**AWS**

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# AWS SCENARIO’S

# Elastic Compute Cloud (EC2)

1. How to access the private instance which is present in private subnet ?

Ans : **Using BASTION(windows public) – HOST(linux private)**

**Step1 : First create VPC with 2 subnets i.e Public & Private.**

**Step2 : Then, Attach IGW to public and NAT to Private**

**Step3: Then, Create Linux Public Instance in Public Subnet and Windows**

**bastion instance in Public subnet too.**

**Step4 : Create Private Linux Instance in the Private Subnet.**

**Step5 : Then Launch Windows instance using RDP.**

**Step6 : After launching, Install Putty& Puttygen in the remote Windows**

**instance.**

**Step7 : Then, Copy the pem file from local desktop to Windows remote server.**

**Step8 : Then, Launch Both Private and Public Instance in the Windows instance**

**on by one.**

**Step9 : Finally install mysql in the private instance.**

2. **How to install httpd on 2 Linux instance in a single time and Host a static website** ?

Ans :

**Step1 :** Select Linux AMI

**Step2 :** Select Instance type

**Step3 :** Enter the No of instances as : 2 & scroll below and write the following script in “user data” :

#!/bin/bash

sudo yum update -y

sudo yum install httpd -y

sudo echo "hello" > index.html

sudo mv index.html /var/www/html

sudo service httpd restart

**Step4:** Now Give tags , security group as SSH & HTTP anywhere and launch the instance & directly copy the public ip and fire.

3. **How to access the private instance from the public instance using Bastion Host / Jump Host**?

Ans : Suppose we have our website in public instance and our Database in Private instance and we want to access the database instance.. so we can do by using Bastion host. For that do the following :

**Step1 :** Launch the Public instance by adding “ec2-user@<public IP>” and uploading the .ppk file with additional one thing is by marking/Checking the “ALLOW AGENT FORWARDING ” present in ssh > auth …i.e. above of the file uploading.

**Step2:** Now copy the private instance private IP and then go to the launched server terminal and fire the following command :

# ssh <private ip of private instance>

Note : if you do “sudo su” then you can’t access the private instance. & you can access max to max 2 instances at a time.

OR

**Step1 :** Convert the key i.e pem file to ppk file using PuttyGen.

**Step2 :** Download the “Peagent” and add the ppk key to peagent.

**Step3 :** Now Open the Putty , Enter the Hostname in “Session” as *ec2-user@<public Instance Public IP>*

**Step4 :** Now go the SSH > Click on “Allow Agent Forwarding”.

**Step5 :** At last , enter the Remote Command in “SSH” as *ssh <Private Instance Private IP>* and Click on OK and Launch.

You will see that the private instance get launched.

OR

(Not Recommended)

**Step1 :** Launch the public instance normally.

**Step2 :** Now use WinScp to copy the .pem file to /home/ec2-user

**Step3 :** Now go to Private instance , and copy the command given as example when we click on connect of private instance like :

ssh -i "dhiraj.pem" ec2-user@10.0.2.158

**Step4 :** At last , Open the Public Instance and paste the copied command. You will see that we successfully connected to private instance.

4. **How can you/anyone access Windows instance and the data without using RDP**?

Ans :

**Step1 :** Create Windows instance and then launch by using RDP first.

**Step2 :** After launching, create users by following steps :

Control panel > User Accounts > Manage another account > Add New user

**Step3 :** After that add the username and password and save it.

**Step4:** Now go to Computer management and do the following steps :

Computer Management > Local Users and Groups > Groups > Remote Desktop Users

**Step5:** Now click on add and enter the username in title “ Enter the object name to select” & click on Select Names > OK > OK .

