**AWS:(2006)**

CLOUD COMPUTING:

* Access services on demand
* Avoid large upfront investments
* Provision computing resources as needed
* Pay only for what we use

AWS GLOBAL INFRASTRUCTURE:

1. REGIONS(38)->sub geographical areas
2. Availability zones(120)->clusters of data center..

Northern virginia(us-east-1)->2006(6 availability zones)

Mumbai(ap-south-1)

Hyderabad(ap-south-2)

1. Data center

CLOUDFRONT(service)-PoP(700+)

* Akamai-CDN
* Content delivery network (CDN) of AWS Service…it used infra called edge location.

(43)TWO LOCAL ZONES(provide some services): DELHI,KOLKATA

* LATENCY DECREASING(it only address latency sensitive application)

WAVELENGTH ZONES:(EDGE LOCATION)

* Ultra low latency for deployment

CLOUD DEPLOYMENT MODELS:

* PUBLIC:

AWS,AZURE,GOOGLE,ORACLE

* PRIVATE:

ON PREM ENVIRONMENT->Financial

ADV:SECURITY DIS:MORE COST

* HYBRID:

PUBLIC(pub facing applications)+PRIVATE(ON PREM)

**FACTOR FOR REGION SELECTION:**

* Low latency
* Compliance/governance
* Service availability
* Cost

**SECURITY:**

AUTHENTICATION(userid,pass)

AUTHORIZATION(EC2,RDS)

**WAF(WELL ARCHITECTED FRAMEWORK)**

**6 PILLARS**

COST OPTIMIZATION

RELIABILITY

OPERATIONAL EXCELLENCE

PERFORMANCE

SECURITY

* Enforce principle of feast privilege
* Multi factor authentication
* Apply at all layers

SUSTAINABILITY

**Amazon resorce number(arn)**

->Data in the buckets are called object

->bucket name should be unique

**CLOUD TRAIL(service):**

🡪Track user history/activities

* IAM: user, policy, role, groups

**IAM POLICIES:**

🡪Json format{key value}

**Customer manage policy**

* Effect

🡪allow or deny

* Action
* Resource
* condition

**POLICY EVALUATION:**

**IAM Groups:**

* One user can be a part of multiple group

Group union will work

**IAM Roles:(account role, service role, web identity->facebook,google)**

Security token service

Two service cannot talk to each other without permisssions

Temporary credentials

Web identity

**AWS networks: 🡪2^32-n -5**

CIDR(classless inter domain routing)

192.168.0.0/24

192.168.0.0🡪network ip

192.168.0.1🡪Route

192.168.0.2🡪DNS

192.168.0.3🡪future

.

.

192.168.0.255🡪broadcast id

AWS supported CIDR from: **2^32-n -5**

/16 - /28

65536 16

**Virtual private cloud: isolated space in cloud**

EX: Buying a land for isolated purpose

**🡪total ip 192.168.0.0/16(65536)**

Public-subnet 4096 ip (4096-5)

192.168.0.0/20

192.168.15.255

Private-subnet 4096 ip

192.168.16.0/20

192.168.31.255

Step 1: creating LTI VPC

Step 2: in that vpc create public subnet

Step3: then private subnet

when we create vpc automatically route table is created

Mearly by writing/naming subnet as public

Step4: create and attach internet gateway with vpc also with subnet -doesn’t make the ip public its just a step

