AMAZON EC2

ELASTIC COMPUTE CLOUD

Provides virtual servers with secure and resizable compute capacity, allows easier management and creation of instances.
Allows scaling of instances as per requirement and integration with other services as well
Launch of instances in one or more regions since the global infrastructure is divided into regions i.e., more than one availability zone
Has a tight security network making it easier to work with VPC to allows all resources to have access

Instances optimised for Compute memory storage and GPU Processing:

- Cluster compute instances designed for High Performance

USE CASES OF EC2:

Deploying applications like .jar, .war or .ear application without maintaining the underlying infrastructure
Scaling application is based upon the demand
Deploying ML models that have been trained
Allows connection to databases which are deployed on-premise servers

Creating an EC2 instance allows us to customise our env per req, it has a default set of AMI(Amazon Machine Image) options supporting various OS along with pre-configured resources like RAM, ROM and storage.

- Can create AMI curated with a combo of default and user defined configs
  - Amazon Linux
  - Red Hat Linux
  - SUSE Linux
  - Ubuntu
  - Windows

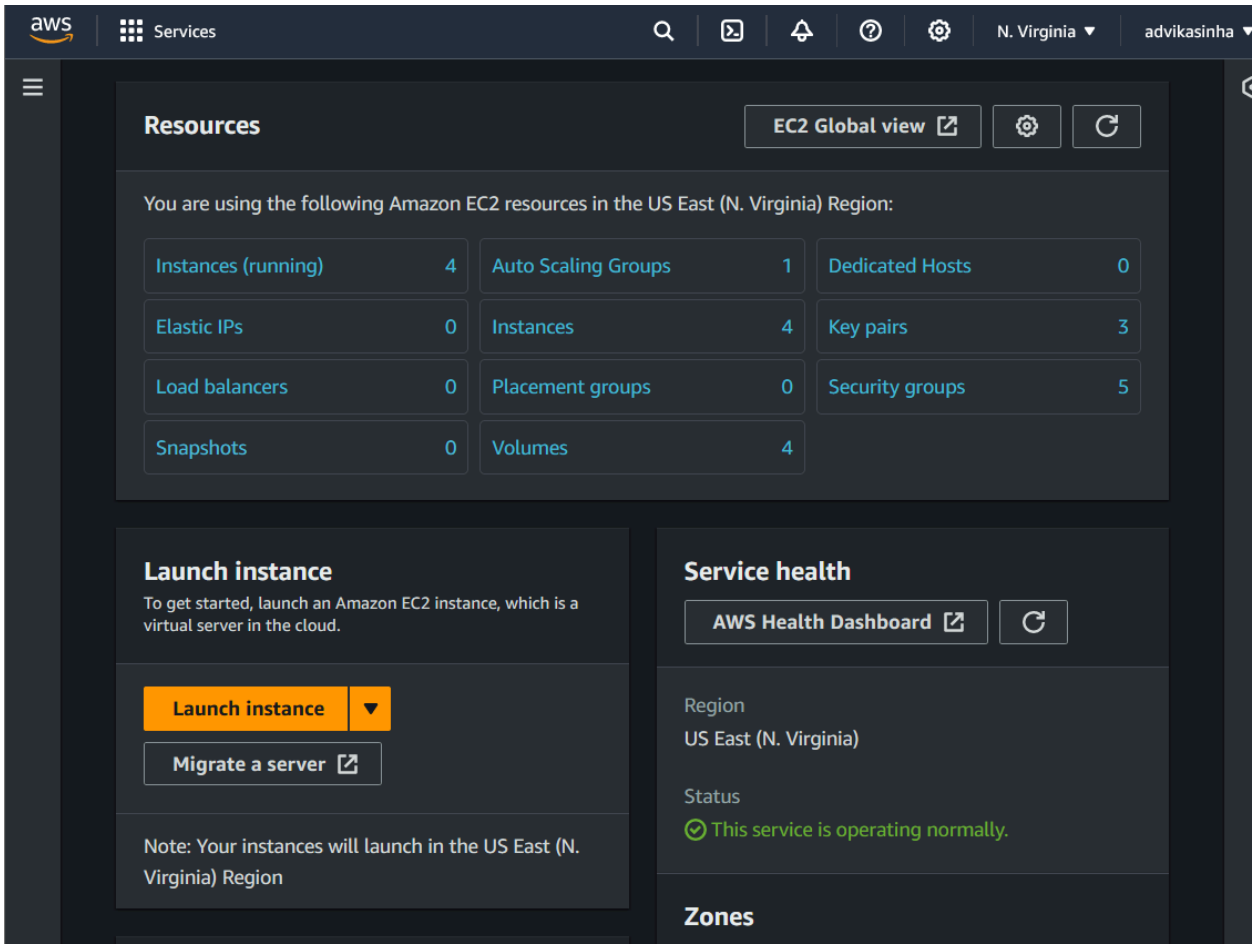
Allows users to choose software that runs on their VM (service allocated to AWS Marketplace):

