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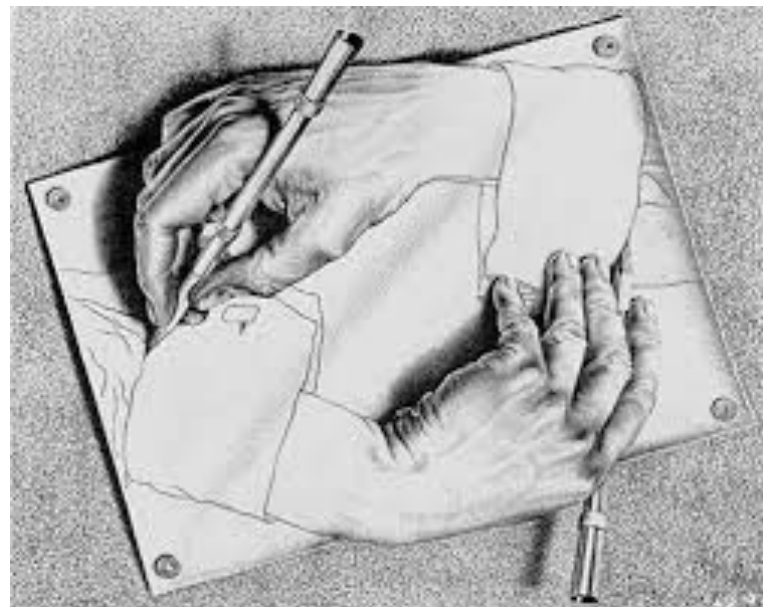
# Introduction to EC2

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WAY TO REINVENT YOURSELF



## Today's Takeaways

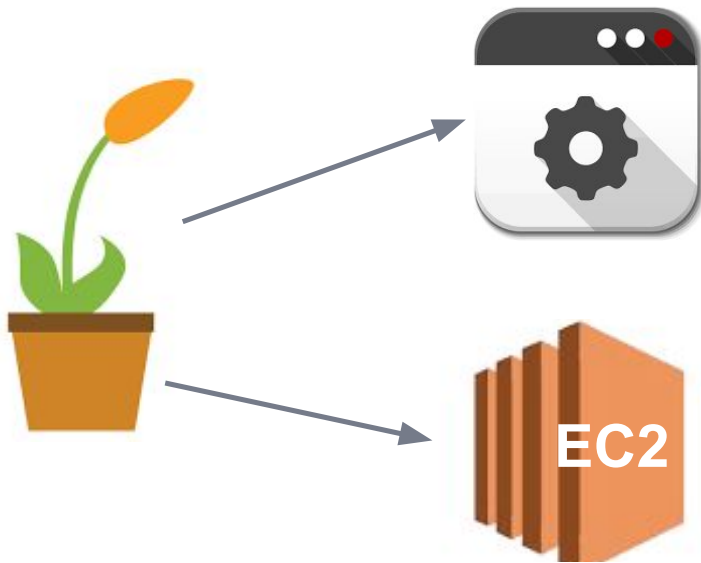
- ▶ Introduction to EC2
- ▶ EC2 Instance Types
- ▶ Creating an EC2 instance



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# 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.

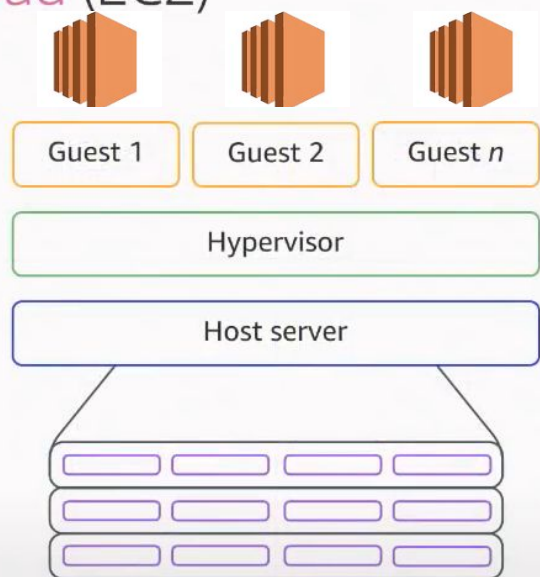
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## Amazon Elastic Compute Cloud (EC2)

