

Introduction to EC2

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Elastic Compute Cloud (EC2) is a **highly configurable virtual server**.

EC2 is resizable **compute capacity**. It takes **minutes** to launch new instances.

Anything and everything on AWS uses EC2 Instance underneath.

Choose OS via
Amazon Machine Image (AMI)

Choose **Instance Type**

Add Storage (**EBS**, **EFS**)

Configure Instance



t2.nano

\$0.0065/hour (\$4.75/month)

1 vCPU 0.5GB Mem

C4.8xlarge

\$1.591/hour (\$1161.43/month)

36 vCPU 60GB Mem 10 Gigabit performance

SSD HDD Virtual Magnetic Tape Multiple Volumes

Security Groups, Key Pairs, UserData, IAM Roles, Placement Groups

EC2 Instance Families

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What are Instance Families?

Instance families are different combinations of CPU, Memory, Storage and Networking capacity.

Instance families allow you to choose the appropriate combination of capacity to meet your application's unique requirements.

Different instance families are different because of the varying hardware used to give them their unique properties.

Commonly instance families are called "Instance Types" but an instance type is a combination of size and family.

General Purpose

A1 T2 T3 T3a T4g M4 M5 M5a M5n M6zn M6g M6i Mac

balance of compute, memory and networking resources

Use-cases web servers and code repositories

Compute Optimized

C5 C4 Cba C5n C6g C6gn

Ideal for compute bound applications that benefit from high performance processor

Use-cases scientific modeling, dedicated gaming servers and ad server engines

Memory Optimized

R4 R5 R5a R5b R5n X1 X1e High Memory z1d

fast performance for workloads that process large data sets in memory.

Use-cases in-memory caches, in-memory databases, real time big data analytics

Accelerated Optimized

P2 P3 P4 G3 G4ad G4dn F1 Inf1 VT1

hardware accelerators, or co-processors

Use-cases Machine learning, computational finance, seismic analysis, speech recognition

Storage Optimized

I3 I3en D2 D3 D3en H1

high, sequential read and write access to very large data sets on local storage

Use-cases NoSQL, in-memory or transactional databases, data warehousing

EC2 Instance Types

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An instance type is a particular **instance size and instance family**:

A common pattern for instance sizes:

- nano
- micro
- small
- medium
- large
- xlarge
- 2xlarge
- 4xlarge
- 8xlarge
-




Currently selected: t2.micro (- ECUs, 1 vCPUs, 2.5 GHz, -, 1 GiB memory, EBS only)

	Family	Type	vCPUs (1)	Memory (GiB)
<input type="checkbox"/>	t2	t2.nano	1	0.5
<input checked="" type="checkbox"/>	t2	<u>t2.micro</u> Free tier eligible	1	1
<input type="checkbox"/>	t2	<u>t2.small</u>	1	2
<input type="checkbox"/>	t2	<u>t2.medium</u>	2	4
<input type="checkbox"/>	t2	<u>t2.large</u>	2	8
<input type="checkbox"/>	t2	<u>t2.xlarge</u>	4	16

There are many exceptions to this pattern for sizes e.g.

- c6g.metal – is a bare metal machine.
- C5.9xlarge – Is not a power of 2 or even number size

EC2 Instance Sizes

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EC2 Instance Sizes **generally double** in price and key attributes

Name	vCPU	RAM (GiB)	On-Demand per hour	On-Demand per month
t2.small	<u>1</u>	<u>12</u>	\$0.023	<u>\$16.79</u>
t2.medium	<u>2</u>	<u>24</u>	\$0.0464	<u>\$33.87</u>
t2.large	2	<u>36</u>	\$0.0928	\$67.74
t2.xlarge	<u>4</u>	<u>54</u>	\$0.1856	<u>\$135.48</u>

EC2 – Dedicated Host

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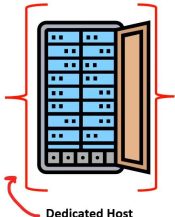
Dedicated Hosts are single-tenant EC2 instances designed to let you Bring-Your-Own-License (BYOL) based on **machine characteristics**

	Dedicated Instance	Dedicated Hosts
Isolation	Instance Isolation	Physical Server Isolation
Billing	Per instance billing (+\$2 per region fee)	Per host billing
Visibility of Physical characteristics	No Visibilities	 Sockets, cores, host ID
Affinity between a host and instance	No Affinity	Consistency deploy to the same instances to the same physical server
Targeted instance placement	No control	Additional control over instance placement on physical server
Automatic instance placement	Yes	Yes
Add capacity using an allocation request	No	Yes

EC2 Tenancy

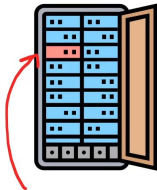
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EC2 has three levels of tenancy:



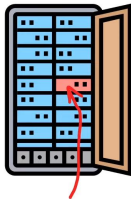
Dedicated Host

Your server lives here and you have control of the physical attributes



Dedicated Instance

Your server always lives here



Default

Your instance live here ***until reboot***