

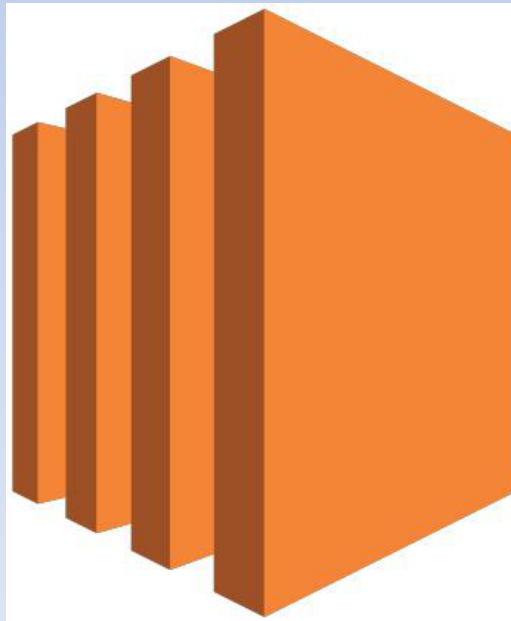


AWS Certified Solutions
Architect - Associate

Module 4

AWS Elastic Cloud

Compute – EC2



Agenda

- ✓ What is AWS EC2
- ✓ Benefits & Features
- ✓ EC2 Purchasing Options
- ✓ EC2 AMI
- ✓ EC2 Instance Types
- ✓ EC2 Operations – reboot, stop, terminate , resize
- ✓ Elastic IP
- ✓ EC2 Billing
- ✓ EC2 Pricing
- ✓ Hands-On Labs

What is EC2??

- ☐ Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) cloud.
- ☐ It provides you with complete control of your computing resources and lets you run on Amazon's proven computing environment.
- ☐ Amazon EC2 reduces the time required to obtain and boot new server instances (EC2 instances) to minutes.
- ☐ Amazon EC2 changes the economics of computing by allowing you to pay only for capacity that you actually use.

EC2 Benefits

Elastic Web-Scale Computing

Completely Controlled

Flexible Services

Integrated

Reliable

Secure

Easy to Use

Inexpensive

EC2 Features

AMI

Instance Type

Key Pair

Instance Store

EBS Volume

VPC

Security Groups

EIP

EC2 Purchasing Options

On- Demand Instance

Pay by the
hour

Reserved Instance

On-Lease
Model with 1
to 3 years
terms &
Significant
Discount

Spot Instance

Bidding Model
with
significant
discount up to
90 %

Purchasing Options Cont..

Dedicated Instance

Pay, by the hour, for instance that run on single tenant hardware

Dedicated Hosts

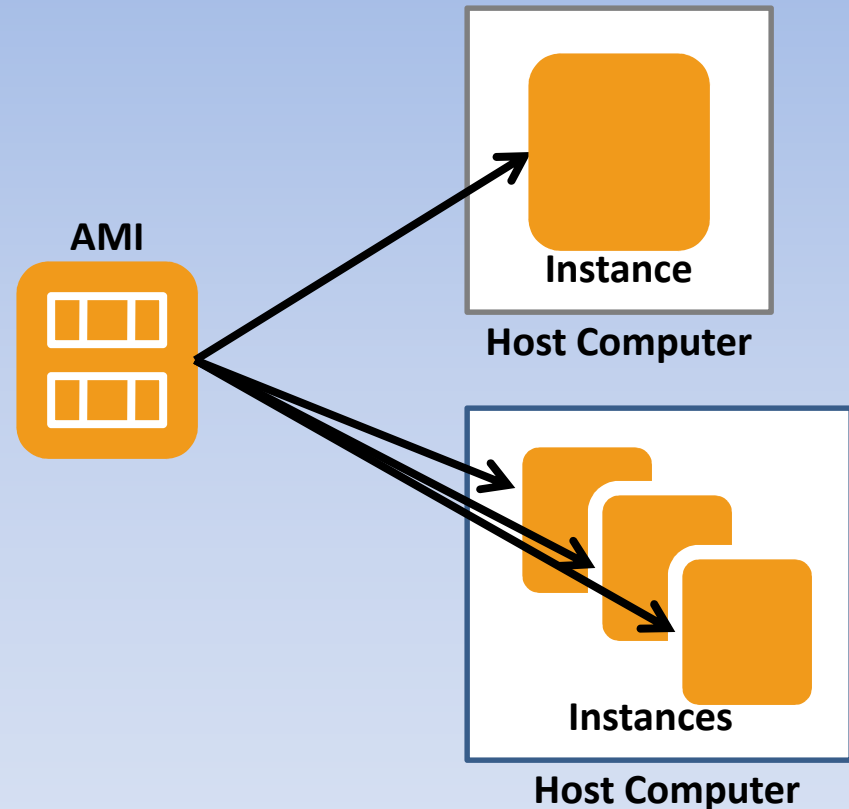
Physical host is fully dedicated to run your instances.