Virtual servers in the cloud



Physical servers in  
AWS global regions



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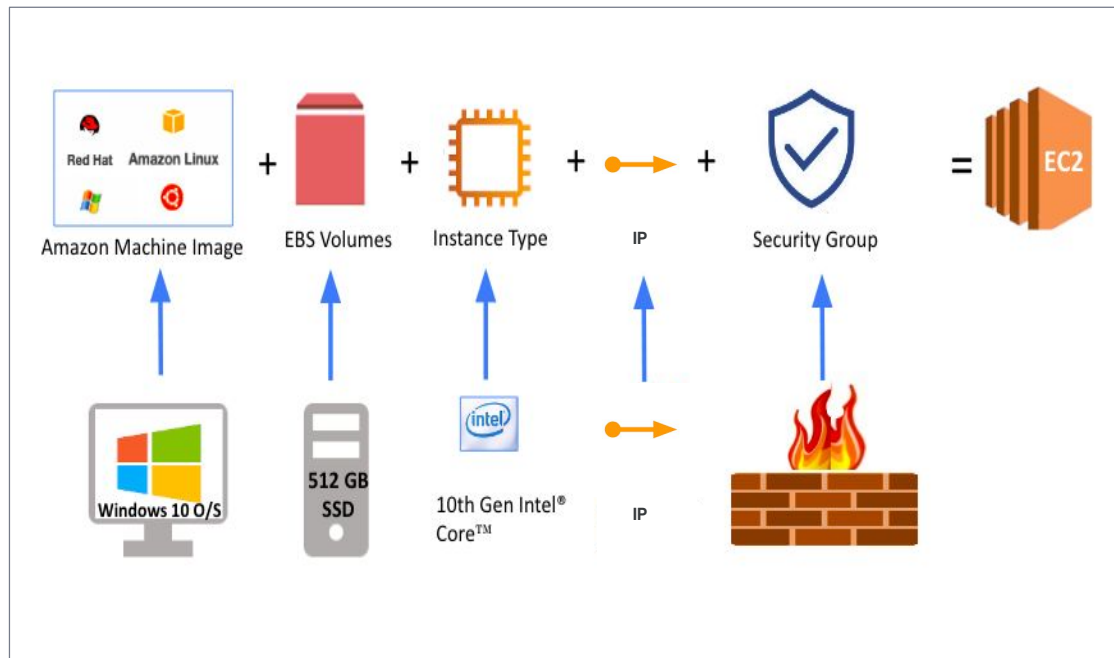
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# Introduction to EC2



## What is EC2?

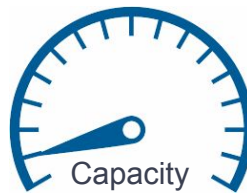
- In fact, EC2 is a **kind of computer** such as your desktop in your home. Components of the EC2 are similar to conventional computer devices.
- Each EC2 component refers to one of the conventional computer parts such as Operating System, Hard Disk and Intel/AMD processors, etc.



# Introduction to EC2



## EC2 Features



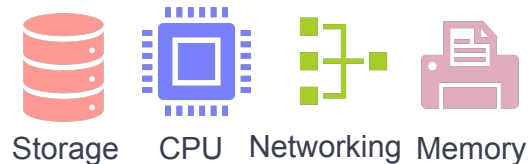
- Pay as you go,
- Setup and ready to use within 1 minute,
- CPU, Memory and Storage Capacity needs can be arranged within minutes,
- Create, Stop or Terminate instances via EC2 console easily.



