AWS EC2

What is AWS EC2?

- EC2 stands for Elastic Compute Cloud.
- Amazon EC2 is the virtual machine in the Cloud Environment.
- Amazon EC2 provides scalable capacity. Instances can scale up and down automatically based on the traffic.
- You do not have to invest in the hardware.
- You can launch as many servers as you want and you will have complete control over the servers and can manage security, networking, and storage.

Instance Type:

- Instance type is providing a range of instance types for various use cases.
- The instance is the processor and memory of your EC2 instance.
- The EC2 instance types are generally categorized into 6 types.
- They are:
    - General Purpose – (T2, M5, M4)
    - Compute Optimized – (C5, C4)
    - Memory Optimized – (X1, R4)
    - Accelerated Computing - (P3, P2, G3, F1)
    - Storage optimized - (I3, H1, D2)
    - GPU Optimized

EBS Volume:

- EBS Stands for Elastic Block Storage.
- Virtual Hard Disk in the Cloud.
- It is the block-level storage that is assigned to your single EC2 Instance.
- It persists independently from running EC2.
    - Types of EBS Storage
        - General Purpose (SSD)
        - Provisioned IOPS (SSD)
        - Throughput Optimized Hard Disk Drive
        - Cold Hard Disk Drive
        - Magnetic

Instance Store: Instance store is the ephemeral block-level storage for the EC2 instance.

- Two types of Storage options are available in EC2.
- One is EBS Volume and another is Instance store.
- Instance stores can be used for faster processing and temporary storage of the application.

AMI: AMI Stands for **Amazon Machine Image**.

- AMI decides the OS, installs dependencies, libraries, data of your EC2 instances.
- Multiple instances can be launched using a single AMI.
- Used when there is a need for multiple instances with the same configuration.

Security Group: A Security group acts as a virtual firewall for your EC2 Instances.

- It decides the type of port and kind of traffic to allow.

- Five security groups can attach to single instances.
- Security groups are active at the instance level.
- Network ACLs are active at the subnet level.
- Inbound rules are the traffic that can come inside your EC2 Instance. i.e., Incoming HTTP/HTTPS request in port 80 and port 443.
- Outbound rules are the traffic for outside of your EC2 Instance. i.e., Outgoing HTTP/HTTPS response from port 80 and port 443.
- Security Groups can only allow but can't deny the rules.
- If you allow port 80 for inbound and outbound is by default enabled for that security group, hence the Security group is considered as stateful.
- By default, in the outbound rule all traffic is allowed and needs to define the inbound rules.

Key Pair: A key pair, consisting of a private key and a public key, is a set of security credentials that you can use to prove your identity while connecting to an instance.

- Amazon EC2 instances use two keys, one is the public key which is attached to your EC2 instance.
- Another is the private key which is with you. You can get access to the EC2 instance only if these keys get matched.
- Keep the private key in a secure place.

Tags: Tag is a key-value name you assign to your AWS Resources.

- Tags are the identifier of the resource.
- Resources can be organized well using the tags.

Charges:

- You will get different pricing options such as On-Demand, Saving Plan, Reserved Instances, and Spot Instances.
- You will also get the dedicated host where the physical servers will be allocated to you.

Free Tier Limit:

- AWS Free tier comes with 750 hrs. of Linux and Windows Instances.
- Only t2.micro instances are eligible for the free tier.
- The region where t2.micro is not available you can use t3.micro.