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Introduction to EC2



Today's Takeaways

- ▶ Introduction to EC2
- ▶ EC2 Instance Types
- ▶ Creating an EC2 instance

Introduction to EC2

What is EC2?



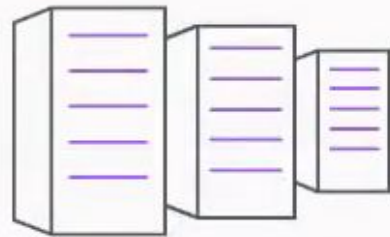
- EC2 stands for **Elastic Compute Cloud** in AWS.
- EC2 is a service that **allows you to run application** programs in the computing environment.
- EC2 is a web service that provides **secure, resizable compute capacity** in the cloud. It is designed to make web-scale cloud computing easier for developers.



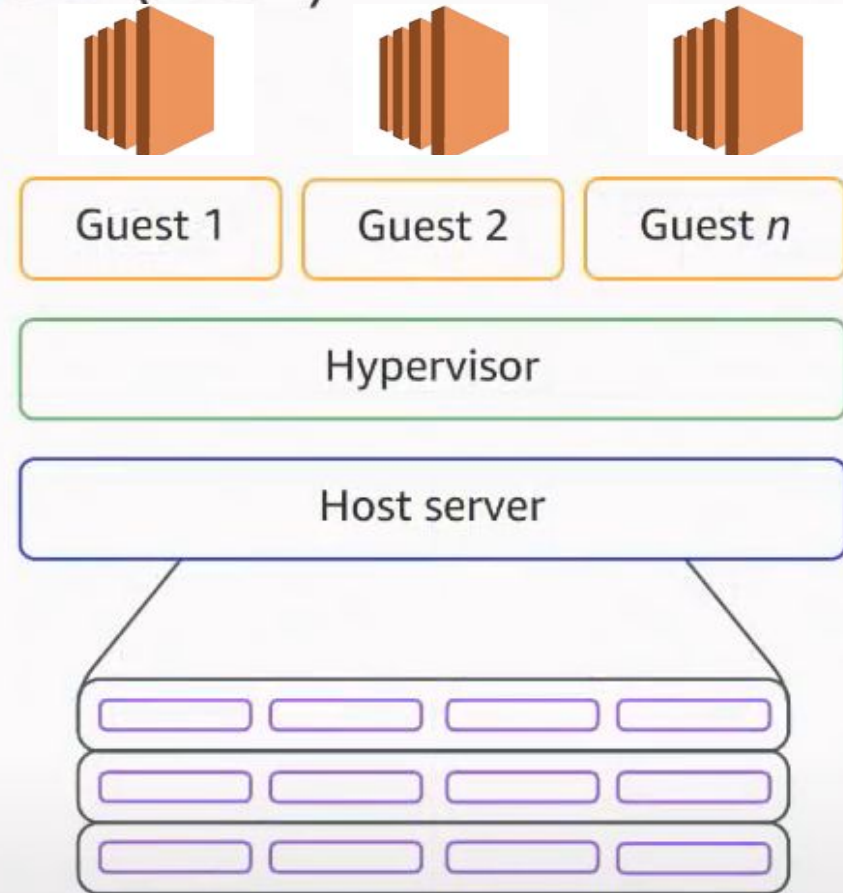
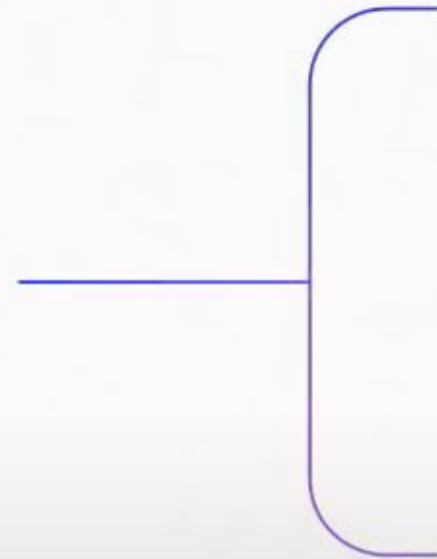


Amazon Elastic Compute Cloud (EC2)

