Lecture 16

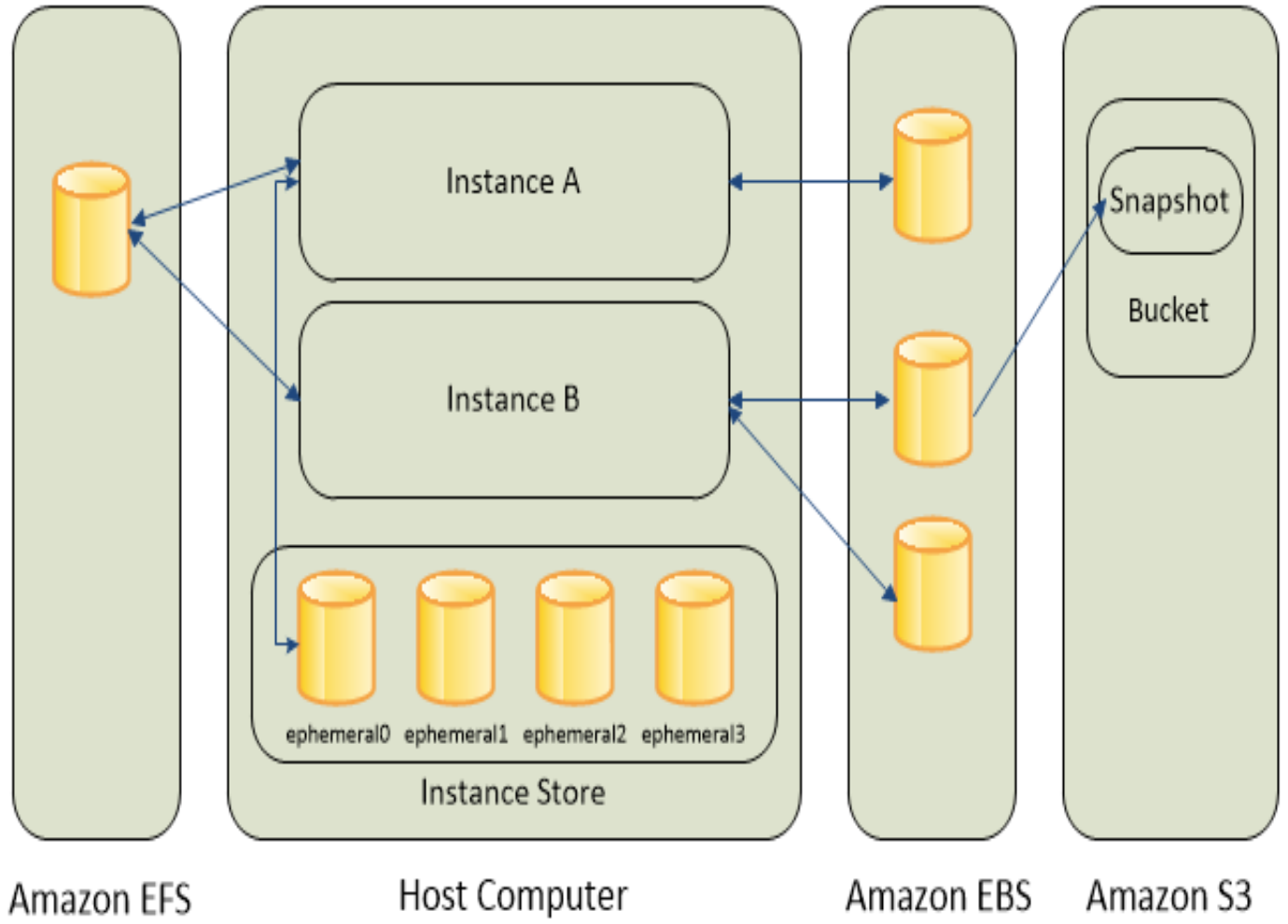
Cloud Storage

Serverless Computing

Types of Storage in AWS

- Amazon Elastic Block Store (EBS)
- AWS Instance store
- AWS EFS
- AWS S3

View of different Storages



Amazon EBS

Amazon EBS provides durable, block-level storage volumes that you can attach to a running instance