Step 5:Creating route table

Route table have two column

Public router have 2 entry , private have 1 entry

RT-LTI Public sub RT-LTI private sub

Target Destination Target Destination

Local 192.168.0.0/16 Local 192.168.0.0/16

LTI-IGW 0.0.0.0/0

Step 6: Attach routetable with subnet public/private

**Ec2 instance**

**1)Launch**

Name to server—key values

Create tags:prod

**2)AMI (free tier) select os**

**3)Instance Type:**

1. General purpose -for general applications

t, m (t3.micro) t-family,3-generation,micro-size

1. Storage Optimize

Reading & writing 🡪where we need high input, output operations

1. Compute Optimize

High performance compute

1. Memory Optimize

Highend database application

To run database in huge memory

Elastic cache 🡪radis

🡪mencache

1. Accelerated computing

Graphical workload, Floating point calculations

**Free Tier:**

**Free for I yr**

**750hrs/month of IPv4**

**4)Key value pairs:**

Create key pair name

After creating a key pair it download a file

The key which download in my machine is private key

Aws gives public key

**5)Network edit**

Vpc, subnet, enable public ip

Security group name 🡪Akshitha-SGP

**Creating Inbound Security Group Rules**  
remote access🡪for linux, ssh 🡪port 22

http 🡪for windows,rdp🡪port 80

**6)configure storage**

**7)finally connect the ec2 instance and write script (index.html)**

**Then copy the ipv4 public address and run in browser**

**🡪If I stopped the instance the ip will lost so we use service elastic ip**

**Elastic IP(EIP):if**

Elastic ip’s are static ip

Action: associate static ip with

**VPC SECURITY:**

**SECURITY GROUP:**

Instance level firewall

It blocks inbound traffic and it allows outbound traffic

**Network ACl -**subnet level firewall

It allow all inbound and outbound traffics by default

**Lower the rule higher the priority**

**Separate inbound and separate outbound**

**Route53**

Buy domain name

Create a record

Geolocation routing based on location

**Monitoring services:**

**CloudTrail**

Monitor user activity

**CloudWatch**

Monitors resources and applications

🡪logs

🡪metrics

🡪alarms

Create dashboard in cloudwatch🡪LTI-db

**CloudWatch:**Create->metric->ec2->instance->cpu utilization

**Simple notification services(SNS):**

Create topics-> standard -> name-LTI\_server-monitoring-> create

Subcriptions -> email -> email id -> accept in mail

Ec2 -> instances -> create alarm ->

Cloudwatch -> alarms->metrics -> all metrics -> ec2 -> cpu utilization -> graphed metrices -> average -> 5min bell icon -> greater/equal 30 -> in alarm -> select an existing sns topic -> LTI\_server-monitoring -> next -> name

Create a server :default vpc🡪172.31.0.0/16

Every region have one default vpc🡪we can delete that vpc

default subnet == no of availability zones

All default subnets are public ip

**Default subnets are risky**

**Aws global infra**

**Vpc**

**Default vpc**

**S3:**

Simple storage service

Scalable storage in cloud

S3 is an object storage service

Object=data+metadata+key

S3 is unlimited in size but size of single object should not cross 5TB

S3 provides 11(9)’s of durability=>99.999999999

1 Billion object -🡪 for 100 years --🡪 Chances of losing data 1%

When data is stored in S3 it is automatically replicate your data in 3 available zones.

When we create s3 bucket we get two options:

|🡪 General purpose

|🡪7 storage class

|🡪 No option of selecting any availability zone.

|🡪Directory purpose

|🡪 low latency case (provides single digit(0-9) milisec response)

|🡪 S3 express one zone

|🡪 Option of selecting availability zone

AWS has 3 types of storage

|🡪 Block(EBS)

|🡪File (EFS)

|🡪 Object(S3)

Procedure:

S3 buckets -> Buckets -> General ->name ->Block public access(disable) -> versioning -->create bucket

Name:-only small letters ,need to be unique,length btw 3 and 63

Go to the bucket -> add file ->make it accessible in acl

To make multiple objects public:

Go to bucket->create folder->upload all files ->then make it public using Bucket policy

IAM Policy:

* Identity based policy
  + Effect,action ,resource,condition
* Resource based policy
  + Effect,action ,resource,Principal,condition

Bucket policy ->policy generator ->S3 getobjects ->allow->\* for principal ->action (getobject)->generate and copy it -> Paaste in Bucket policy ->Save changes

Inorder to make all the changes public give “arnno::/path of the folder/

A screenshot of a computer

AI-generated content may be incorrect.