1 Introduction to EC2

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Today's Takeaways

- Introduction to EC2
- EC2 Instance Types
- Creating an EC2 instance
- Connecting to EC2 via SSH
- Deploying Apache Web Server
- Using User Data to Automate Deployments

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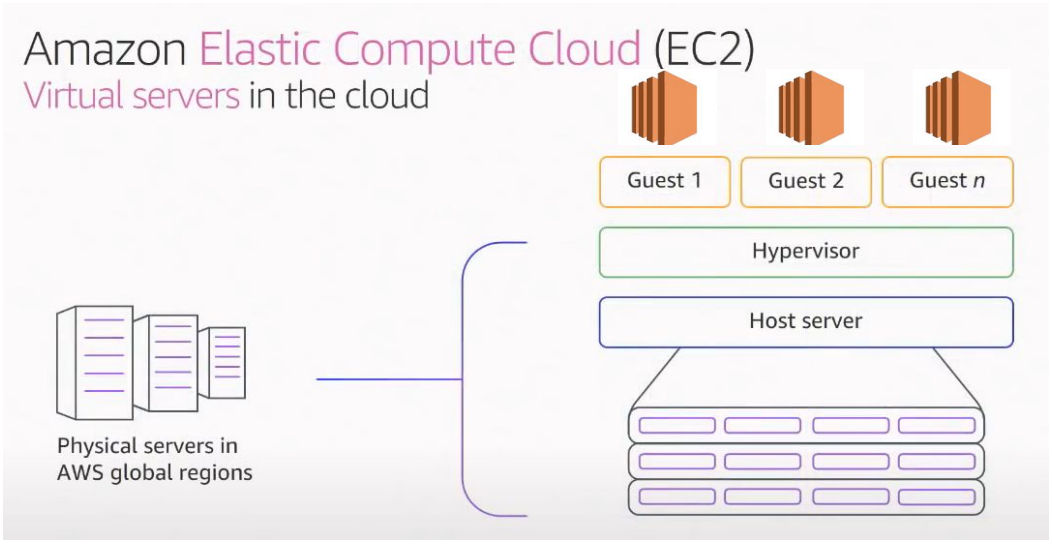
Today's Sessions

- Session 1
  - EC2 Fundamentals - Slides
- Session 2
  - Hands On - Create & Connect to EC2
- Session 3
  - Deploy Web Server on EC2 (manual & automated)

Introduction to EC2

What is EC2?

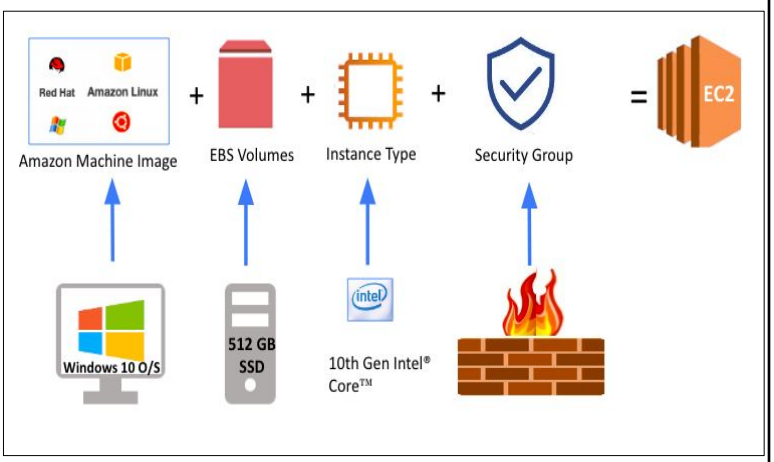
- EC2 stands for Elastic Compute Cloud in AWS.
- EC2 is a service that allows you to run application programs in the computing environment.
- EC2 is a web service that provides secure, resizable compute capacity in the cloud. It is designed to make web-scale cloud computing easier for developers.



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 processors (CPU), etc.



Introduction to EC2

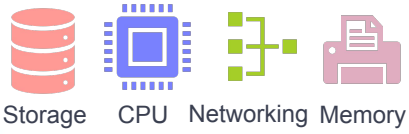
EC2 Features

- 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.