- SAP- globally used ERP(enterprise resource planning) software, supports automation of workflows, offers mobile-based applications.
  - Puts data from diff processes and business functions at a single centralised location
- LAMP- used for backend or server side dev (LINUX for OS, APACHE for web server, MySQL for database server and PHP for programming lang)
- Drupal- open source content management to build and maintain websites, online directories and other types of digital content

On-Demand	Reserved	Spot
Pay-as-you-go model	Commitment for a time period	Bid instances and winner can use
Can use all resources	Can use all resources	Can't save the data which is used

Dedicated hosts are physical servers with EC2 instance capacity that allows you to reduce costs by allowing you to use your existing server bound software licenses.

THE AWS CONSOLE FOR EC2 SERVICE THAT DISPLAYS INSTANCES PREVIOUSLY LAUNCHED:



AMAZON S3

SIMPLE STORAGE SERVICE

Object storage as S3, File Storage as EFS, Block Storage as EBS

Objects (entities stored in an S3 bucket) have object data and metadata where metadata is a set of name-value pair that describes the data

An S3 bucket is a public cloud storage container for objects. When you create a folder in S3, it creates a 0-byte object with a key that is set to the provided folder name.

S3 is a key-value store in the form of a NoSQL database used for accumulating voluminous, mutating, unstructured or semi-structured data.

Can store any file type but max object file size =160 GB per upload

GENERAL PURPOSE BUCKET	DIRECTORY BUCKET
Original S3 bucket type	Special purpose buckets
Can contain objects stored across all storage classes except S3 Express One Zone	Only allows objects stored in the S3 Express One Zone Storage class
Recommended for most use cases and access patterns	Recommended for low-latency use cases, provides faster data processing within a Single Availability Zone

A simple key based object store: when data is stored, you assign a unique object key that can later be used to retrieve that data

Keys can be any string; constructed to mimic hierarchical attributes

Use S3 Object Tagging to organise data across all of your S3 buckets

A simple, stds based REST(Representational State Transfer) web service interface that is designed to work with any internet dev toolkit

FEATURES OF S3:

1. Buckets and Objects

> Amazon S3 Buckets:

Containers for storing data

Each bucket has unique policies and configurations

Bucket names must be globally unique

> Amazon S3 Objects:

Fundamental entities stored in S3

Consist of:

Key: Unique identifier

Version ID: Identifies the version of the object

Value: The data itself

Metadata: Data about the data

Sub-resources: Additional resources linked to the object

Access Control Information: Permissions and access settings

Tags: Key-value pairs for object labeling

2. Versioning and Access Control

>S3 Versioning:

Keeps records of all versions of objects in a bucket

Not enabled by default

Adds storage costs for multiple versions

>Access Control Lists (ACLs):

Specify access permissions for buckets and objects

S3 Object Ownership can manage object ownership and enable /disable ACLs

3. Bucket Policies and Lifecycle Management

>Bucket Policies:

Control access within your AWS account

Specify which users and services can access the bucket and how

>Lifecycle Rules:

Automate data management to save costs

Move data to cheaper storage classes like AWS Glacier or delete it after a certain period

4. Keys and Null Objects

>Keys:

Unique identifiers for objects within a bucket

>Null Objects:

Objects in a bucket where versioning is suspended have a null version ID