Virtual servers in the cloud



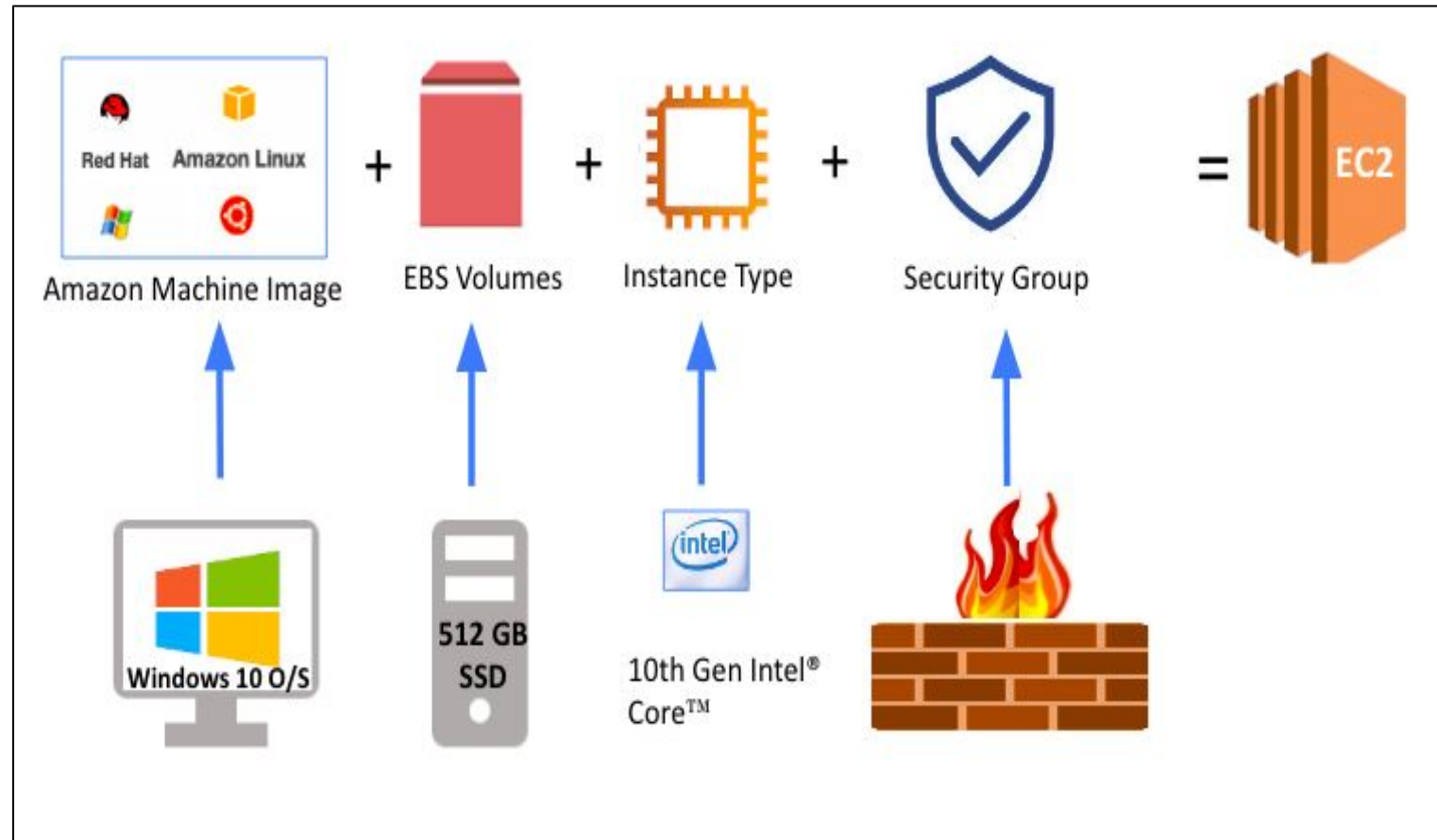
Physical servers in
AWS global regions



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.



