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SESSION 6

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EC2 Instance Purchasing Options

1. On Demand (Least Commitment, by default)

- Low cost billing per hour
- No upfront payment and no long term commitment
- You are charged by the hour or by minutes
- It is for applications where the workload is for short term and unpredictable

2. Reserved Instances(RI)

- You reserve a specific instance attribute Instance Type, Region, OS for 1 year or 3 year
- These are for applications that have steady state, predictable usage or require reserved capacity
- You can buy and sell in the reserved Instance Marketplace
- **Reduced Pricing is based on: Term* Class Offering*Payment options**

Class Offering:

Standard- 75% reduced pricing compared to on-demand, but you cannot change RI Attributes, instance type, region, tenancy, OS

Convertible- up to 54% reduced pricing compared to on-demand. Allows you to change RI attributes.

Scheduled- you reserve instance for specific time period, like once a week, for few hours

Term: you commit for 1 year or 3 year contract. The longer the term the greater the savings.

Payment Options: All upfront, partial upfront or no upfront. The greater the upfront greater the saving

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3. Spot Instances(Biggest saving)

AWS has unused compute capacity that they want to maximize the utility of the idle servers.

- Spot Instances provide a discount of 90% compared to On-Demand pricing
 - Spot instances can be terminated if the computing capacity is needed by on demand customers
 - Useful for workloads that are resilient to failures
 - Designed for applications that have flexible start and end times
 - Termination Condition: If AWS terminates your instance you are not charged for the partial hour of usage
- If you terminate the instance you will still be charged for any hour that it ran.

4. **Dedicated Host(Most Expensive)**

- When you have strict server-boundaries that won't support multi tenancy or cloud deployment.
- It saves upto 70%
- Enterprise and large organisations may have security concerns or obligations about sharing the same hardware with other AWS customers
- Dedicated Hosts(expensive): book entire physical server

5. **Dedicated Instance:**

- They are EC2 instances that runs in a virtual private cloud on hardware that's dedicated to a single customer.

Questions

1. Which EC2 Purchasing Option can provide you the biggest discount, but it is not suitable for critical jobs or databases?
2. What should you use to control traffic in and out of EC2 instances?
3. How long can you reserve an EC2 Reserved Instance?
4. You would like to deploy a High-Performance Computing (HPC) application on EC2 instances. Which EC2 instance type should you choose?
5. Which EC2 Purchasing Option should you use for an application you plan to run on a server continuously for 1 year? Reserved Instance
6. Which EC2 Instance Type should you choose for a critical application that uses an in-memory database?
7. Security Groups can be attached to only one EC2 instance.

1. Spot Instances 2. Security groups 3. 1 or 3yrs 4. Compute Optimise 5. Reserved Instance
6. Memory Optimised 7. False

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EC2 Instance Storage

EBS(Elastic Block Store)

- It is a network drive(not physical) therefore there might be a little latency.
- It is AWS block -level storage solution used within EC2 cloud service to store persistent data, the data is stored in EBS even when the EC2 instances are shut down.
- As a highly dependable cloud service, EBS offers 99.999% availability
- EBS volumes are specific to AZs and can be attached to instances within same AZ.
- EBS Volumes are created for a specific AZ. It is possible to migrate them between different AZs using EBS Snapshots.
- Single EBS volume can be attached to one EC2 instance at a time, however, one EC2 instance can have more than one EBS volume attached to it.

Types Of EBS:

General Purpose SSD: It is for small chunks of data that require fast Input/output Optimum balance between cost and performance for a variety of IT workloads.

Provisioned IOPS (SSD): This volume type is suitable for the most demanding I/O intensive

