



1 Introduction to EC2

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Introduction to EC2

What is EC2?

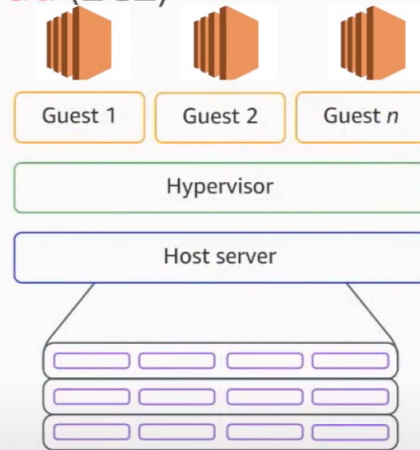
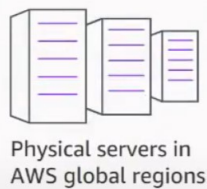


- EC2 stands for **E**lastic **C**ompute **C**loud in AWS.
- EC2 is a service that **allows you to run application** programs in the computing environment.
- EC2 is a web service that provides **secure, resizable compute capacity** in the cloud. It is designed to make web-scale cloud computing easier for developers.

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Amazon Elastic Compute Cloud (EC2)

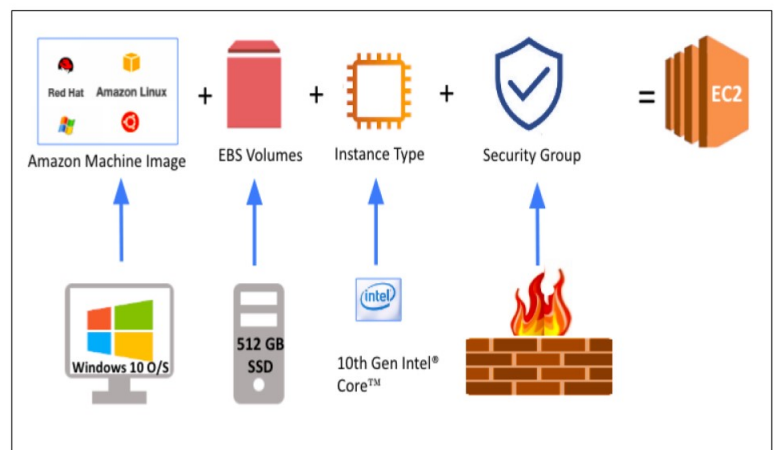
Virtual servers in the cloud



Introduction to EC2

What is EC2?

- In fact, EC2 is a **kind of computer** such as your desktop in your home. Components of the EC2 are similar to conventional computer devices.
- Each EC2 component refers to one of the conventional computer parts such as Operation System, Hard Disk and Intel/AMD processors, etc.





Introduction to EC2

EC2 Features



- Pay as you go,
- Setup and ready to use within 1 minute,
- CPU, Memory and Storage Capacity needs can be arranged within minutes,
- Create, Stop or Terminate instances via EC2 console easily.



EC2 Instances

Types of Instances



Storage



CPU



Networking



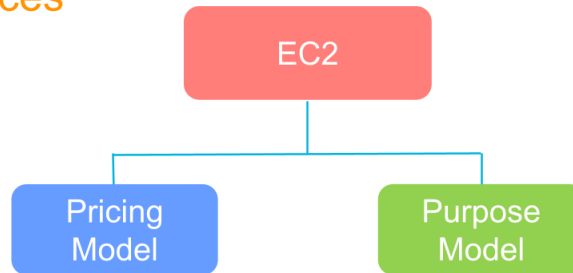
Memory

- Amazon EC2 provides a wide selection of instance types optimized to fit different use cases.
- Instance types comprise varying combinations of CPU, memory, storage, and networking capacity