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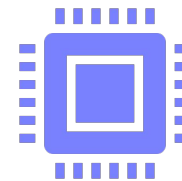
Types of Instances

EC2 Instances

Types of Instances



Storage



CPU



Networking



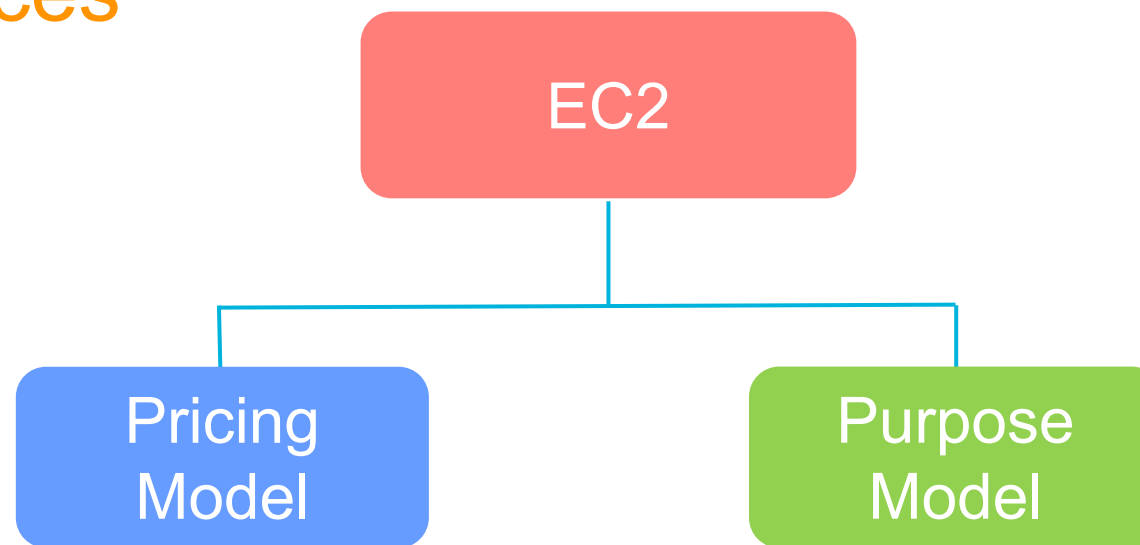
Memory

- 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

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EC2 Instances

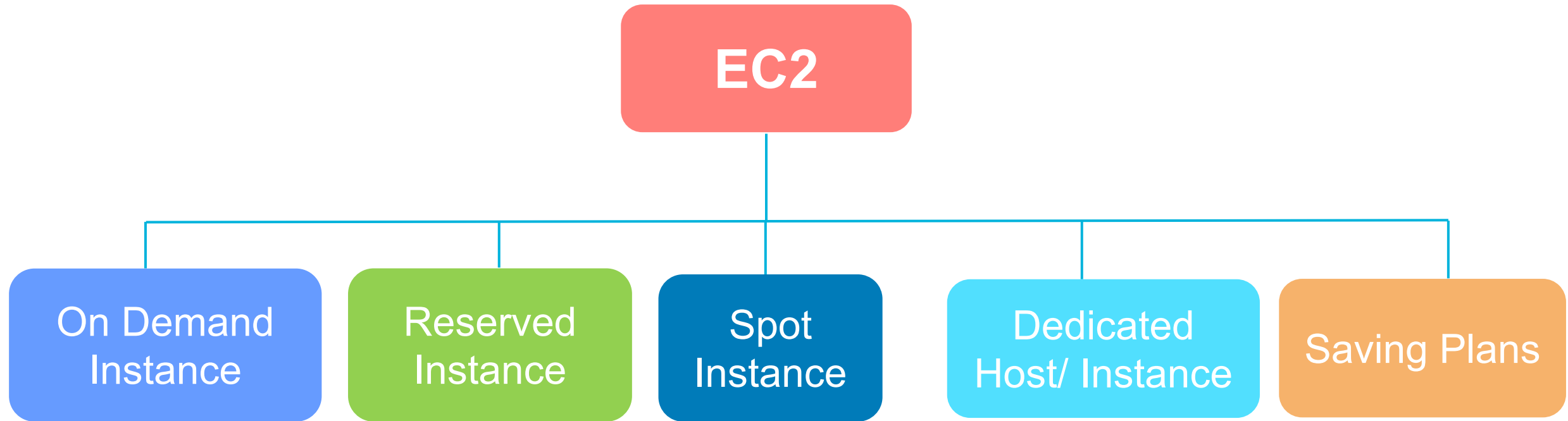
Types of Instances



- 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.