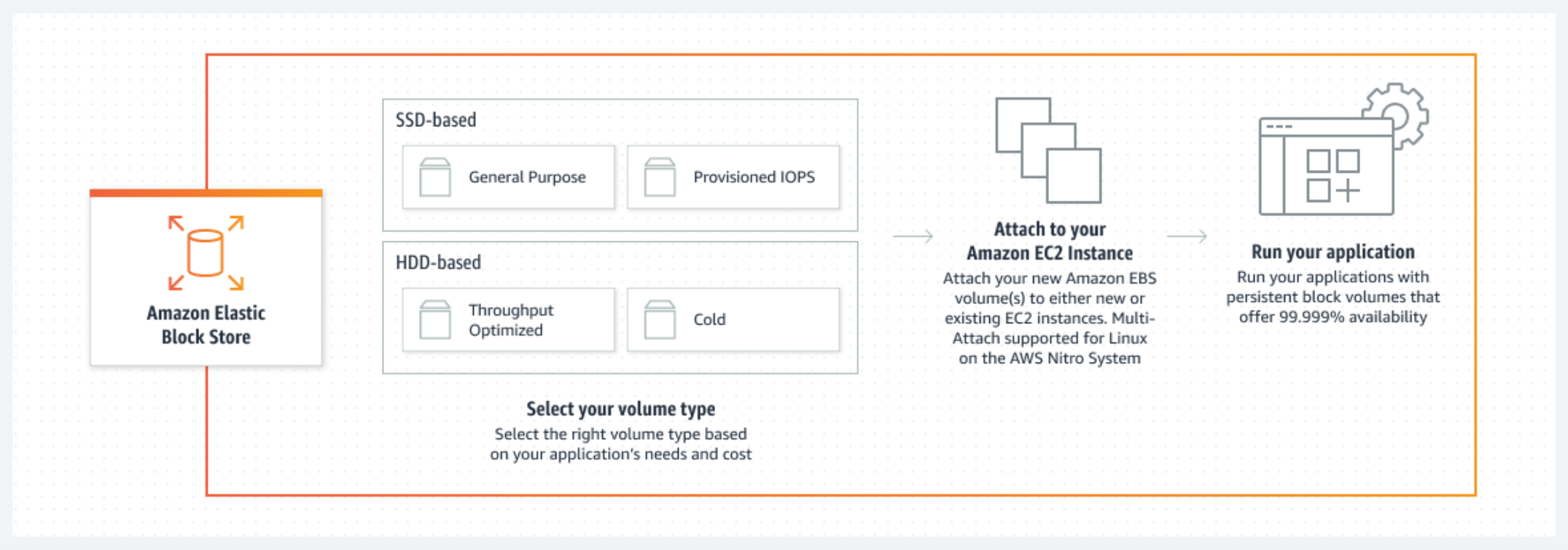
Amazon EBS as a primary storage device for data that requires frequent and granular updates e.g., database

An EBS volume behaves like a raw, unformatted, external block device that you can attach to a single instance

You can dynamically change the configuration of a volume attached to an instance

EBS volumes can also be created as encrypted volumes using the Amazon EBS encryption feature

EBS


Amazon Elastic Block Store
SSD-based
General Purpose
Provisioned IOPS
HDD-based
Throughput Optimized
Cold
Select your volume type
Select the right volume type based on your application's needs and cost
Attach to your Amazon EC2 Instance
Attach your new Amazon EBS volume(s) to either new or existing EC2 instances. Multi-Attach supported for Linux on the AWS Nitro System
Run your application
Run your applications with persistent block volumes that offer 99.999% availability

Types of Amazon Elastic Block Store

- AWS provides different EBS volume options for different workloads and use cases. All these different EBS volumes are either backed up by SSD (Solid-state drive) or a hard disk drive (HDD).
- SSD (Solid-state drive): designed for transactional workloads where the volume is supposed to perform a lot of small read and write operations.
- HDD (Hard disk drive): specifically designed for throughput based workloads e.g. MapReduce, log files, etc.

