



# Beginner's Guide To Amazon EC2

## What is AWS EC2?

Amazon Elastic Compute Cloud, EC2 is a web service from Amazon that provides resizable compute services in the cloud.

## Features of Amazon EC2

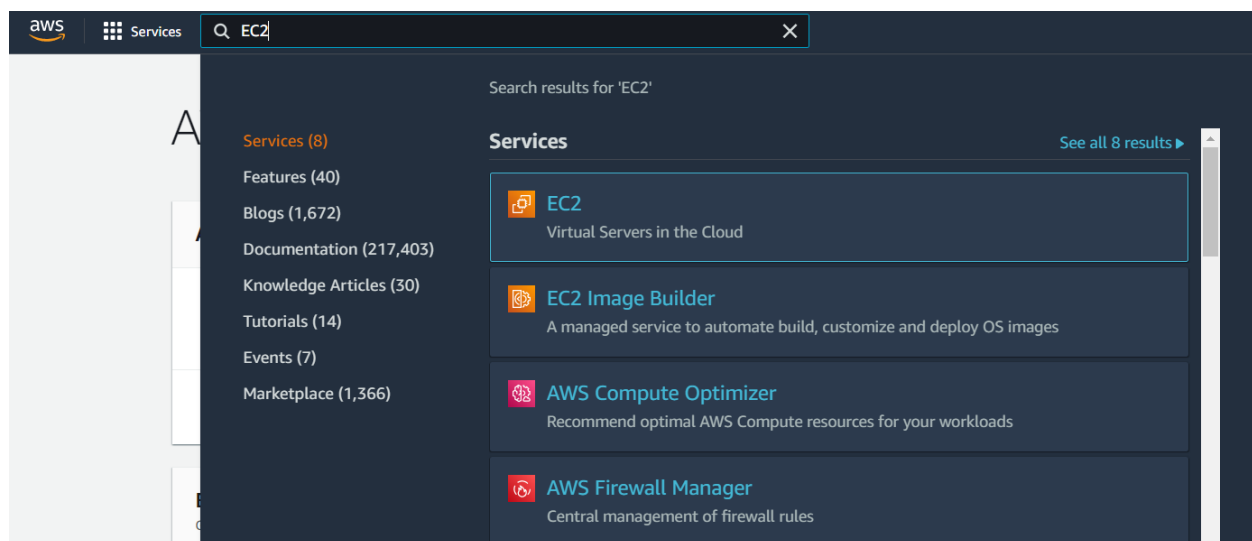
Amazon EC2 provides the following features:

- Virtual computing environments, known as *instances*
- Preconfigured templates for your instances, known as *Amazon Machine Images (AMIs)*, that package the bits you need for your server (including the operating system and additional software)
- Various configurations of CPU, memory, storage, and networking capacity for your instances, known as *instance types*
- Secure login information for your instances using *key pairs* (AWS stores the public key, and you store the private key in a secure place)
- Storage volumes for temporary data that's deleted when you stop, hibernate, or terminate your instance, known as *instance store volumes*
- Persistent storage volumes for your data using Amazon Elastic Block Store (Amazon EBS), known as *Amazon EBS volumes*
- Multiple physical locations for your resources, such as instances and Amazon EBS volumes, known as *Regions* and *Availability Zones*
- A firewall that enables you to specify the protocols, ports, and source IP ranges that can reach your instances using *security groups*
- Static IPv4 addresses for dynamic cloud computing, known as *Elastic IP addresses*

