THE SPARKS FOUNDATION - GRIP

DOMAIN- WEB & MOBILE DEVELOPMENT TASKS

TASK 4- CI/CD: CLOUD COMPUTING

Author- Navjyot Kumar

Objectives:

◇ Read up about AWS or Azure.

◇ Write up about the steps of setup and essentials of AWS EC2 or Azure VM (one page step by step).

◇ Create an EC2 or azure VM instance and access it through SSH from your pc over internet.

◇ In the EC2, deploy and run any application (a website with tomcat/spring boot) or python based project.

◇ Use at least one service apart from EC2 or VM, i.e. Database service, or MQ, ML, Mobile or any other services provided by AWS or Azure.

➢ STEPS OF SETUP AND ESSENTIALS OF AWS

1. Open AWS Management Console https://aws.amazon.com/console/

2. Log in to the console using your email and password.

3. Then, for launching a VM, go to EC2 under Compute.

Q. What is a VM?

A Virtual Machine (VM) is a compute resource that uses software instead of a physical computer to run programs and deploy apps. It is software that runs programs or applications without being tied to a physical machine.

Q. What is Compute?

The Compute category of services are key resources that allow you to carry out computational abilities via a series of

instructions used by applications and systems.

Q. What is EC2?

Amazon Elastic Compute Cloud (Amazon EC2) is a web service that provides secure, resizable compute capacity in the cloud. It provides capability to launch a VM on the cloud.

4. Click on Create new Instance.

Q. What is EC2 instance?

An EC2 instance is a virtual server in Amazon's Elastic Compute Cloud for running applications on the Amazon Web

Services infrastructure.

5. Now, we need to select AMI.

Q. What is AMI?

An Amazon Machine Image is a special type of virtual appliance that is used to create a virtual machine within the

Amazon Elastic Compute Cloud. It serves as the basic unit of deployment for services delivered using EC2. It serves as a template.

6. Now, we need to Choose an Instance Type. (basic specifications like number of CPU)

7. Next, we have to Configure Instance Details. (details like Number of Instances, region, subnet, etc.)

8. Next, we have to Add Storage.

9. Next, Add Tags. (optional)

10. Next, Add Security Group. (here we include the firewall rules for access to our instance and traffic)

11. Finally, Review And Launch.

12. It asks for a key-pair. (Note: It's necessary to have the key pair downloaded in the system before launching the instance so that we can connect to the instance via SSH.)

Q. What is key-pair?

A key-pair, consisting of a private key and a public key, is a set of security credentials that you use to prove your identity when connecting to an instance.

Q. What is SSH?

SSH or Secure Shell is a network communication protocol that enables two computers to communicate and share data.

Let's connect to our Instance via putty.

Q. What is Putty?

PuTTy is a software terminal emulator for Windows and Linux. It is an open source application that supports multiple network protocols, such as - SSH, Telnet, SCP, rlogin, and serial port.

13. For this, we need Public IP of our instance and key pair we downloaded earlier in .ppk format. (it is originally in .pem format.)

Now, let's run a simple application on this instance. For this task, I have created a Corona Fund Raiser ,a static website, using HTML, CSS and JavaScript and hosted on GitHub.

14. Inside Instance terminal, commands to be run are:

• sudo su : It provides root access

• yum update : It ensures that everything is up to date.

• yum install httpd : It installs apache webserver on our instance.

Q. What is Apache?

The Apache HTTP Server, commonly called Apache, is a free, widely-used and open-source cross-platform web server software. It mainly contains two folder parts: /var/www/html and /var/www/cgi-bin. The static files are kept in html folder while cgi-bin folder is for dynamic scripts.

• yum install git : It installs git in our VM.

• git clone "https://www.github.com/<account>/<repository>.git" : It clones the repository from GitHub to our system.

• mv /home/ec2-user/Corona-Fund-Raiser/index.html /var/www/html : It moves index.html file to apache's html folder.

• mv /home/ec2-user/Corona-Fund-Raiser/styles.css /var/www/html : It moves styles.css file to apache's html folder.

• httpd -k start : It starts the apache webserver.

Now, let's check whether the application is hosted correctly over internet or not.

15. On browser, type http://<public\_ip\_of\_instance>

If everything is correct, then website shows up.

➢ WHAT IS AMAZON SNS?

AMAZON SIMPLE NOTIFICATION SERVICE (AMAZON SNS) IS A MANAGED SERVICE THAT PROVIDES MESSAGE DELIVERY FROM PUBLISHERS TO SUBSCRIBERS (ALSO KNOWN AS PRODUCERS AND CONSUMERS).

PUBLISHERS COMMUNICATE ASYNCHRONOUSLY WITH SUBSCRIBERS BY SENDING MESSAGES TO A TOPIC, WHICH IS A LOGICAL ACCESS POINT AND COMMUNICATION CHANNEL. CLIENTS CAN SUBSCRIBE TO THE SNS TOPIC AND RECEIVE PUBLISHED MESSAGES USING A SUPPORTED ENDPOINT TYPE, SUCH AS AMAZON KINESIS DATA FIREHOSE, AMAZON SQS, AWS LAMBDA, HTTP, EMAIL, MOBILE PUSH NOTIFICATIONS, AND MOBILE TEXT MESSAGES (SMS).

➢ SETTING UP AN AMAZON SNS TOPIC USING THE AWS MANAGEMENT CONSOLE

First, create a topic, then subscribe to it. You can optionally publish a test message to the topic.

To create an SNS topic

1. Open the Amazon SNS console at https://console.aws.amazon.com/sns/v3/home.
2. On the Amazon SNS dashboard, under Common actions, choose Create Topic.
3. In the Create new topic dialog box, for Topic name, enter a name for the topic (for example, my-topic).
4. Choose Create topic.
5. Copy the Topic ARN for the next task (for example, arn:aws:sns:us-east-1:111122223333:my-topic).

To subscribe to an SNS topic

1. Open the Amazon SNS console at https://console.aws.amazon.com/sns/v3/home.
2. In the navigation pane, choose Subscriptions, Create subscription.
3. In the Create subscription dialog box, for Topic ARN, paste the topic ARN that you created in the previous task.
4. For Protocol, choose Email.
5. For Endpoint, enter an email address that you can use to receive the notification, and then choose Create subscription.
6. From your email application, open the message from AWS Notifications and confirm your subscription.
7. Your web browser displays a confirmation response from Amazon SNS.

To publish a test message to an SNS topic

1. Open the Amazon SNS console at https://console.aws.amazon.com/sns/v3/home.
2. In the navigation pane, choose Topics.
3. On the Topics page, select a topic and choose Publish to topic.
4. In the Publish a message page, for Subject, enter a subject line for your message, and for Message, enter a brief message.
5. Choose Publish Message.
6. Check your email to confirm that you received the message.

THANK YOU!!