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## Types of Instances

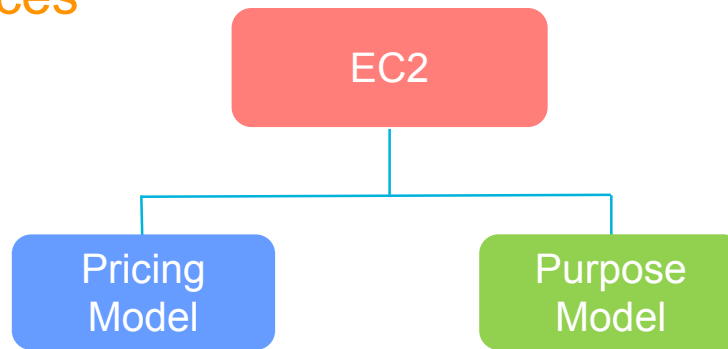
### EC2 Instances Types of Instances



- 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

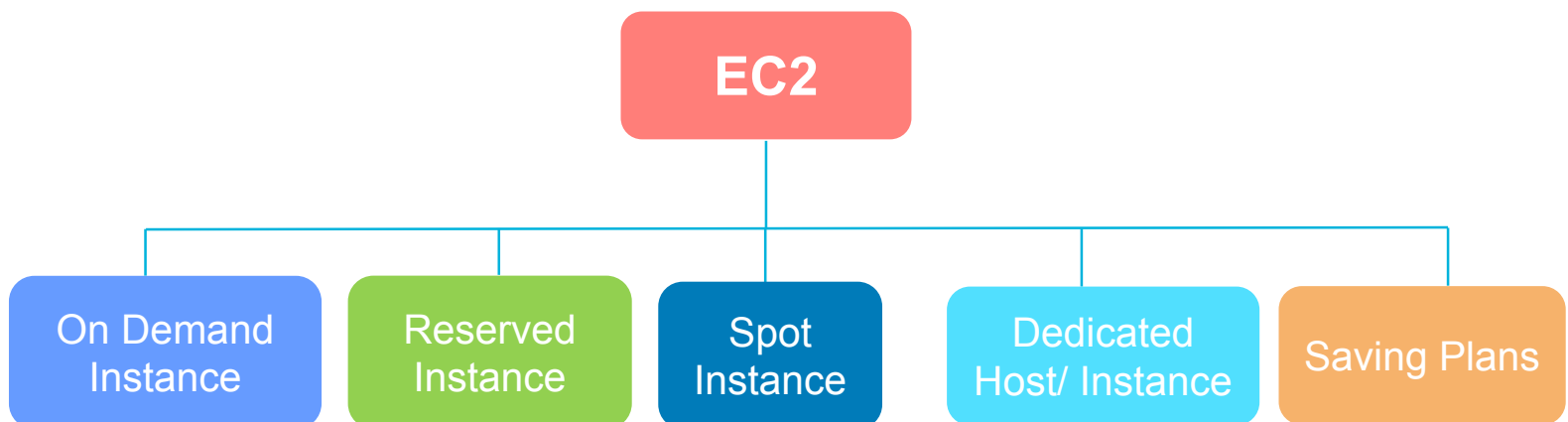
## Types of Instances



- 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

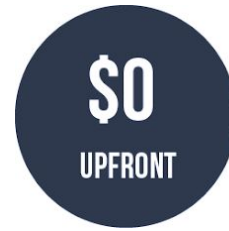
## Pricing Model of Instances



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

## On Demand Pricing

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

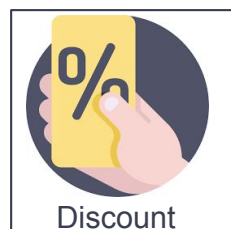


- 25 seconds usage--->>>  $\$ 0.0116 / 60 = \$ 0.00019$  (min 60 seconds )
- 60 seconds usage--->>>  $\$ 0.0116 / 60 = \$ 0.00019$  (min 60 seconds )
- 30 minutes usage--->>>  $\$ 0.0116 / 2 = \$ 0.0058$
- 1 month usage---->>>  $\$ 0.0116 * 24 * 30 = \$ 8.47$

\* Add Pricing of EBS Volume + IPv4 (after February 1, 2024)

# EC2 Instances

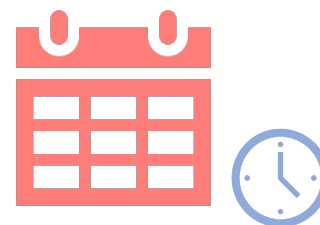
## Reserved Instances (RI)



- 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.