**Step6:** Now open “mstsc” and enter the windows public IP and then Username and password.

**Step7 :** Finally you will be able to access the instance and the data in it.

5. How to ssh to Amazon linux , Ubuntu instance & access Data without using key?

Ans :

**Step1 :** First login to Amazon linux instance using key pair.

**Step2 :** Then edit the configuration file :

# sudo vi /etc/ssh/sshd\_config

**Step3 :** If you want to login root user without key do following changes in config file :

# PermitRootLogin yes

**Step4 :** If you want to login specific user without key do following changes in config file (no to yes) :

PasswordAuthentication yes

**Step5 :** Now add the users you want to give access of server:

# adduser shubmesh5

# passwd shubmesh5

New password :

Retype password :

**Step6 :** Now reastart sshd :

# service sshd restart

**Step7 :** Now with only public key you can ssh to Amazon Linux Instance.

6. Can we connect EC2 instance with the internet which is not having Public IP address?

Ans : We can connect EC2 instance with the internet by using NAT Gateway which having Elastic IP.

The EC2 uses the Public IP of the NAT gateway or NAT Instance and connect to the internet.

# Virtual Private Cloud (VPC)

1. We have two VPCs i.e VPC1 and VPC2. Each VPC having EC2. VPC1 EC2 is SSH but VPC2 EC2 is not SSH. So how can you solve this issue?

Ans : **Step1 :** I will first check whether SSH port is open or not in Security Group Inbound Rule. If Not open, then I will add SSH rule and open that port.

**Step2 :** Again if its not doing SSH then check Network ACL SSH port is open or not. If not, then open the port.

# Elastic Load Balancer (ELB)

1. **How to check whether our Load Balancer is working or not**?

Ans : To check our ELB is working or not we have to do following things :

**Step1:** Firstly create 2 Linux instances in the public subnet.

**Step2:** Now , host a website in both the subnet like, Write “FIRST” in the first instance and “SECOND” in the second instance.

**Step3:** Now , create a load balancer and attach with both of them.

**Step4:** Now copy the IP/DNS provided by the ELB and put it in browser.

You will see the changing of workload between two instances/servers by changing the pages like FIRST , SECOND etc.

2. **Suppose we have put our web server(EC2) and database server(RDS) in same private subnet for security reason and we want to get access of web server(EC2) to end user. So how we can achieve this**?

Ans : By using Public-Facing Load Balancer :

**Step1 :** Create a VPC with 2 subnets like Public subnet and Private Subnet.

**Step2 :** Create a IGW to Public Subnet and create a NAT Gateway in Public Subnet and attach to Private Instance.

**Step3 :** Now , Add the Public instance in Public Subnet and the Private Instance in Private subnet. In Our case , we want both Web-Server & Database-Server in Private Subnet. So we will create Web server and DB Server in Private subnet only.

**Step3:** Now, For creating Web server, go to EC2 and add security group as SSH and HTTP. & For creating DB Server, go to EC2 and add security group as SSH and MYSQL.

**Step4:** Now create a Load Balancer , Go to Load Balancer > Classic LB > Give name & Select VPC .

**Step5 :** As our Load Balancer is Public- Facing LB so Select Public Subnet from Bottom. > Click On “Assign Security Groups” > Create New SG > Add rule as “All Traffic” > Next > Next > Next > Add Ec2 Instances > Select the “ Web server “ > add Tags > Review and Create.

**Step6 :** Now , Go to Instances tab at bottom , Check the instances status till it becomes “InService”.

**Step5 :** Now copy the DNS Name and Paste in URL.

By doing this, We can only access the Web Server and Not the Database Server.

# Simple Storage Service (S3)

1.Suppose I am having my data present in S3 bucket named “Bucket-N.Virginia” and I want to take backup to other region bucket named “Bucket-Mumbai” of that data whenever I upload a new data in that bucket. So how will I do that ?

Ans : We can achieve this by using S3 Cross-Region Replication.

Cross-Region Replication is used to take a backup of our bucket to another region or another account.