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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

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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

On Demand Pricing

- t2.micro in us-east-1 (N.Virginia)
- cost : \$ 0.0116/hour

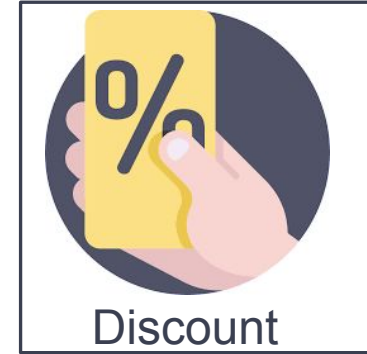


- 25 seconds usage--->>> $\$ 0.0116 / 60 = \$ 0.00019$ (min 60 seconds)
- 60 seconds usage--->>> $\$ 0.0116 / 60 = \$ 0.00019$ (min 60 seconds)
- 30 minutes usage--->>> $\$ 0.0116 / 2 = \$ 0.0058$)
- 1 month usage---->>> $\$ 0.0116 * 24 * 30 = \$ 8.32$)

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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.

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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

Spot Instance

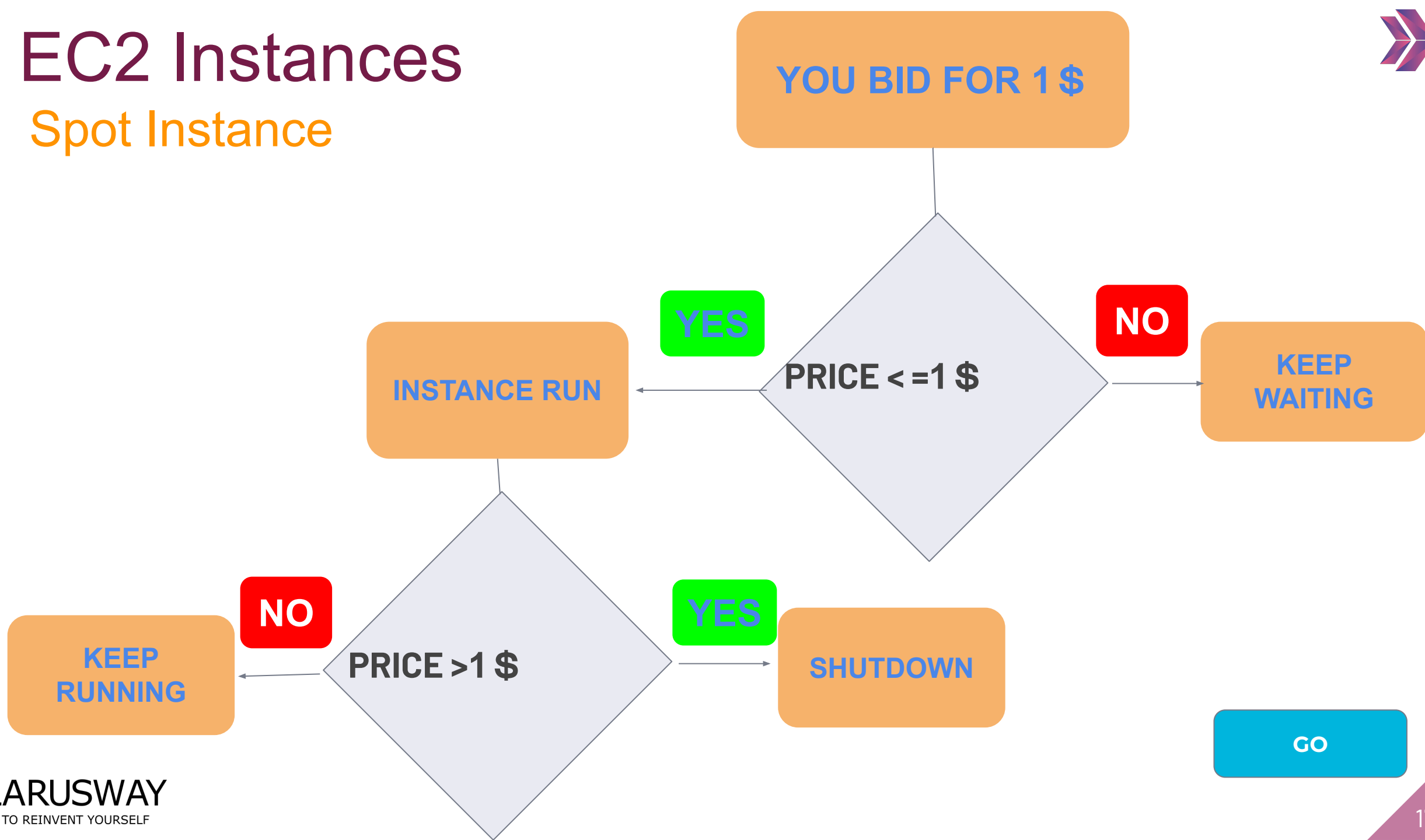


- In Spot Instance, you can enter a purchase order by setting a target price.
- The machine runs when the current price falls below the target price.
- The machine automatically shuts down if the price exceeds that target price.
- You can save up to 90% cost advantage.

