**Compute Service**

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## 

## Elastic Compute Cloud - EC2

EC2 allows you to rent and manage virtual servers in the cloud.

Servers are physical computer hardware running at the data center. EC2 instances are virtual servers running on these physical servers.

In the real world, it is used to deploy databases and applications.

###### How to access the EC2 instance?

1. AWS Management Console
2. Secure Shell
3. EC2 Instance Connect
4. AWS Systems Manager

###### Features of EC2

1. Elastic Load Balancing

It automatically distributes your incoming application traffic across multiple EC2 instances. For eg: Classic Load Balancer, Application Load Balancer, Gateway Load Balancer, Network Load Balancer

1. Auto Scaling

EC2 auto scaling adds or replaces EC2 instances automatically across AZs, based on need and changing demand.

Types of scaling:

1. Horizontal Scaling: In this, the number of servers is adjusted as per the requirement.
2. Vertical Scaling: In this, the CPU and RAM of a server are adjusted as per the requirement.

###### EC2 Pricing Options

1. **On-Demand**

A fixed price in which you are billed down to the second based on the instance type.

There is no contract, and you pay only for what you use.

When to use it?

* If you care about low cost without any upfront payment or long-term commitment.
* Your applications have unpredictable workloads that can’t be interrupted.
* Your applications are under development.
* Your workloads will not run longer than a year.

1. **Spot**

Spot Instances let you to take advantage of unused EC2 capacity. Your request is fulfilled only if capacity is available.

When to use it?

* You are not concerned about the start or stop time of your application.
* Your workloads can be interrupted.
* Your application is only feasible at very low compute prices.

1. **Reserved Instance**

Reserved Instances allow you to commit to a specific instance type in a particular region for 1 or 3 years.

When to use it?

* Your application has steady-state usage and you can commit to 1 or 3 years.
* You can pay money upfront in order to receive a discount on On-Demand prices.
* Your application requires a capacity reservation.

1. **Dedicated Hosts**

Dedicated hosts allow you to pay for a physical server that is fully dedicated to running your instances.

When to use it?

* You want to bring your own server-bound software license from vendors like Microsft or Oracle.
* You have regulatory or compliance requirements around the tenancy model.

1. **Savings Plan**

Savings Plan allows you to commit to compute usage(measured per hour) for 1 or 3 years.

When to use it?

* You want to lower your bill across multiple compute services.
* You want the flexibility to change compute services, instance types, operating systems, or regions.

###### Important for the exam:

1. EC2 pricing
2. Scaling types
3. Types of load balancers
4. Benefits of each
5. Real-world usage
6. How to connect?

## Lambda

AWS lambda is a serverless service, mainly designed for developers who just code and do not have any idea or do not want to do patching, scaling, etc for the servers.

In this service the servers are maintained by AWS only. The end users is not having access to the servers also.

All the code executions are tracked in CloudWatch logs.

###### Features

1. It supports popular programming languages like Java, Go, Python, etc.
2. You author code using your favourite development environment or via the console also.
3. Lambda can execute your code in response to events.
4. Lambda functions have 15 minute timeout.

###### Important for exam:

1. Resposnibilties in Lambda
2. Cost/ Always free

###### Other compute services for knowledge:

1. Fargate: Serverless technique used to manage containers.
2. Outpost: Supporting hybrid cloud model. Basically, hardware is provided by AWS.
3. LightSail: Used to quickly launch preconfigured applications for small projects.
4. Batch: AWS batch is used to process large workloads in smaller batches.