically package node NPM

packages and run tests using make before deploying to an AWS environment.

Media Service :- Company called Elemental

(1) Elemental

Ans Elemental Media Encoder is a file based video transcoding service for converting video formats for video on the web content.

(2) Elemental Media Package :- video content for delivery over the internet it can also protect against piracy through the use of digital rights management.

(3) Elemental Media Tailor :- advertising into video streams viewer receive streaming video with ads that are personalized for them.

(4) Elemental Media Live : broadcast grade live video processing service for creating video streams for delivery to televisions and Internet connected devices Elemental media store is a storage

(5) Elemental media store is storage services in AWS cloud that is optimized for media and finally Amazon kinesis video streams streams video from

(6) Amazon Kinesis Video Streams : stream video from connected devices to the AWS cloud Analytics machine learning and other processing applications

AWS Mobile Services

- ① AWS Mobile Hub : one place to generate a cloud configuration file which stores information about those
- ② Configured Services
- ③ AWS Device Farm : testing services for Android iOS web applications in large collected of physical devices in AWS cloud.
- ④ AWS AppSync : is graph & backend for mobile and web applications.

AWS Migrations Service

- ① AWS Application Discovery Service : gathers information about the enterprise's on-premises data centers to help plan migration over to AWS data that is collected in an encrypted format in an AWS application discovery service data store.
- ② AWS Database Migration Service : migration of data bases, we can also migrate database engine type to another totally different database engine type, we can migrate Oracle over to AWS Aurora.
- ③ AWS Server Migration Service : can automate the migration of thousands of on-premise workloads over to the AWS cloud this reduces costs and minimizes our downtime for migrations.

PAGE NO.	
DATE	/ /

to the Aws Cloud this reduces costs and minimizes our downtime for migrations.

- (4) Aws Snowball : is a portable petabyte scale data storage device that can be used to migrate data from on-premises environments over to the Aws cloud you can download your data to the snowball device and then send it to Aws who will then upload that to a storage service for you.

Business Productivity & App Streaming.

- (1) Amazon workDocs : file collaboration and management service in the Aws cloud the web client allows you to view and feedback over 35 different file types including Microsoft Office file types and pdf.
- (2) Aws Work Mail , is secure managed business email and calendar service.
- (3) Amazon chime is an online meeting service in the Aws cloud it is great for businesses for online meeting video conferencing calls , chats and to share content both inside and outside of your organization .
- (4) Amazon Workspaces : desktop service it can easily provide streaming cloud-based Microsoft Windows desktops Amazon .
- (5) Amazon app Stream 2.0 : streaming service that allows you to stream desktop applications .

from Andriod or html's compatible web browser, this is great for users who want access to their applications from anywhere. Now one area that's really progressing rapidly is

AWS IoT

① AWS IoT : Microcontroller Raspberry Pi to securely interact with cloud applications and other devices.

② Amazon freeRTOS : is an operating system for microcontrollers such as the microchip pic32 that allows small low cost low power device connect to AWS IoT.

③ AWS Green grass : is software that lets you run local AWS Lambda function and managing data using Sync and machine learning applications on AWS IoT Connected devices.

AWS Green grass extends AWS services to devices so they can act locally on the data they collect generate while still using cloud-based AWS IoT capabilities. Here's some really

Game Development.

① Amazon GameLift : allow deploy, scale, manage Game Service

② Amazon Lumberyard : it game development environment and cross-platform triple-a game engine on

The AWS Cloud.

Composite Service

Elastic Beanstalk: deploy application

every manage by AWS

We have work on write a code only

: Automatically handle capacity

Provisioning, load balancing, scaling, and application health monitoring.

Easy to upload new version of code. CLI

- Worker Containers -

- Auto Node.js, Java, .NET, PHP, Ruby, Python & Go.

- Servers such Apache, Nginx, Passenger and IIS.

update version

Create → upload → launch → Manage
Application Version environment Environment

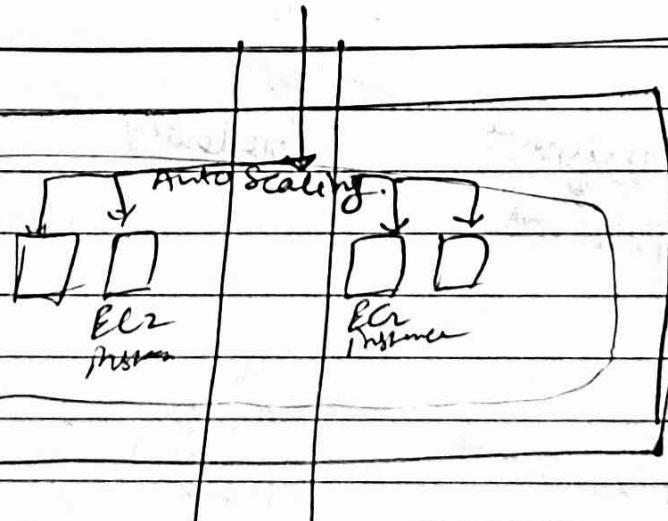
Reploy New Version

Fault tolerance :- Architecture

Elastic Load Balancer

AWS

VPC



Region

Node.js deployment with AWS Elastic Beanstalk

CloudFront with simple website: Metacritic API

Application name

Platform: application

High availability with auto-scaling

Amazon CloudWatch logs, CloudWatch metrics;

Amazon VPC

All operations for website can be done via console

Action

Deployment configuration, delete, applications, instances, stacks etc.

CloudWatch Metrics, CloudWatch Metrics Insights, CloudWatch Metrics Insights Metrics

① API - CloudWatch Metrics

Management Console → Deployment → CloudWatch Metrics

CLI → CloudWatch Metrics → Metrics

SDK → CloudWatch Metrics

User credentials - session token

Access key ID

External User

API

Username

Credentials

Temporary Credentials

Password

AWS Management Console

AWS (CLI)

SDK

Application

Remote Computer

↓
AWS API Calls
AWS Cloud

CLI

Shell

Powershell



aws.amazon.com/cli

AWS Cloud 9 (IPE)

CLI

Create Cloud 9

Create S3 bucket

Upload & delete object

Delete no bucket.

Lab

Cloud 9 Create environment (env)

Name env

Next Step

Env setting →

Next step.

Review.

CLI

aws - version

aws s3 mb s3://cli-peer

make bucket: cli-peer

upload

aws s3 rm / / dev-powandy-note.pdf