SSD

- **General Purpose SSD**

  Recommended for most of the use cases as it is suitable for small and medium workloads such as frequently accessing workloads, applications in development and production environments, system boot volumes and more.

- **Provisioned IOPS SSD**

  Used for critical production applications and databases that require high performance EBS storage.

HDD

- **Throughput optimized**

  Recommended for most of the use cases as it is suitable for small and medium workloads such as frequently accessing workloads, applications in development and production environments, system boot volumes and more.

- **Cold**

  Used for critical production applications and databases that require high performance EBS storage.

EBS Benefits

Amazon EC2 instance store

- Many instances can access storage from disks that are physically attached to the host computer. This disk storage is referred to as *instance store*.
- Instance store provides temporary block-level storage for instances.
- The data on an instance store volume persists only during the life of the associated instance.

Amazon S3


Analytics data
Log files
Application data
Videos and pictures
Backup and archival
Move data
Move your data to Amazon S3 from wherever it lives – in the cloud, in applications, or on-premises
Amazon S3
Object storage built to store and retrieve any amount of data from anywhere
Store data
Create bucket, specify the Region, access controls, and management options. Upload any amount of data
Control access to data
Optimize cost with storage classes
Replicate data to any Region
Access from on-premises or VPC
Protect and secure your data
Gain visibility into your storage
Artificial Intelligence (AI)
Advanced analytics
Machine Learning (ML)
Analyze data
Use AWS and 3rd party services to analyze your data to gain insights

Amazon S3

Amazon S3 provides access to reliable and inexpensive data storage infrastructure.

It is designed to make web-scale computing easier by enabling you to store and retrieve any amount of data, at any time, from within Amazon EC2 or anywhere on the web.

For example, you can use Amazon S3 to store backup copies of your data and applications. Amazon EC2 uses Amazon S3 to store EBS snapshots and instance store-backed AMIs.

Maximum Capacity of bucket = 5TB.

Amazon EFS

Amazon EFS provides scalable file storage for use with Amazon EC2.

You can create an EFS file system and configure your instances to mount the file system.

You can use an EFS file system as a common data source for workloads and applications running on multiple instances.

Adding storage

Every time you launch an instance from an AMI, a root storage device is created for that instance.

The root storage device contains all the information necessary to boot the instance.

You can specify storage volumes in addition to the root device volume when you create an AMI or launch an instance using *block device mapping*.

Serverless computing

Serverless computing

Build and run applications without thinking about servers.

Serverless computing

- AWS offers technologies for running code, managing data, and integrating applications, all without managing servers.
- Serverless technologies feature automatic scaling, built-in high availability, and a pay-for-use billing model to increase agility and optimize costs.
- These technologies also eliminate infrastructure management tasks like capacity provisioning and patching, so you can focus on writing code that serves your customers.
- Serverless applications start with AWS Lambda, an event-driven compute service natively integrated with over 200 AWS services and software as a service (SaaS) applications.

Serverless computing

- Move from idea to market, faster
- Lower your costs
- Adapt at scale
- Build better applications, easier

Serverless services on AWS

- Compute Service: For example, AWS Lambda, AWS Fargate
- Application integration: Amazon EventBridge, AWS SNS, AWS SQS, Amazon API gateway, etc.
- Data store: Amazon S3, Amazon DynamoDB, etc.

Question1:
Let 167.23.255.255 is broadcast address then find the network where it broadcast the message.

Question 2:
255.255.240.0 is the subnet mask.
Then find the no. of subnets and no. of hosts within the each subnet?

Thank You