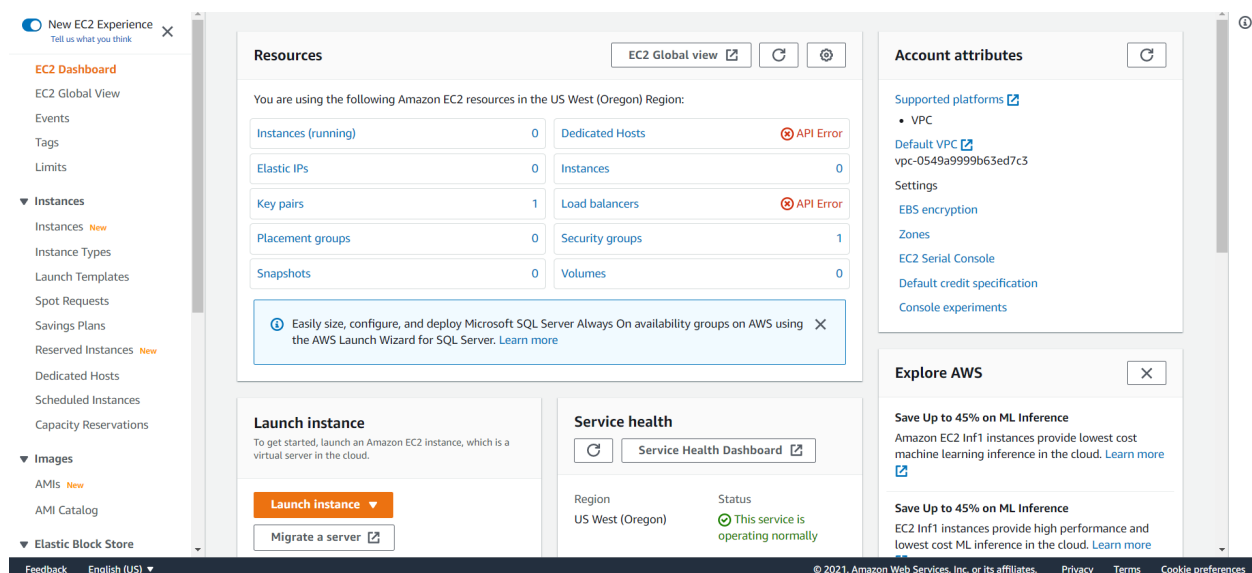
- Metadata, known as *tags*, that you can create and assign to your Amazon EC2 resources
- Virtual networks you can create that are logically isolated from the rest of the AWS Cloud, and that you can optionally connect to your own network, known as *virtual private clouds* (VPCs)

## Create Your First Amazon EC2 Instance (Linux)

1-Select Services>EC2 from the AWS Management Console home page:



You are now in the EC2 Dashboard



## 2-Click Launch Instance

A seven-step wizard is started

## 3-Click the top Select button to choose the Amazon Linux 2 AMI

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 1: Choose an Amazon Machine Image (AMI) Cancel and Exit

Search by Systems Manager parameter

Quick Start

My AMIs

AWS Marketplace

Community AMIs

☐ Free tier only ⓘ

**Amazon Linux 2 AMI (HVM) - Kernel 5.10, SSD Volume Type** - ami-00f7e5c52c0f43726 (64-bit x86) / ami-0c8ae7b6508eff3f4 (64-bit Arm) Select

Amazon Linux Free tier eligible

Amazon Linux 2 comes with five years support. It provides Linux kernel 5.10 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras. This AMI is the successor of the Amazon Linux AMI that is now under maintenance only mode and has been removed from this wizard.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

**Amazon Linux 2 AMI (HVM) - Kernel 4.14, SSD Volume Type** - ami-0e21d4d9303512b8e (64-bit x86) / ami-070936f6bb0327457 (64-bit Arm) Select

Amazon Linux Free tier eligible

Amazon Linux 2 comes with five years support. It provides Linux kernel 4.14 tuned for optimal performance on Amazon EC2, systemd 219, GCC 7.3, Glibc 2.26, Binutils 2.29.1, and the latest software packages through extras. This AMI is the successor of the Amazon Linux AMI that is now under maintenance only mode and has been removed from this wizard.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

**macOS Monterey 12.0.1** - ami-0bf8b4f2b53367596 Select

The macOS Monterey AMI is an EBS-backed, AWS-supported image. This AMI includes the AWS Command Line Interface, Command Line Tools for Xcode, Amazon SSM Agent, and Homebrew. The AWS Homebrew Tap includes the latest versions of multiple AWS packages included in the AMI.