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EC2 Instances

Spot Instance





EC2 Instances

Spot Instance



Spot instances are recommended for:

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

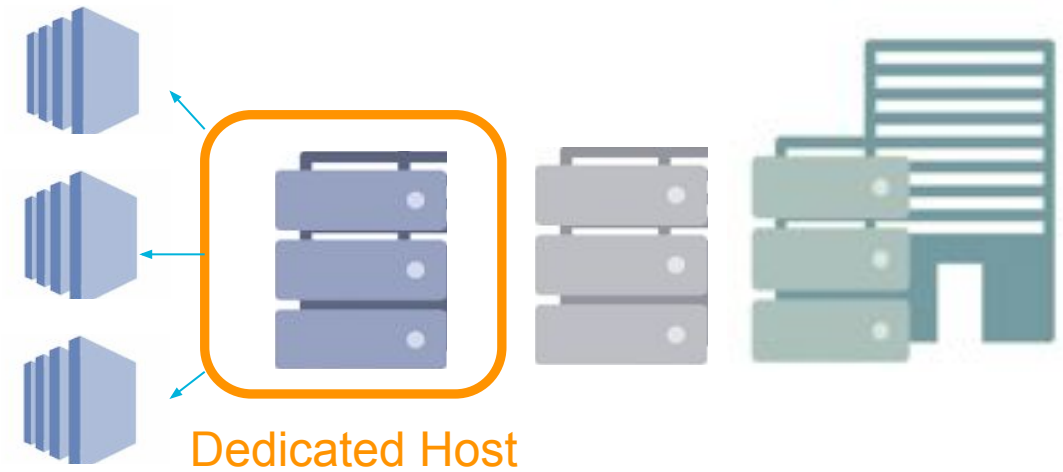
EC2 Instances

Dedicated Host/Instance

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

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

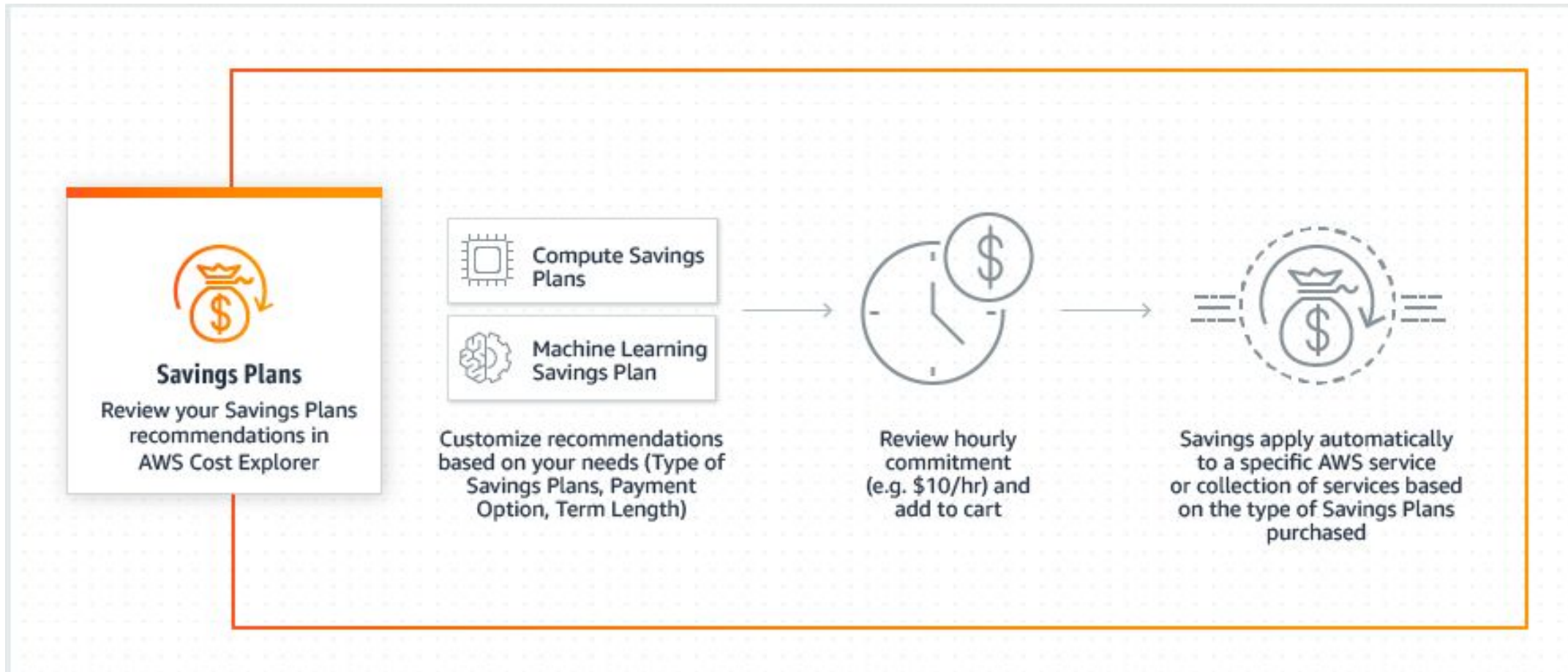
A Dedicated Host **consists of Dedicated Instance capacities** according to your needs. You may choose to buy a Dedicated Host or only one Dedicated Instance also.