2 Types of Instances

EC2 Instances

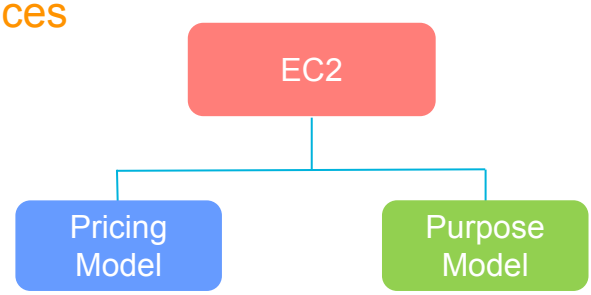
Types of Instances



- 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

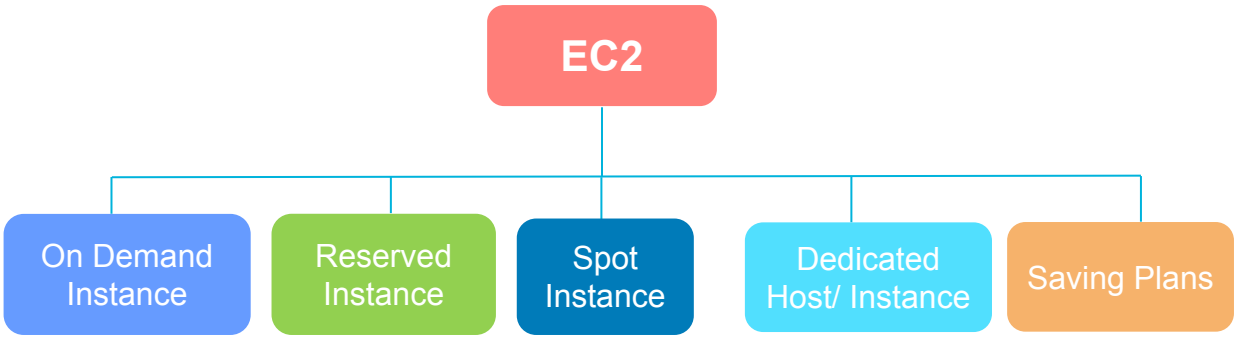
Types of Instances



- 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
  - second (Linux, Windows, SQL Server, Ubuntu)
  - hour (everything else)
- No commitments
- No upfront payments
- You can increase or decrease your compute capacity

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

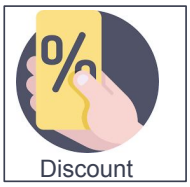
On Demand Pricing

- 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)

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

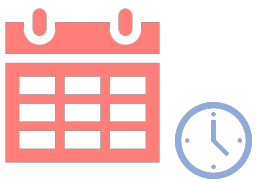
Reserved Instances (RI)

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.

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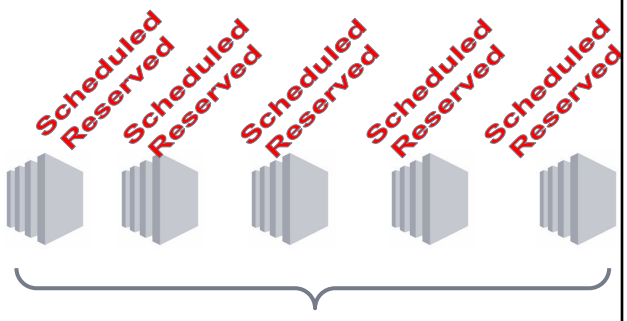
EC2 Instances