EC2 Instances

Types of Instances

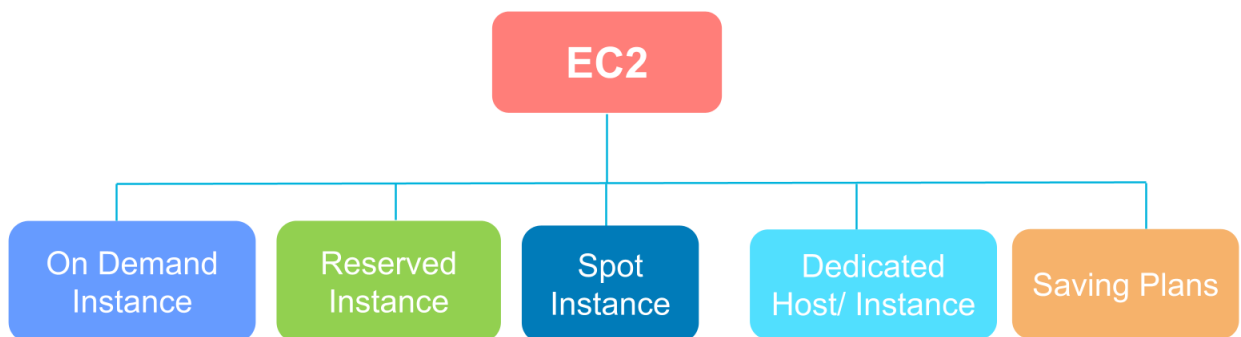


- Instance types are grouped into a variety of families based on target application profiles and pricing options. It is possible to categorize EC2 types under **two main perspective** :
- These are **Pricing Model** and **Purpose Model**.



EC2 Instances

Pricing Model of Instances



When we look at the pricing perspective, AWS offers 5 different types of instance pricing.



EC2 Instances

On Demand Instances



- You **pay for** compute capacity by the “hour” or the “second”
- **No commitments**
- **No upfront payments**
- You can **increase or decrease** your compute **capacity**
- Pre-estimated



EC2 Instances

On Demand Instances



On-Demand instances are recommended for:

- Users that prefer the low cost and flexibility of Amazon EC2 **without any up-front payment or long-term commitment**
- Applications with **short-term, spiky, or unpredictable workloads** that **cannot be interrupted**



EC2 Instances

Reserved Instances (RI)



- Reserved Instances provide you with a **significant discount (up to 75%) compared to On-Demand** instance pricing.
- It is a tariff that takes advantage of the discounted price by giving AWS a **1 or 3-year commitment**.
- In addition, Reserved Instances **provide a capacity reservation**, giving you additional confidence in your ability to launch instances when you need them.



EC2 Instances

Reserved Instances (RI)



Reserved Instances are recommended for:

- Applications with **steady state usage**
- **Applications that may require reserved** capacity
- Customers that can **commit** to using EC2 over a **1 or 3 year term** to **reduce** their total computing costs



EC2 Instances

Scheduled Reserved Instances



- It's an Instance model **derived from Reserved Instance**
- This model is very similar to the Reserved Instance and provides you to **make the purchase over 24 hours**.
- Thanks to the Scheduled Reserved Instance, you can run an instance **only between the hours you reserved in reduced price**.