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EC2 Instances

Saving Plans



EC2 Instances

Types of Instances Recap



On Demand



Reserved



Dedicated



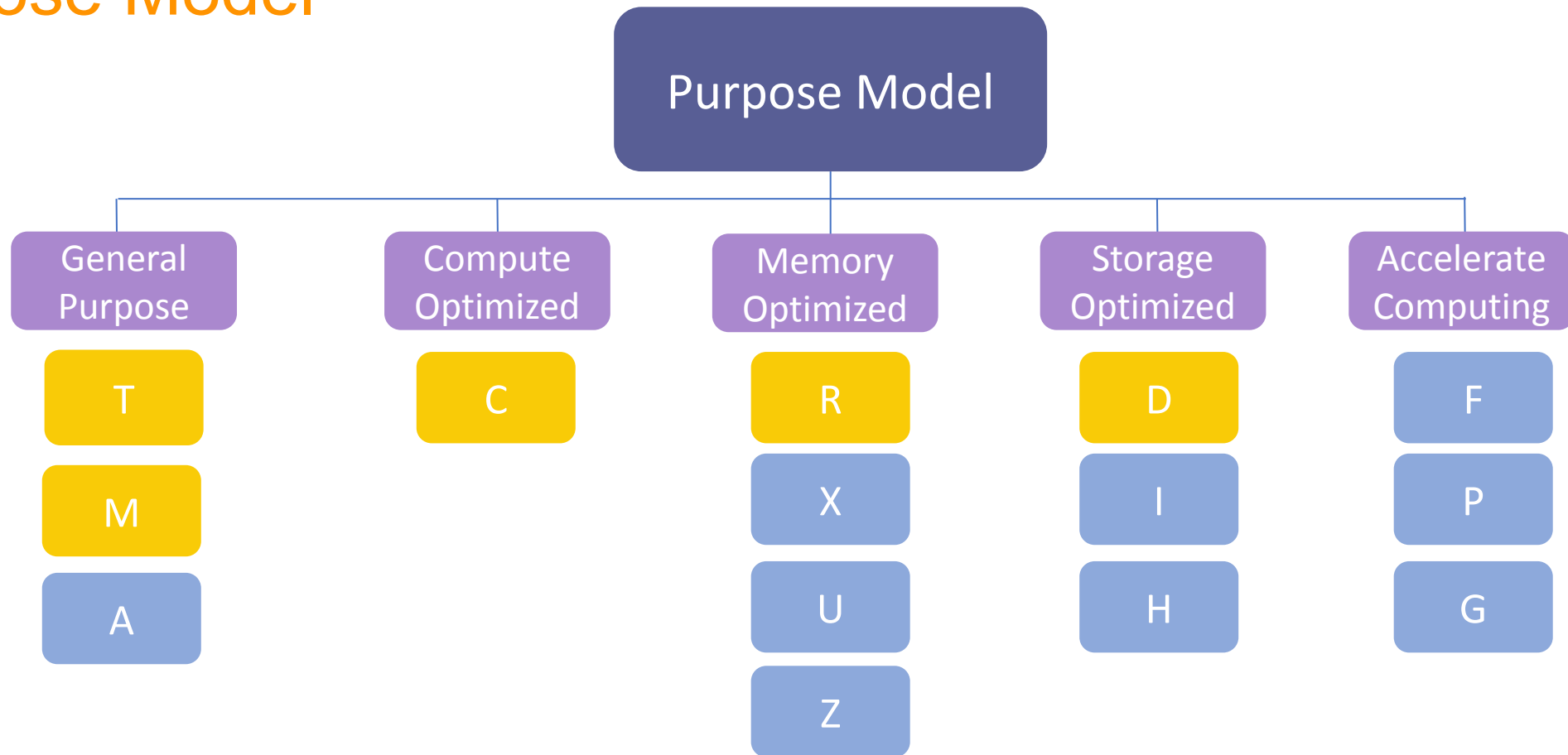
Spot



Saving Plan

EC2 Instances

Purpose Model

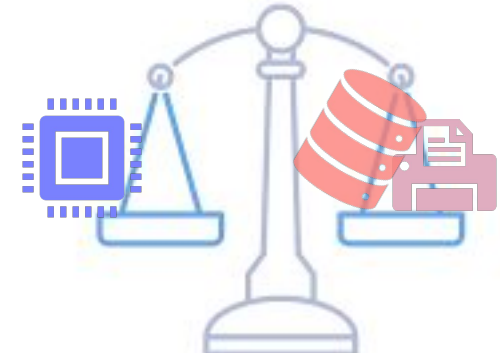


AWS offers 14 different types of virtual machines in 5 categories

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EC2 Instances