EC2 Amazon Machine Image - AMI

❑ An Amazon Machine Image (AMI) provides the information required to launch an instance.

❑ An AMI includes the following:

- A template for the root volume for the instance (for example, an operating system, an application server, and applications)
- Launch permissions that control which AWS accounts can use the AMI to launch instances
- A block device mapping that specifies the volumes to attach to the instance when it's launched.



EC2: Instance Types

- ☐ The instance type specifies the hardware of the host computer used for your instance.
- ☐ Each instance type offers different compute, memory, and storage capabilities.
- ☐ Amazon EC2 dedicates some resources of the host computer, such as CPU, memory, and instance storage, to a particular instance.
- ☐ Amazon EC2 shares other resources of the host computer, such as the network and the disk subsystem, among instances.
- ☐ If each instance on a host computer tries to use as much of one of these shared resources as possible, each receives an equal share of that resource.
- ☐ However, when a resource is under-utilized, an instance can consume a higher share of that resource while it's available.

EC2: Instance Types Cont....

General Purpose

T2

M5

M4

Memory Optimized

R4

X1

X1e

Storage Optimized

H1

i3

D2

Compute Optimized

C4

C5

Accelerated Computing - GPU

P3

P2

G3

F1

EC2 : Operations to understand

Characteristic	Reboot	Stop/Start (EBS – Based instance only)	Terminate
Host computer	The instance stays on the same host computer	The instance runs on a new host computer	None
Private and Public IPv4 Addresses	These addresses stay the same	The instance keeps same private ip but public ip changed	None
Elastic Ip address	The elastic ip remain associated with the instance	The elastic ip remain associated with the instance	The elastic ip is disassociated from the instance
Instance store volumes	The data is preserved	The data is erased	The data is erased
Root device volume	The volume is preserved	The volume is preserved	The volume is deleted by default
Billing	The instance billing hour doesn't change	Stop incurring charges from "Running" to "Stopping", and start new instance billing hour from "Stopped" to "Running"	Stop incurring charges

EC2: Elastic IP

- ☐ An Elastic IP address is a public IP address (static) that you can allocate to instance.
- ☐ You can disassociate an Elastic IP address from a resource, and re-associate it with a different resource.
- ☐ A disassociated Elastic IP address remains allocated to your account until you explicitly release it.
- ☐ To ensure efficient use of Elastic IP addresses, a hourly charge is associated if an Elastic IP address is not associated with a running instance, or if it is associated with a stopped instance or an unattached network interface.
- ☐ You are not charged for one Elastic IP address associated with the running instance, but you are charged for any additional Elastic IP addresses associated with the instance.
- ☐ By default, all AWS accounts are limited to 5 Elastic IP addresses per region.

EC2: Billing & Pricing

- ❑ If instance is billed by the hour, you are billed for a minimum of one hour each time a new instance is started—when it enters the running state.
- ❑ If your instance is billed by the second, you are billed for a minimum of 60 seconds each time a new instance is started—when it enters the running state.
- ❑ Instances that are in any other state—such as stopped, pending, etc.—are not billed.
- ❑ Examples:
 - When you run one instance for 30 minutes and then terminate the instance, you are billed for one instance hour.
 - When you run one instance for 10 minutes, stop the instance, and then start the instance again, you are billed for two instance hours.
 - When you run two EC2 instances of the same type for 30 minutes each, you are billed for two instance hours.



EC2: Some Pricing Comparison

Resource	OS	Region	Pricing	Remarks
t2.micro	Linux	USE (N. Virginia)	\$0.0116/ Hr.	On-Demand
t2.micro	Windows	USE (N. Virginia)	\$0.0162/ Hr.	On-Demand
t2.micro	Linux	AP (Mumbai)	\$0.0144./ Hr.	On-Demand
t2.micro	Windows	AP (Mumbai)	\$0.019/ Hr.	On-Demand
t2.micro	Linux	USE (N. Virginia)	\$0.007/ Hr.	- Reserved (1 Year, Upfront) - 42% Saving, On-Demand)
t2.micro	Windows	USE (N. Virginia)	\$0.011/ Hr.	- Reserved (1 Year, Upfront) - 30% Saving, On-Demand

EC2 Limitation

Resource	Default Limit
EIP per region	5
Running On-demand t2.micro instances	20
Reserved instances	20

Hands-On Lab