**Step1 :** Create a bucket in N. Virginia Region named “Bucket-N.Virginia”. and returen back to your original region. i.e Mumbai

**Step2 :** Make Sure versioning is enable in both the bucket.

**Step3 :** Go to your bucket “Bucket-Mumbai” and go to “Management” & then select “Replication ” tab.

**Step4 :** Click on “Get Started”.

**Step5 :** Make sure it must have already selected entire bucket radio button.

**Step6 :** Select the destination bucket i.e “Bucket-N.Virginia”. It can be in different region or in Different account too. And click on Next.

**Step7 :** In IAM Role , Click on “create new role “ and Give rulename as “mylifemyrule1” and make sure status is enabled.Then Click on Next and Save.

*Note : The rulename must be unique.*

**Step8 :** Now you can upload any data in your source bucket and it will automatically get copy to destination. And it is similar for deletion.

2. Consider I am having my data stored in S3 bucket and I want to move data from standard class IA after 30 days, IA to the glacier after 90 days, and expire after 360 days. So How will you do that ?

Ans : To achieve this we have to create **Life-Cycle Rule** :

**Step1 :** Go to your bucket and go to the “ Lifecycle ” present in “ management ” tab.

**Step2 :** Click on “Add Lifecycle rule”.

**Step3 :** Enter the lifecycle rule name as “N.Virginia-data” and make sure the radio tab is on “Apply to all the objects in the buckets” & Click on Next.

**Step4 :** Select “ Current Version “ and Click on “+ Add transition” .

**Step5 :** In object creation select “ Transition to Standard IA after” and days as “30 days”.

**Step6 :** Again Click on “+ Add Transition ”.

**Step7 :** Select “Transition to Glacier after” and days as “60 days” and Click on I Acknowledge. And Next.

**Step8 :** Select Previous and Current version both and Give the expiry days as “360 days” to both. Click on Next and Save.

Finally this will move our data to Standard IA after 30 days and then to Glacier after 60 days and gets deleted after 360 days.

# Elastic Block Storage (EBS)

1. How to take per minute backup of EBS volume which is attached to Ec2 instance which is running currently ?

Ans : Automated backup can be done by : Life Cycle Manager, AWS Backup , N2WS (3rd party tool) and By using CloudWatch Events.

* ***Using CloudWatch Event :***

So we will do By CloudWatch Event :

**Step1 :** Go to CloudWatch Event tab.

**Step2 :** Click On Radio Button “Schedule”

**Step3 :** We can give fixed Time or By using Crontab.

**Step4 :** Click on Add Targets.

**Step5 :** Select Target as “EC2 Create Snapshot API calls”

**Step6 :** Enter the EBS Volume ID & Create an IAM Role.

**Step7 :** Click On Configure Details.

This will create automated EBS volume backups on every minutes , hrs , days, years.

* ***Using LifeCycle Manager :***

**Step1 :** Go to EC2 > Lifecycle Manager.

**Step2 :** Click on “Create Snapshot Lifecycle Policy”

**Step3 :** Give the Descripting & Select the resource type as “Volume” & Give the Tags names as you had given to your Volume “my-volume”.

**Step4 :** Now , Give the Schedule name and Run policy for every “1 minutes” by using ConJob Expression.

*Note : It backup for minimum Every hour.*

**Step5 :** Give the Starting time of this policy and the count of backup/snapshot in “Retain”

**Step7 :** All the remaining details don’t change.

**Step6 :** Finally, Click on Create Policy

* ***Using AWS Backup :***

**Step1 :** Go to “ AWS Backup ” Service.

**Step2 :** Click on “Manage Backup plan“ and then “Create Backup Plan”.

**Step3 :** Select “Build New Plan”.

**Step4 :** Give Backup plan name as “My-EBS backup”

**Step5 :** Give rule name as “myrule” & select the frequency like cronjob or fixed i.e Every 12 hrs , daily ,weekly, monthly and Yearly.

**Step6 :** Now , If you want to make your backup to transition like to Cold Storage and delete this snapshot after day. You can give.