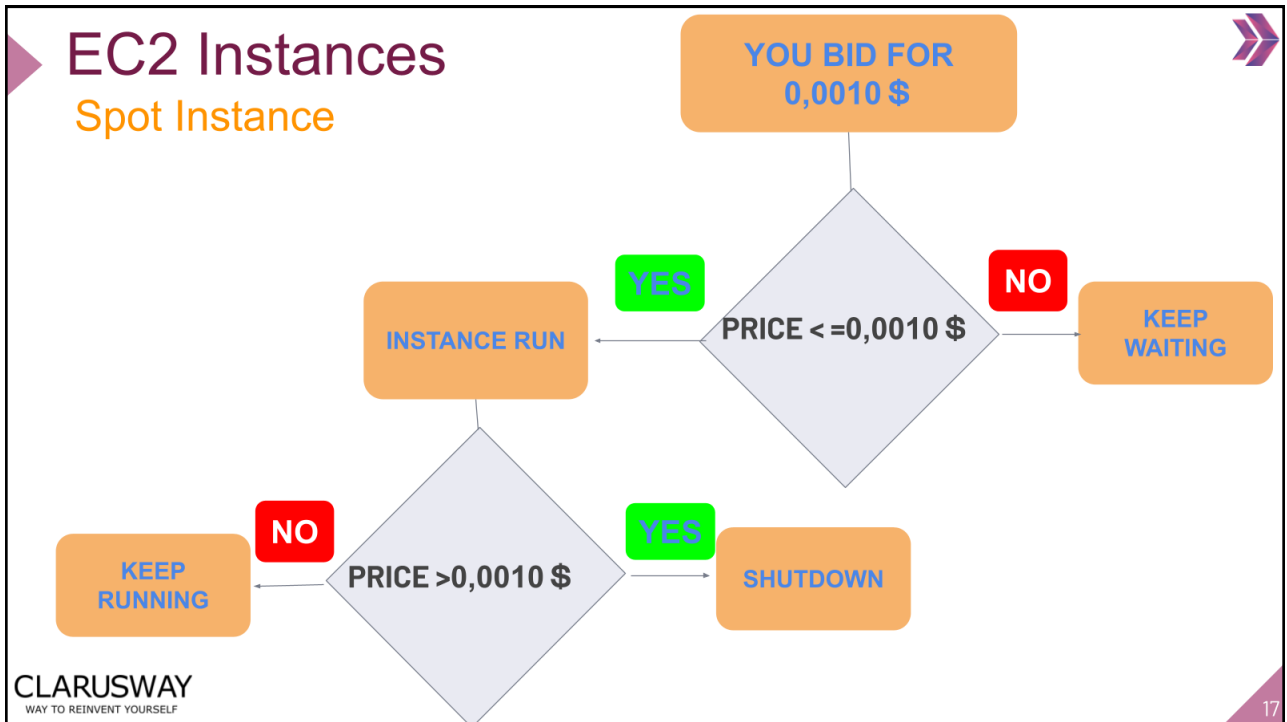


EC2 Instances

Spot Instance



- In Spot Instance, you can enter **a purchase order** by setting **a target price**.
- The machine runs when the **current price falls below the target price**.
- The machine automatically **shuts down** if the **price exceeds** that target price.
- You can save up to **90% cost advantage**.



EC2 Instances

Spot Instance

The image shows a bar chart with three bars of increasing height, with a red arrow pointing upwards, indicating rising prices. Next to it is an icon representing EC2 Spot Instances, showing a stack of blue blocks with 'EC2' written on them.

Spot instances are recommended for:

- Applications that have **flexible start and end times**
- **Non-continuity jobs** such as testing

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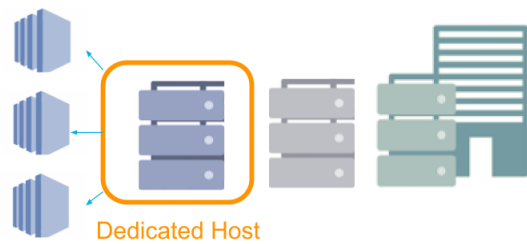
EC2 Instances

Dedicated Host/Instance

A Dedicated Host is a physical server the whole capacity of with EC2 instance is **dedicated to your use**.

Not only your instances are reserved but also they **physically separated** from the other servers.

A Dedicated Host **consists of Dedicated Instance capacities** according to your needs. You may choose to buy a Dedicated Host or only one Dedicated Instance also.