General Purpose

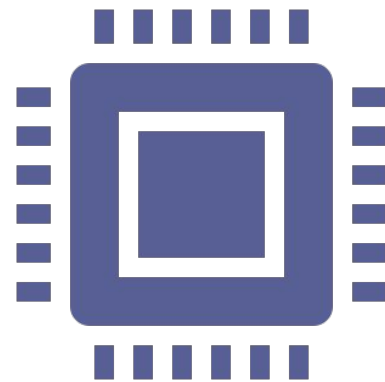


General Purpose

- 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

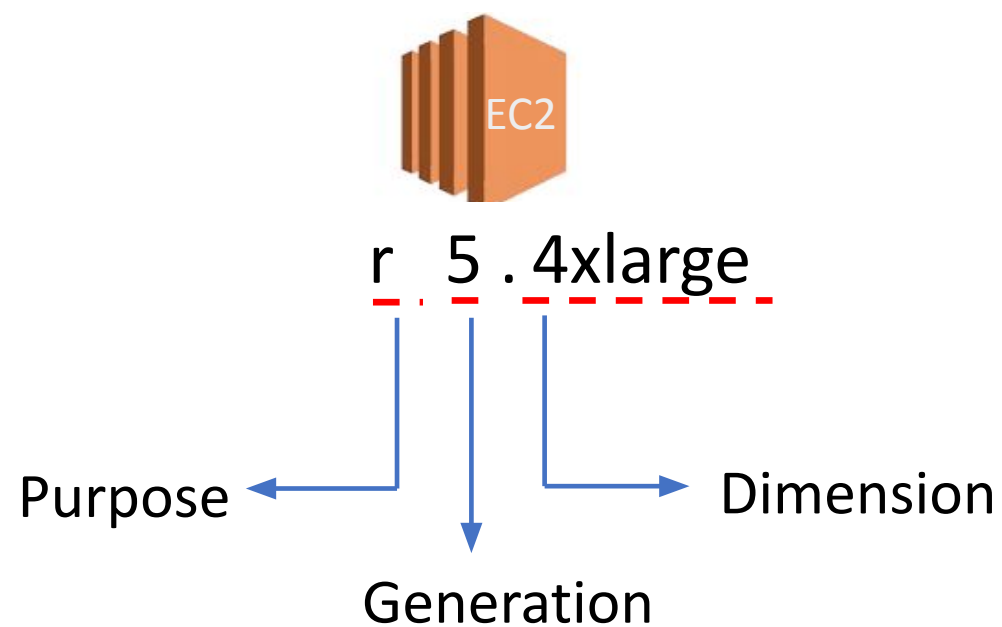
Accelerated Computing



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

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



THANKS!

Any questions?

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