Example

www.e-commerce

RESERVED INSTANCE: 7/24



Scheduled Reserved 08:00 AM - 08:00 PM

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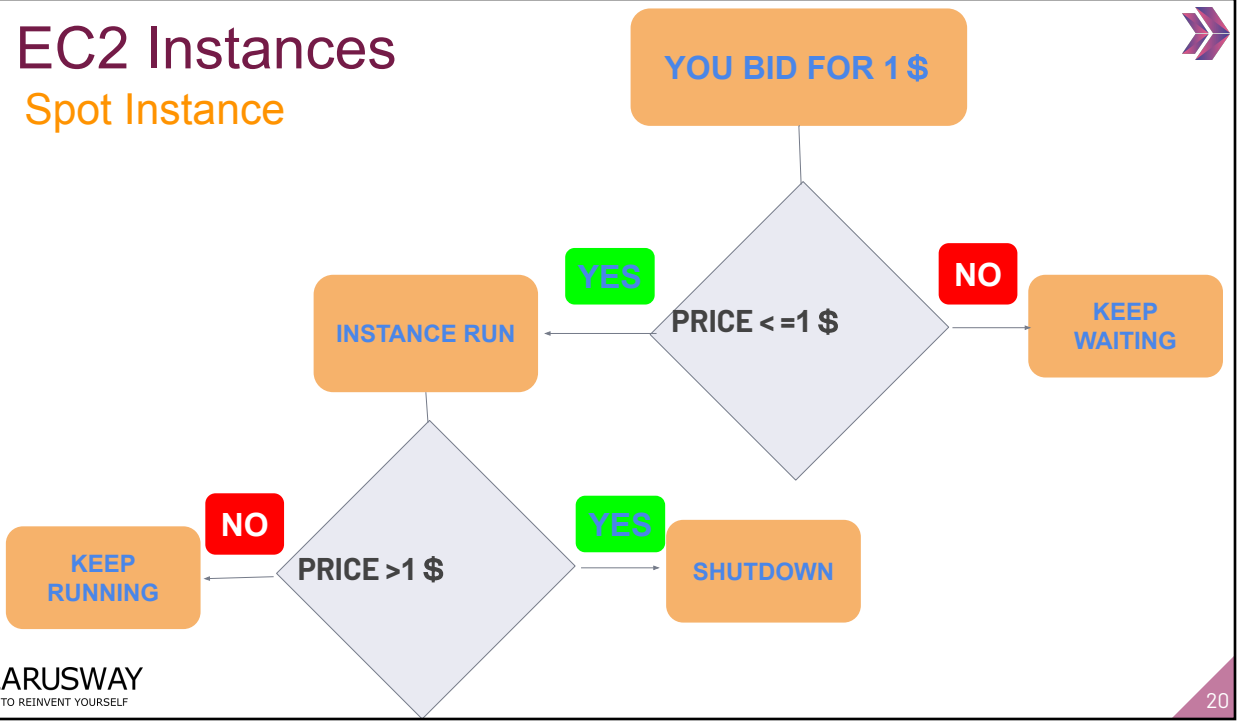
EC2 Instances

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.

