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

Red Hat ubuntu Amazon Linux SUSE

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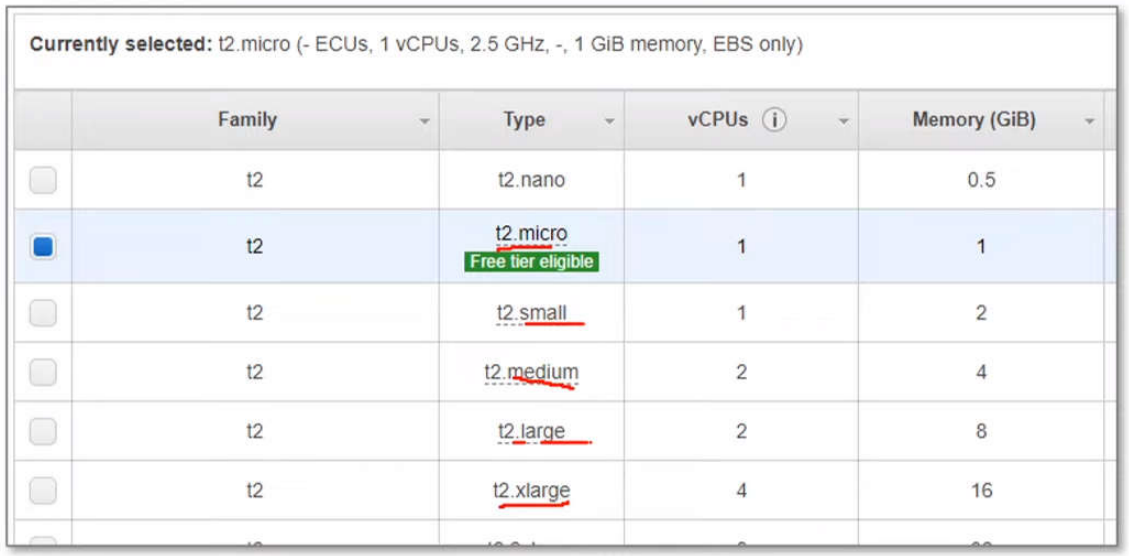
An instance type is a particular **instance size and instance family**:

A common pattern for instance sizes:

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



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

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

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

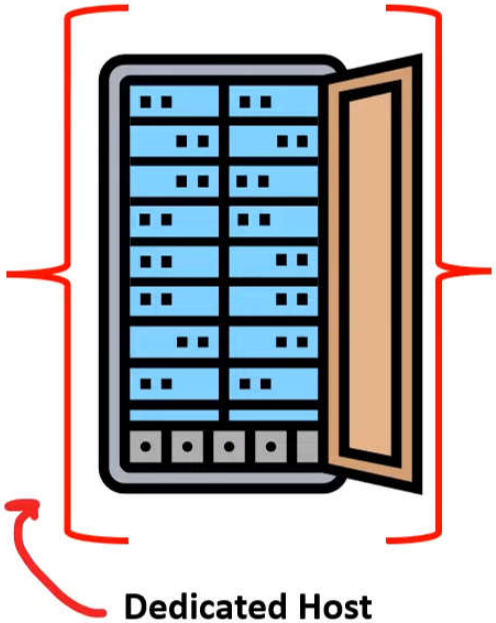
EC2 – Dedicated Host

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

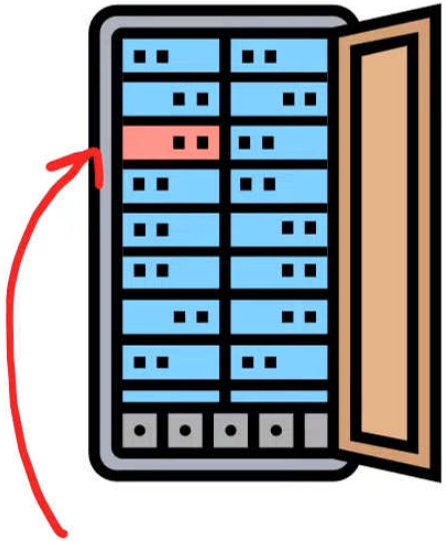
EC2 Tenancy

EC2 has three levels of tenancy:



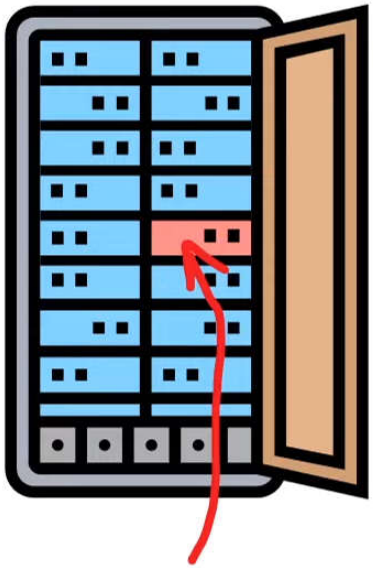
Dedicated Host

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



Dedicated Instance

Your server always lives here



Default

You instance live here ***until reboot***