# 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

## 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



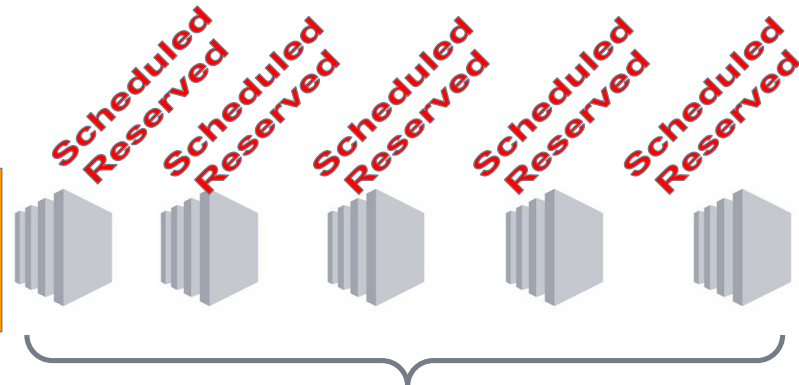
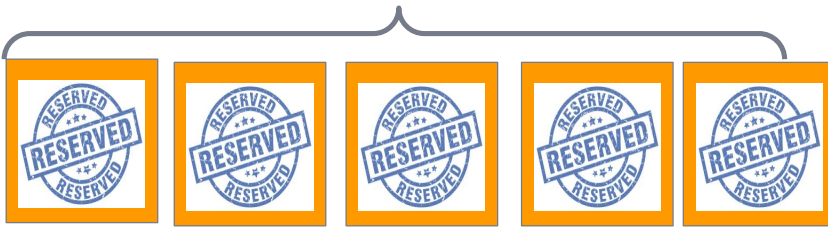
# EC2 Instances

## Example

www.e-commerce



RESERVED INSTANCE: 7/24



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Scheduled Reserved 08:00 AM - 08:00 PM

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# EC2 Instances

## Spot Instance



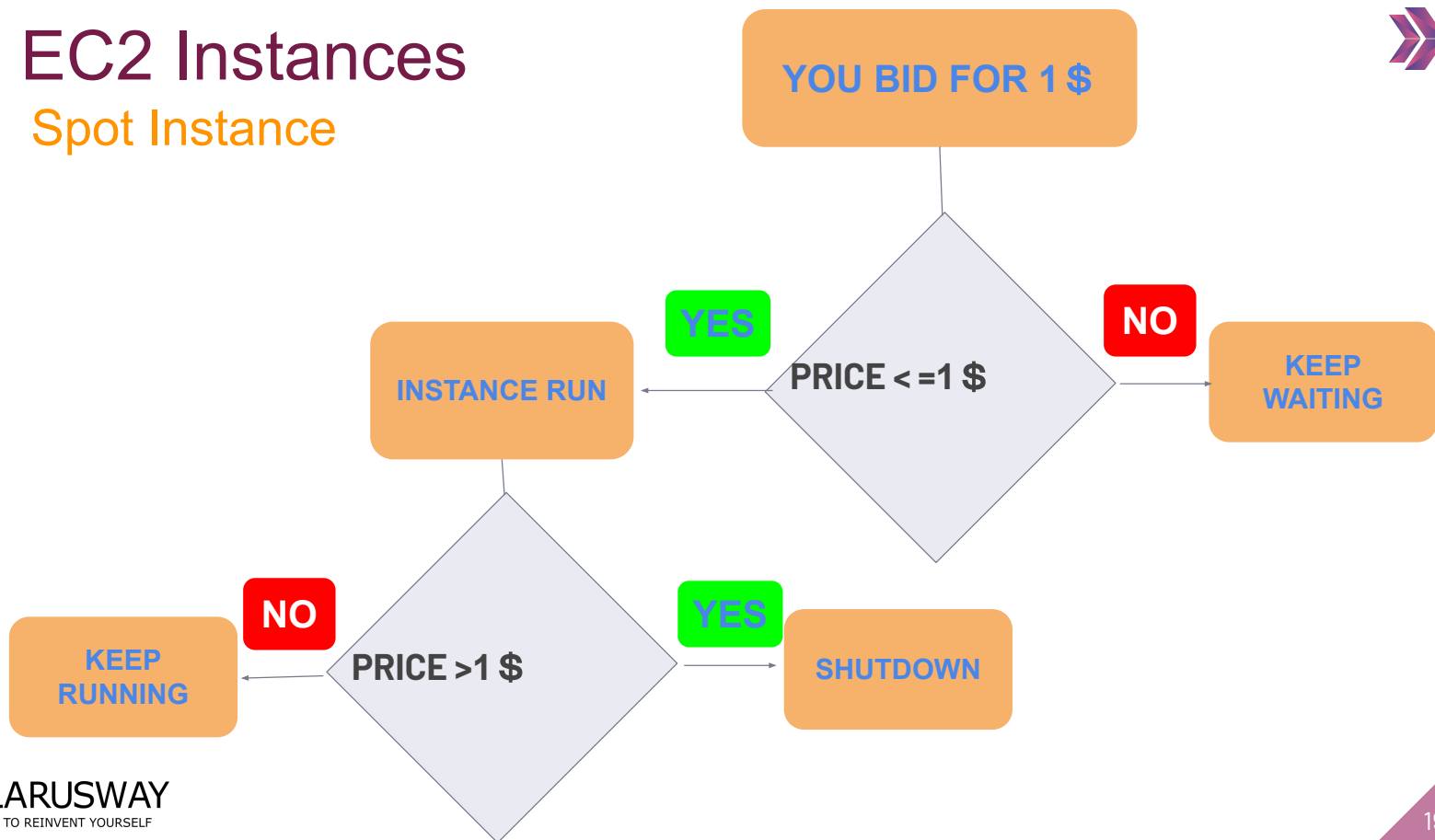
- In Spot Instance, you can enter a purchase order by setting a target price.
- The machine runs when the current price falls below the target price.
- The machine automatically shuts down if the price exceeds that target price.
- You can save up to 90% cost advantage.