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

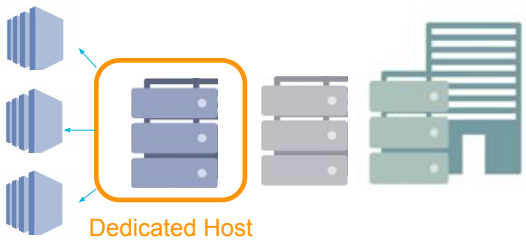
EC2 Instances

Dedicated Host/Instance

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



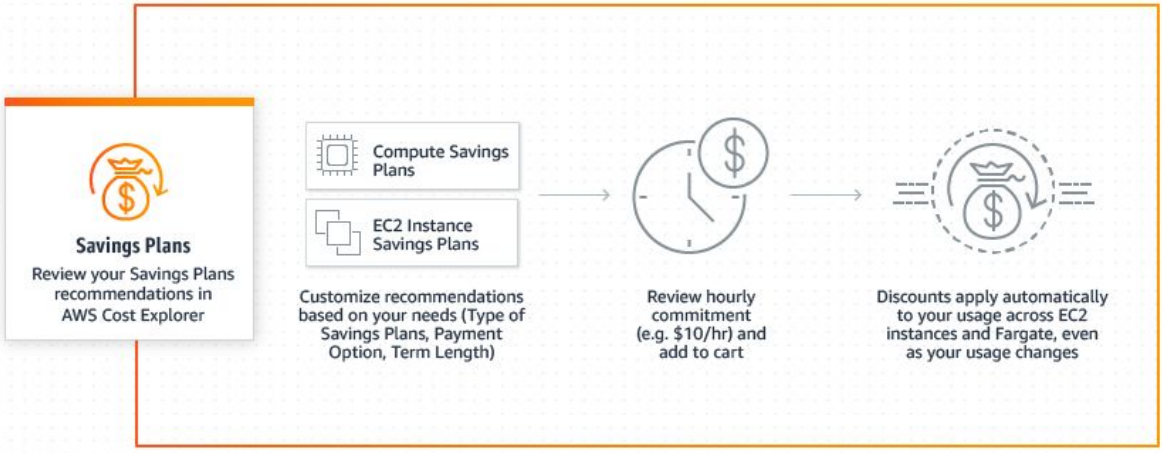
Dedicated Host

vs

Dedicated Instance

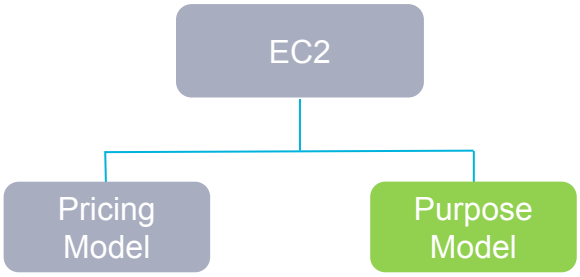
EC2 Instances

Saving Plans



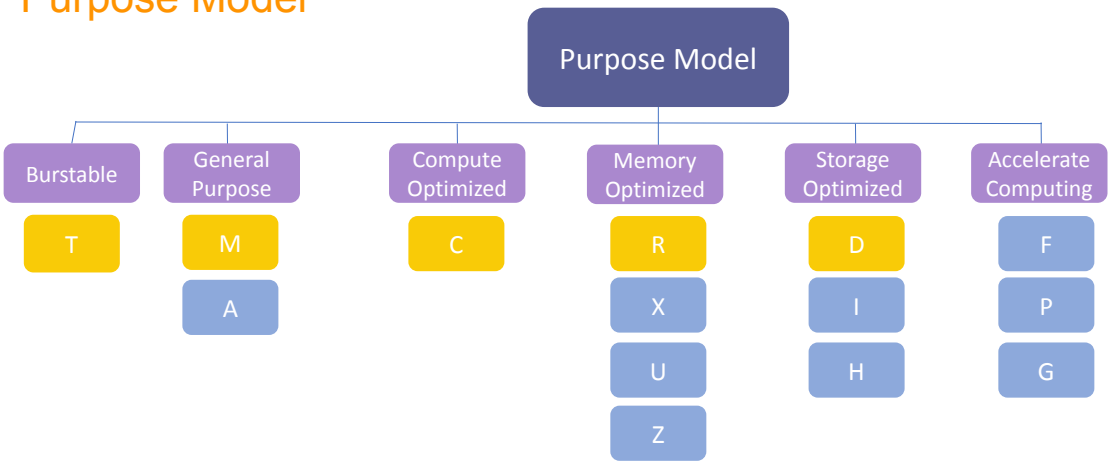
EC2 Instances

Types of Instances Recap



EC2 Instances

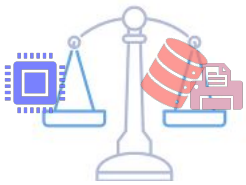
Purpose Model



AWS offers 14 different types of virtual machines in 6 categories

EC2 Instances

General Purpose

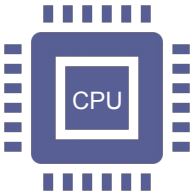


General Purpose

- 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

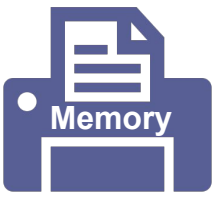
Compute Optimized



- 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.

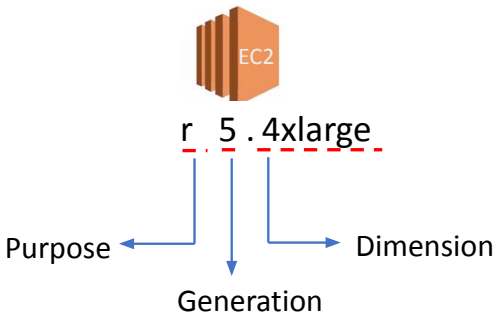
EC2 Instances

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

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

Kahoot!

Your Experience
with EC2 & SSH

Kahoot!

THANKS!

Any questions?

You can find me at:

- @Altaz - Instructor
- altaz@clarusway.com

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Break
return @ 9pm

amazon web services

Introduction to EC2

Hands-On Parts 1 & 2

- Introduction to Apache Web Server
- Launch and Connect to EC2 Instance

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Break
return @ 10pm

Introduction to EC2

Hands-On Parts 3 & 4

- Install and Configure Apache Web Server
- Automation of Web Server Installation