SESSION 4

AWS EC2

(Elastic Compute Cloud)

Infrastructure As a Service(IaaS)

AWS EC2

- It is a virtual server in the cloud
- Amazon EC2 provides **scalable computing capacity** in the AWS cloud.
- Leveraging it enables organisations to develop and deploy applications faster, without needing to invest in hardware upfront.
- Users can launch virtual servers, configure security and networking, and manage cookies from an intuitive dashboard.

EC2 Configuration Options

- Operating System(OS): Windows, Linux, MacOs
- Compute power and cores(CPU)
- RAM
- Storage space
    - EBS and EFS
    - EC2 instance store
- Network card: IP addresses
- Firewall rule: Security Groups
- Bootstrap Script(Configure at firstt launch) EC2 user data

EC2 Launch

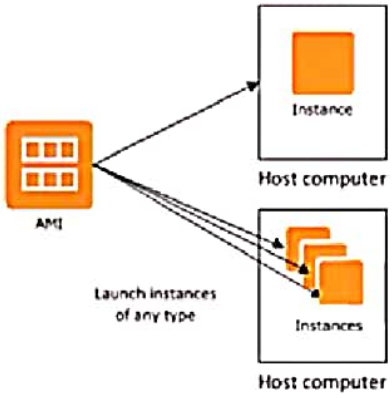
1. Login to AWS console and search for EC2 service
2. Choose AMI(Amazon Machine Image)
3. Choose EC2 Instance type
4. Configure Instance
5. Adding Storage
6. Adding Tags
7. Configure Security Groups
8. Review

AMI(Amazon Machine Image)

- An AMI is an Amazon Machine Image. It is a template basically of an Operating System platform which you can use as a base to create your instance.
- Once you launch an EC2 instance from your preferred AMI, the instance will automatically be booted with the desired OS.
- AMI are usually of 3 types:

  Public AMI (Predefined: AWS creates these, and user can modify it)
  Your own AMI
  An AWS Marketplace AMI
  → Custom AMI

- You add your own software, configuration, operating system, monitoring.
- From an AMI, you launch an instance, which is a copy of the AMI running as a virtual server in the cloud. You can launch multiple instances of an AMI.



Amazon EC2 Instance Types

An instance type specifies the hardware specifications that are required in the machine from the previous step. Instance types belong to four main families:

1. **General Purpose:** Great for diversity of workloads like web servers.
   - Balance between **Compute, Memory, Network**
   - **t2-micro** general purpose

2. **Compute Optimised: (starts with c eg. c5)**
   - Great for compute intensive tasks that require high performance processors.
   - example, batch processing workload, high performance web server, dedicated gaming server

3. **Memory Optimised {r series(RAM)}**
   - Fast performance of workloads that process large data sets in memory
   - High performance rational and non-rational databases

4. **Storage Optimised{i,D,H1}**
   - Great for storage intensive tasks that require high, sequential read and write access to large data sets on local storage
   - Relational and NoSQL databases, cache for in-memory database

Configure Security Groups

These are used to specify rules based on which users are given access to the EC2 instance. You set up the type of security, protocol, the port range, and source (from where the incoming traffic is coming from).

- It can be attached to multiple instances
- It is locked down to a single region/ VPC
- Lives outside EC2, if traffic is blocked EC2 will not see it.
- If your application gives "time out" it is security group issue.
- If your application gives "Connection refuse" error then it is an application error or it is not launched.
- All inbound rules are blocked by default.
- All outbound rules traffic is open.
- 22- SSH, 80-HTTP, 443- HTTPS