Root device type: ebs Virtualization type: hvm ENA Enabled: Yes

**macOS Big Sur 11.6.1** - ami-0789036840ebc8c25 Select

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## 4-Choose any Instance Type

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 2: Choose an Instance Type

Amazon EC2 provides a wide selection of instance types optimized to fit different use cases. Instances are virtual servers that can run applications. They have varying combinations of CPU, memory, storage, and networking capacity, and give you the flexibility to choose the appropriate mix of resources for your applications. [Learn more](#) about instance types and how they can meet your computing needs.

Filter by: All instance families Current generation Show/Hide Columns

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

	Family	Type	vCPUs ⓘ	Memory (GiB)	Instance Storage (GB) ⓘ	EBS-Optimized Available ⓘ	Network Performance ⓘ	IPv6 Support ⓘ
<input type="checkbox"/>	t2	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	t2	t2.micro Free tier eligible	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.large	2	8	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	t2	t2.xlarge	4	16	EBS only	-	Moderate	Yes
<input type="checkbox"/>	t2	t2.2xlarge	8	32	EBS only	-	Moderate	Yes
<input type="checkbox"/>	t3	t3.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

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## 5-Click Next: Configure Instance Details when ready to continue

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances	1	<a href="#">Launch into Auto Scaling Group</a>
Purchasing option	<input type="checkbox"/> Request Spot instances	
Network	vpc-0549a999b63ed7c3 (default)	<a href="#">Create new VPC</a>
Subnet	No preference (default subnet in any Availability Zone)	<a href="#">Create new subnet</a>
Auto-assign Public IP	Use subnet setting (Enable)	
Hostname type	Use subnet setting (IP name)	
DNS Hostname	<input checked="" type="checkbox"/> Enable IP name IPv4 (A record) DNS requests <input checked="" type="checkbox"/> Enable resource-based IPv4 (A record) DNS requests <input type="checkbox"/> Enable resource-based IPv6 (AAAA record) DNS requests	
Placement group	<input type="checkbox"/> Add instance to placement group	
Capacity Reservation	Open	
Domain join directory	No directory	<a href="#">Create new directory</a>
IAM role	None	<a href="#">Create new IAM role</a>

Cancel Previous **Review and Launch** Next: Add Storage

## 6-Click Next: Add Storage

The Add Storage page enables you to further configure storage options:

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 4: Add Storage

Your instance will be launched with the following storage device settings. You can attach additional EBS volumes and instance store volumes to your instance, or edit the settings of the root volume. You can also attach additional EBS volumes after launching an instance, but not instance store volumes. [Learn more](#) about storage options in Amazon EC2.

Volume Type	Device	Snapshot	Size (GiB)	Volume Type	IOPS	Throughput (MB/s)	Delete on Termination	Encryption
Root	/dev/xvda	snap-073a23f31089425ba	8	General Purpose SSD (gp2)	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted

[Add New Volume](#)

Free tier eligible customers can get up to 30 GB of EBS General Purpose (SSD) or Magnetic storage. [Learn more](#) about free usage tier eligibility and usage restrictions.

▼ Shared file systems

You currently don't have any file systems on this instance. Select "Add file system" button below to add a file system.

[Add file system](#)

Cancel Previous **Review and Launch** Next: Add Tags

## 7-Click Next: Add Tags when ready

The Add Tags page provides a helpful way to organize your EC2 instances:

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 5: Add Tags

A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both.

Tags will be applied to all Instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key (128 characters maximum)	Value (256 characters maximum)	Instances ⓘ	Volumes ⓘ	Network Interfaces ⓘ
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This resource currently has no tags

Choose the Add tag button or [click to add a Name tag](#).  
Make sure your [IAM policy](#) includes permissions to create tags.