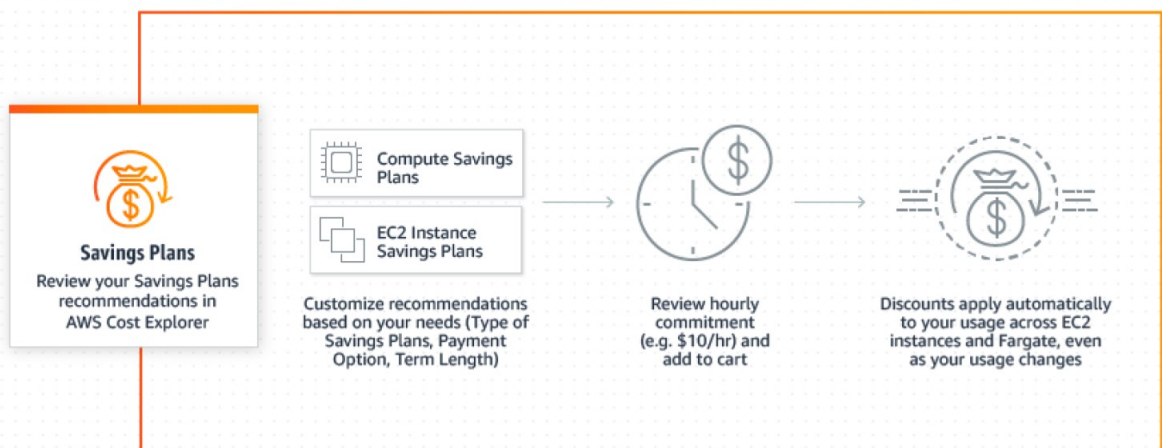


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EC2 Instances

Saving Plans

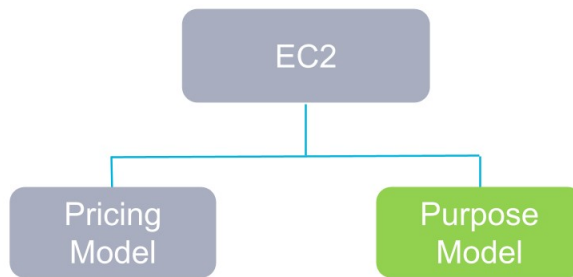


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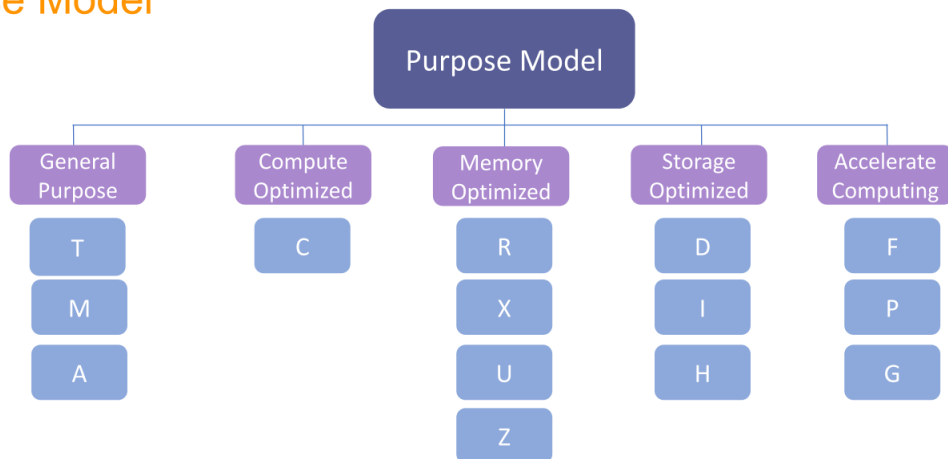
EC2 Instances

Types of Instances Recap



EC2 Instances

Purpose Model



AWS offers 14 different types of virtual machines in 5 categories



EC2 Instances

General Purpose



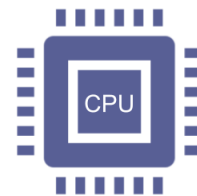
General Purpose

- General purpose instances provide a **balance of compute, memory and networking resources**, and can be used for a variety of diverse workloads.
- There are **T, M and A** options that we can use for standard and application needs.
- This is the **most commonly used instance type** and ideal for web servers.



EC2 Instances

Compute Optimized



- Compute Optimized instances are ideal for compute bound applications that benefit from **high performance processors**.
- Instances belonging to this family are well suited for batch processing workloads, media transcoding, high performance web servers, dedicated gaming server, etc.



EC2 Instances

Memory Optimized



- Memory optimized instances are used in situations requiring a **high-performance database**, **real-time large data analytics**, and **high memory usage**.
- There are R, X, Z and U type instances in this category.



EC2 Instances

Storage Optimized



- Storage optimized instances are designed for workloads that require **high, sequential read and write access** to very large data sets on local storage.
- It is the best used for the fast disk structures we need in **NoSQL databases or data warehouse solutions**.
- There are D, H and I type of instances in this category.



EC2 Instances

Accelerated Computing



Computing

- Preferred when you need machine learning, deep learning calculation, and analysis.
- There are F, P and G type of instances in this category.

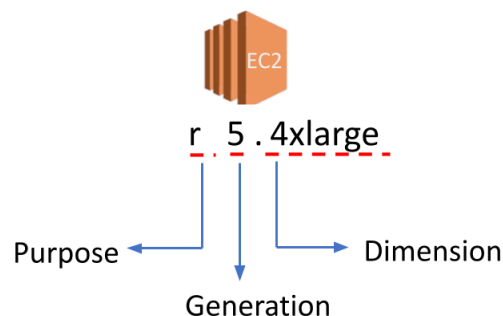
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EC2 Instances

Instance Coding



- **R** refers to its purpose. It means this EC2 is Memory Optimized instance.
- **5** refers to instance generation. For example, the last generation of the r-family is 5.
- **4xlarge** refers to dimension of instance. AWS has built servers of various sizes to suit every need in instance families. For example, the r5-family has 8 different sizes starting from **large to 24xlarge**.
- Not all models have instances in every generation and size.



Introduction to EC2

Let's get our hands dirty!

- Introduction of EC2 console
- Creating an EC2 instance
- Creating an EC2 instance with user data
- Working with Instance Actions