**Step7 :** Remaining things kept as it is & click on “Create Plan”

**Step8 :** Now after creating plan, Click on Assign resources.

**Step9 :** Give Resources Assignment name “myEBS-resource” and Give assign resources by using TAGS or RESOURCES ID.

**Step10 :** You can take backup of AURORA , DynamoDB , EBS , EC2 , EFS , RDS & Storage Gateway. In our case we want to take backup of EBS Volume. So we will select EBS and paste the Volume ID & Click on “Assign Resources”

# Autoscaling (ASG)

1. **I created a web application with autoscaling. I observed that the traffic on my application is the highest on Wednesdays and Fridays between 9 AM and 7 PM. What would be the best solution for me to handle the scaling**?

Ans : Configure a policy in autoscaling to scale as per the predictable traffic patterns.

2. **You have an application running on your Amazon EC2 instance. You want to reduce the load on your instance as soon as the CPU utilization reaches 100 percent. How will you do that ?**

Ans : It can be done by creating an autoscaling group to deploy more instances when the CPU utilization exceeds 100 percent and distributing traffic among instances by creating a load balancer and registering the Amazon EC2 instances with it. Use following method to setup autoscaling policy.

3. Have two instances 1a & 1b .If 1a instance CPU & Memory goes high more than 50% then on that time 1b instance should be up . So how we can achieve it ?

**Ans : This can be done by using Autoscaling Policy with the use of CloudWatch.If your CPU usage is increased by 50% then the autoscaling will atutomatically launch another instances which we will mention.**

**Step1 : Create Public instance in the custom VPC.**

**Step2 : Create an AMI from that Instance.**

**Step3 : Create Launch Configuration from the AMI that we created.**

**Step4 : Create Autoscaling Group.**

**Step5 : Create an Cloudwatch Alarm with following Config :**

Step6 : Go to alarm > EC2 > by Autoscaling group > CPU Utilization >

Threshold : CPU >= 50% > Create alarm.

Step7 : Go to Autoscaling Group > Scaling policy tab > Action > Edit >

Policy name : mypolicy

Alarm : Select the create alarm.

Add : 1 (bcoz we want to increase instance by 1 i.e 1b)

CPU Utilization >= 50

Save.

Similarly you can decrease the instances by using the scaling policies by providing the right parameters. Use remove instead of add.

# Relational Database Service (RDS)

1. Suppose we have 3 servers like Apache, Nginx and RDS. We want to route the traffic from Nginx to RDS?

Ans : We have to give RDS endpoint to Application setting. or We can do by JDBC ODBC Connectivity method.

2. Suppose you have to take a backup of RDS database. You have to take a dumb file?

Ans :

# CloudWatch

1. How to Stop the Instances , Reboot the instances , Terminate the instances at a fixed time or every 2 hour ?

Ans : All the things can be done by CloudWatch Events .

**Step1 :** Go to CloudWatch > Events

**Step2 :** Select Schedule Radio button.

**Step3 :** Give Fixed Time like 2 hrs or Schedule using CronJob.

**Step4 :** Select the targets like “EC2 StopInstances API call” “EC2 RebotInstances API call” “EC2 TerminateInstances API call”

**Step5 :** Select the “ Create New Role ” Everytime.

**Step6 :** Click on “Configure Details”.

**Step7 :** Give the Name , Click on “ Create a Rule “

# Identity and Access Management (IAM)

1. **Your organization has four instances for production and another four for testing. You are asked to set up a group of IAM users that can only access the four production instances and not the other four testing instances. How will you achieve this**?

Ans : We can achieve this by defining tags on the test and production instances and then adding a condition to the IAM policy that allows access to specific tags.

# Route 53

1. Suppose you have one domain like " shubham.com " and your main application is running on shubham.com and your domain is attached with ELB and You have one more application and it is attached to another load balancer and it should be a secure and you have to attach it to your domain to sub-domain. How will you do that ?

Ans :

2.?

Ans : We