Add Tag (Up to 50 tags maximum)

Cancel Previous Review and Launch Next: Configure Security Group

## 8-Click Next: Configure Security Group when ready

Read the supporting text near the top of the Configure Security Group page of the wizard:

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

### Step 6: Configure Security Group

A security group is a set of firewall rules that control the traffic for your instance. On this page, you can add rules to allow specific traffic to reach your instance. For example, if you want to set up a web server and allow Internet traffic to reach your instance, add rules that allow unrestricted access to the HTTP and HTTPS ports. You can create a new security group or select from an existing one below. [Learn more](#) about Amazon EC2 security groups.

Assign a security group: ☒ Create a new security group  
☐ Select an existing security group

Security group name: launch-wizard-1  
Description: launch-wizard-1 created 2021-12-26T16:18:47.550+05:30

Type ⓘ	Protocol ⓘ	Port Range ⓘ	Source ⓘ	Description ⓘ
SSH	TCP	22	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop

Add Rule

**Warning**  
Rules with source of 0.0.0.0/0 allow all IP addresses to access your instance. We recommend setting security group rules to allow access from known IP addresses only.

Cancel Previous Review and Launch

The Warning from AWS is letting you know the default configuration for the security group that is about to be created will grant SSH access from any source IP address (0.0.0.0/0). Production environments should be more restrictive.

## 9-Click Review and Launch when ready



## 12-Click Launch Instances

### Launch Status

✓ **Your instances are now launching**  
The following instance launches have been initiated: i-06e760ed8db79f424 [View launch log](#)

ⓘ **Get notified of estimated charges**  
[Create billing alerts](#) to get an email notification when estimated charges on your AWS bill exceed an amount you define (for example, if you exceed the free usage tier).

13-Click the View Instances button (lower right) to close the confirmation page and return to the Instances screen of the EC2 console.

You can view the status of your instance on the Instances screen of the EC2 console:

The screenshot displays the AWS Management Console's EC2 Instances page. On the left, a navigation sidebar lists various EC2 services. The main content area shows a table with one instance, 'i-06e760ed8db79f424', which is in a 'Running' state. Below the table, the details for this specific instance are expanded, showing its configuration, including the instance ID, IP addresses, and current status.

Name	Instance ID	Instance state	Instance type	Status check	Alarm status	Availability Zone	Public IPv4 DNS
-	i-06e760ed8db79f424	Running	t2.micro	Initializing	User: armaws	us-west-2c	ec2-18-237-238-

**Instance: i-06e760ed8db79f424**

**Details** | Security | Networking | Storage | Status checks | Monitoring | Tags

**Instance summary** Info

Instance ID i-06e760ed8db79f424	Public IPv4 address 18.237.238.245   <a href="#">open address</a>	Private IPv4 addresses 172.31.10.176
IPv6 address -	Instance state Running	Public IPv4 DNS ec2-18-237-238-245.us-west-2.compute.amazonaws.com   <a href="#">open address</a>

## Components of AWS EC2

### 1-Amazon Machine Image (AMI)

Amazon Machine Image is like a preconfigured template to launch an EC2 instance with Operating system, tools, applications and more. You can choose AMI based on the project or usage. There are mainly 3 components in AMI

- Root Component Template which consists of Operating system and applications
- Launch permissions to launch EC2 instance
- Block device mapping that is connecting the storage devices to the instance

## 2-Instances

An instance is a virtual server in the cloud. Its configuration at launch is a copy of the AMI that you specified when you launched the instance.

You can launch different types of instances from a single AMI. Each instance type offers different compute and memory capabilities. Select an instance type based on the amount of memory and computing power that you need for the application or software that you plan to run on the instance.

### Storage for your instance

The root device for your instance contains the image used to boot the instance. The root device is either an Amazon Elastic Block Store (Amazon EBS) volume or an instance store volume. EBS is a storage service that is attached to EC2 to store data it's just like a hard drive.

## Amazon EC2 Instance Types

## Amazon EC2 pricing

There are five ways to pay for Amazon EC2 instances: On-Demand, Savings Plans, Reserved Instances, and Spot Instances. You can also pay for Dedicated Hosts which provide you with EC2 instance capacity on physical servers dedicated for your use.

## Reference

What is Amazon EC2?

Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) Cloud. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers

 <https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/concepts.html>

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