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# EC2 Instances

## Spot Instance



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# EC2 Instances

## Spot Instance vs. On Demand Price



45  
minutes



Spot Instance

Pay for 45 minutes

???????

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# EC2 Instances

## Spot Instance



Spot instances are recommended for:

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

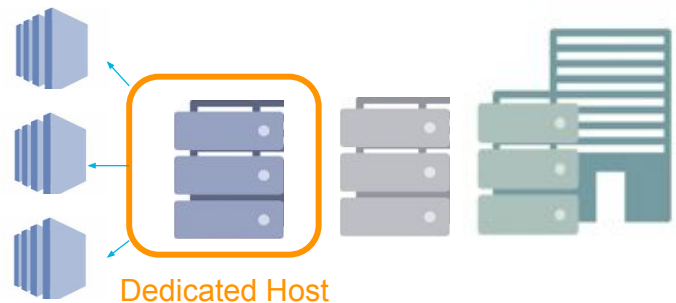
# EC2 Instances

## Dedicated Host/Instance

A Dedicated Host is a physical server the whole capacity of 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.



# EC2 Instances

## Saving Plans

ON DEMAND



5000 HOURS OF USAGE

1500\$

SAVING PLAN



5000 HOURS OF USAGE

1000\$

# EC2 Instances Recap

Spot



Dedicated  
Host/Instance

On Demand

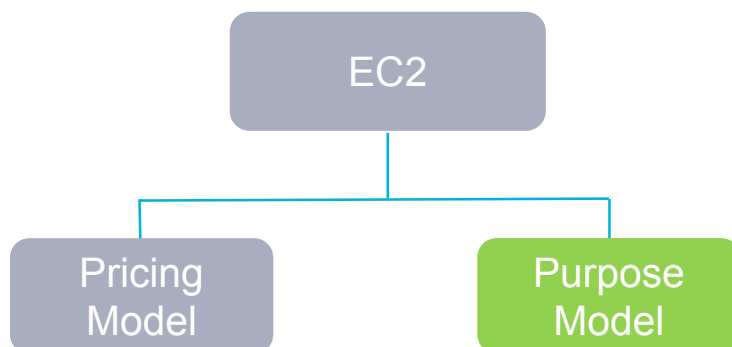
Reserved

Saving Plan



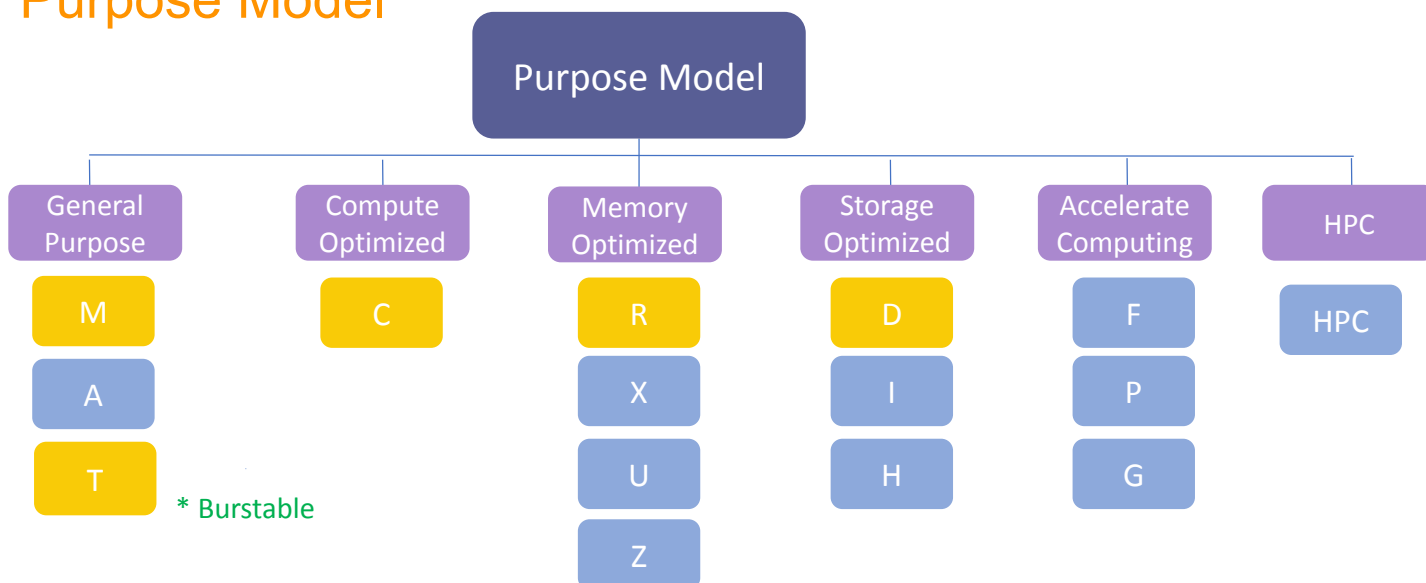
