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Amazon EC2:

Amazon Elastic Compute Cloud [EC2] are virtual servers in AWS, which provides a resizable Compute Capacity in the cloud EC2 is one of the most used and basic service in AWS, So it absolutely make sense to start with EC2 when someone new to AWS.
To keep it very simple, EC2 is a machine with an operating System and hardware Component of your own choice, but the difference is its virtualized. With EC2, there is no need to any upfront cost for the underlying hardware and we can launch the instance as per our need. The instance can be scaled up or down based on the demand of traffic.

Why Amazon EC2:

AWS EC2 has a lot of benefits, here I'm going to list few of there

- Auto-Scaling: Auto scaling helps in providing resource a/c to demand. The resource can increase or decrease as per the demand.

- Pay-as-you-go: You will be charged per hour, so you need to pay what you have used. This makes EC2 very cost effective.

- Reliability: An application can be launched on EC2 in multiple regions and availability zone so even if any application or datacenter fails, the application remains functional.

- Elasticity: You have a choice to select the EC2 configuration of your choice & can modify the configurations as per need.

- High-Availability: SLA commitment of 99.99% availability of each Amazon EC2 region. Each region consists of at least 3 availability zones.

Amazon EC2 Instance Type:

Amazon EC2 provide a wide range of instance

type of various use cases. Instance types comprise varying combination of CPU, memory, storage and networking capacity and give you the flexibility to choose the appropriate mix of resources for your application. Each instance type includes one or more instance size allowing you to scale your resource to the requirements to your target workload.

- General Purpose: General Purpose instance provide a balance of Compute, Memory and networking resources and can be used for a variety of diverse workloads.
- Compute optimized: Compute optimized instance are ideal for compute bound application that need high performance processors.
- Memory optimized: Memory optimized instances are designed to deliver fast performance for workloads that process large data sets in memory.
- Storage optimized: Storage optimized instance are designed for workloads that require high, sequential read & write access to very large data on local

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Storage.

Family	Type	vCPUs	Memory (GiB)
General purpose	t2.micro	1	1
Compute optimized	c5n.large	2	5.25
Memory optimized	r5ad.large	2	16
Storage optimized	d2.xlarge	4	30.5
GPU instances	g2.2xlarge	8	15

Amazon EC2 Pricing:

Amazon EC2 has various pricing models depending on the use-cases.

- Free-Tier ⇒ AWS Free-tier includes 750 hours of linux & windows t2.micro instance, each month for one year. Best suited if someone wants to learn AWS & host basic applications.

- On-Demand → No longer commitment or upfront-payment required and you pay for the Compute per hour. Best suited for applications with short-term or unpredictable workload that can't be interrupted.

- Spot Instance ⇒ Spot instance allows you to request spare Amazon EC2 computing capacity for up to 90% discount. Best suited for applications with flexible start and end times.

- Savings Plans ⇒ Saving Plans are a flexible pricing model that offer low prices on EC2 instance for commitment to a ~~commitment~~ consist amount of usage. for 1 or 3 year term

- Dedicated Hosts: An Amazon EC2 Dedicated Host is a physical server with EC2 instance capacity fully dedicated to your use. It is allocated for a reserved period of 3 years. Dedicated Host can help you reduce cost by allowing you to use your existing server-bound software licenses, and can also help you meet compliance requirements.

- Dedicated Instances ⇒ Dedicated Instance are Amazon EC2 instance running on hardware that is dedicated to you. They may share hardware with other instance

from the same AWS a/c account that are not Dedicated instances.

Dedicated Hosts vs Dedicated Instance Comparison

An important d/w b/w a Host & Instance is that Dedicated Host give you additional visibility & control over how instance are placed on a physical server and you can consistently deploy your instance to the same physical server over time. As a result, Dedicated Hosts enable you to use your existing server bound licenses & address Corporate Compliance and regulatory requirements.