HDD: They are suitable for large data chunks and slower processing

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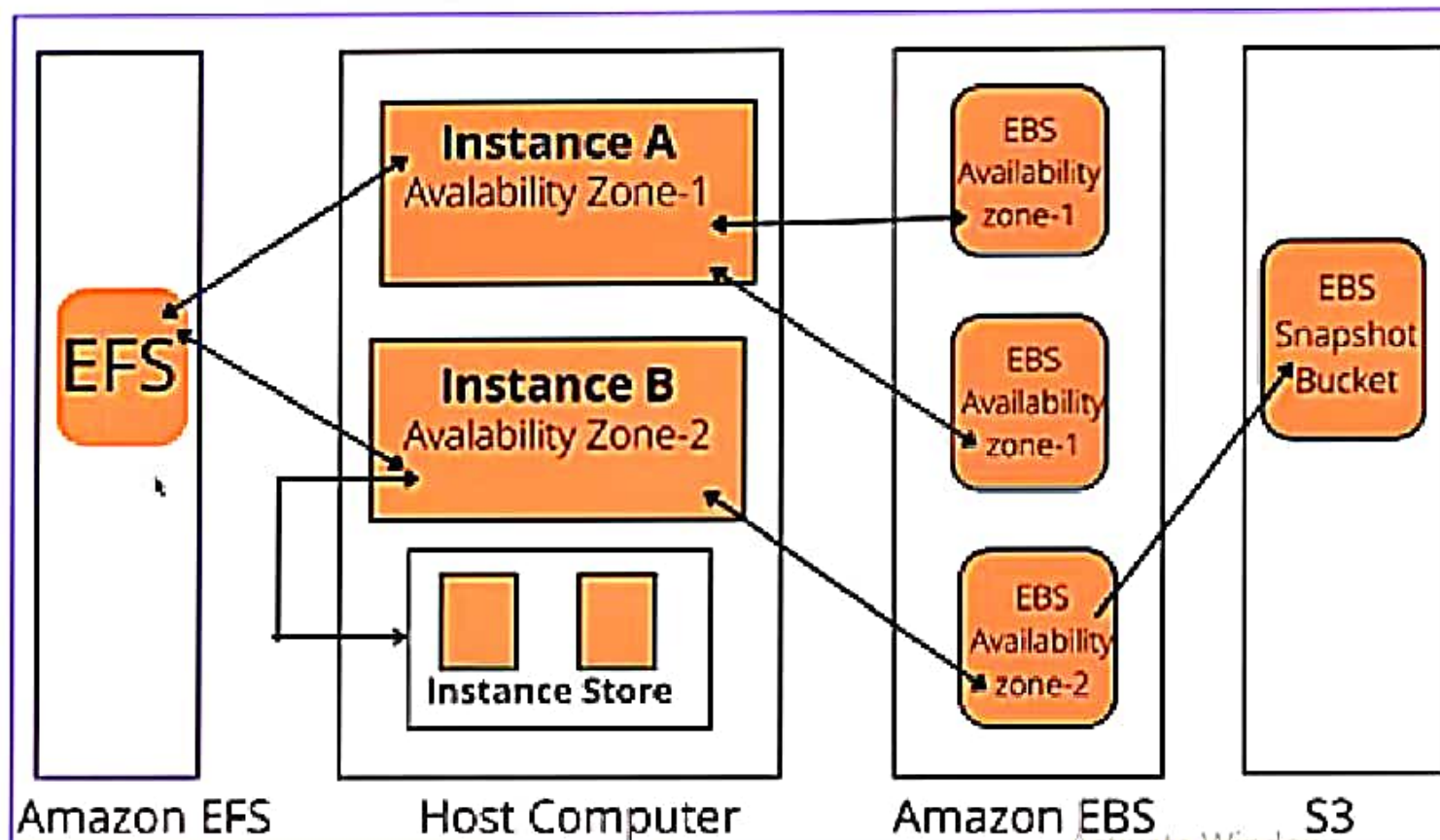
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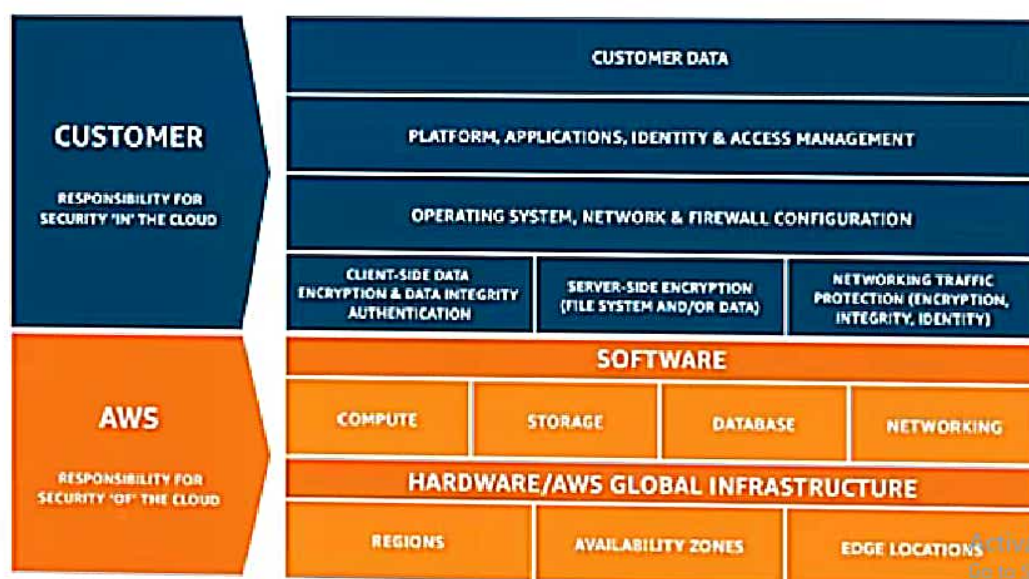
EFS(Elastic File System)

- It is built to scale on demand to petabytes without disrupting applications growing and shrinking automatically as you add or remove files



AWS Shared Responsibility Model

Shared responsibility is about security being a **shared** responsibility



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