# EC2 Instances

## Types of Instances Recap



# EC2 Instances

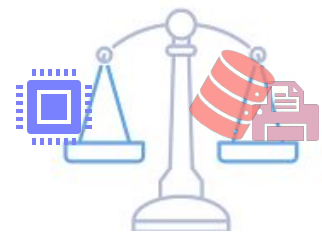
## Purpose Model



AWS offers 15 different types of virtual machines in 6 categories

# EC2 Instances

## General Purpose

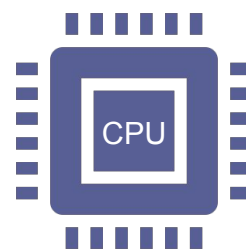


General Purpose

- 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

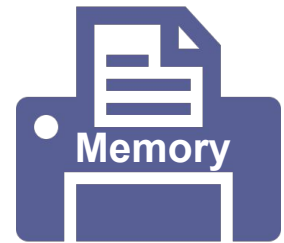
## Compute Optimized



- 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

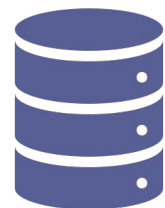
## Memory Optimized



- 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



- 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

## HPC Optimized

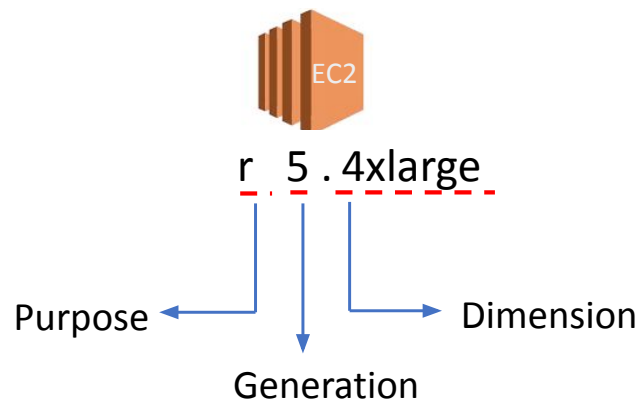


- HPC instances are ideal for applications that benefit from high-performance processors such as large, complex simulations weather forecasting, molecular dynamics and deep learning workloads.



# 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?

You can find me at:

- @osvaldo
- osvaldo@clarusway.com

