

# Introducción a Cloud Computing

## **Amazon Web Services**

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# AGENDA

1. Infraestructura Global
2. IaaS
3. Servicios IaaS
  - a. Compute
  - b. Storage
  - c. Networking
  - d. Seguridad

**Infraestructura global**

# Infraestructura global

- Regiones
- Zonas de disponibilidad
- Edge locations

## Regiones

Ubicación física en el mundo donde aws tiene múltiples zonas de disponibilidad.

## Zonas de disponibilidad

(Availability Zones) Consisten en dos o más data centers, cada uno con red, energía y conectividad redundantes, y ubicados en espacios físicos independientes.

## Edge Locations

Datacenters distribuidos por todo el mundo con el fin de reducir la latencia en la entrega de contenido al usuario.

Este contenido, generalmente es cached.

## **25 Launched Regions**

Each with multiple Availability Zones  
(AZ's)

## **81 Availability Zones**

## **8 Local Zones**

## **17 Wavelength Zones**

For ultralow latency applications

## **7 Announced Regions**

## **9 Announced Local Zones**

## **2x More Regions**


With multiple AZ's than the next  
largest cloud provider

## **245 Countries and Territories Served**

## **108 Direct Connect Locations**

## **230+ Points of Presence**

218+ Edge Locations and 12 Regional  
Edge Caches

- 
- A world map with a light gray background. The map is populated with small circular markers. Blue circles are scattered across North America (USA and Canada), South America (Brazil), Europe (UK, France, Germany, Italy, Spain, Sweden, Finland, Poland, Czech Republic, Slovakia, Austria, Hungary, Switzerland, Netherlands, Belgium, Luxembourg, Ireland, Greece, Turkey, Russia, China, Japan, South Korea, Taiwan, Hong Kong, Singapore, Malaysia, Indonesia, Philippines, Vietnam, Laos, Cambodia, Thailand, Myanmar, Bangladesh, India, Pakistan, Afghanistan, Iran, Iraq, Saudi Arabia, UAE, Oman, Yemen, Egypt, Libya, Tunisia, Algeria, Morocco, Mauritania, Mali, Niger, Chad, Sudan, Ethiopia, Somalia, Kenya, Uganda, Rwanda, Burundi, Tanzania, Zambia, Botswana, Namibia, South Africa, Mozambique, Zimbabwe, Malawi, Swaziland, Lesotho, and Australia). Orange circles are located in Europe (Spain, France, Germany, Italy, Greece, Turkey, Russia, China, Japan, South Korea, Taiwan, Hong Kong, Singapore, Malaysia, Indonesia, Philippines, Vietnam, Laos, Cambodia, Thailand, Myanmar, Bangladesh, India, Pakistan, Afghanistan, Iran, Iraq, Saudi Arabia, UAE, Oman, Yemen, Egypt, Libya, Tunisia, Algeria, Morocco, Mauritania, Mali, Niger, Chad, Sudan, Ethiopia, Somalia, Kenya, Uganda, Rwanda, Burundi, Tanzania, Zambia, Botswana, Namibia, South Africa, Mozambique, Zimbabwe, Malawi, Swaziland, Lesotho, and Australia). The legend in the bottom left corner indicates that blue circles represent 'Regions' and orange circles represent 'Coming Soon'.
- Regions
  - Coming Soon

## 2021 Magic Quadrant for Cloud Infrastructure & Platform Services





# Acceso a Servicios AWS

- Consola web: acceso desde un browser
- Interfaz de comandos: Herramienta cli
- API: Http APIs para realizar todo tipo de tareas

# Acceso a Servicios AWS



click  
click  
click



```
self.file = None
self.fingerprints = set()
self.logdupes = True
self.debug = debug
self.logger = logging.getLogger(__name__)
if paths:
    self.file = open(os.path.join(paths,
    self.file.write('')
    self.fingerprints.update(paths))

@classmethod
def from_settings(cls, settings):
    debug = settings.getbool('debug', True)
    return cls(job_dir(settings), debug)

def request_seen(self, request):
    fp = self.request_fingerprint(request)
    if fp in self.fingerprints:
        return True
    self.fingerprints.add(fp)
    if self.file:
        self.file.write(fp + os.linesep)

def request_fingerprint(self, request):
    return request_fingerprint(request)
```

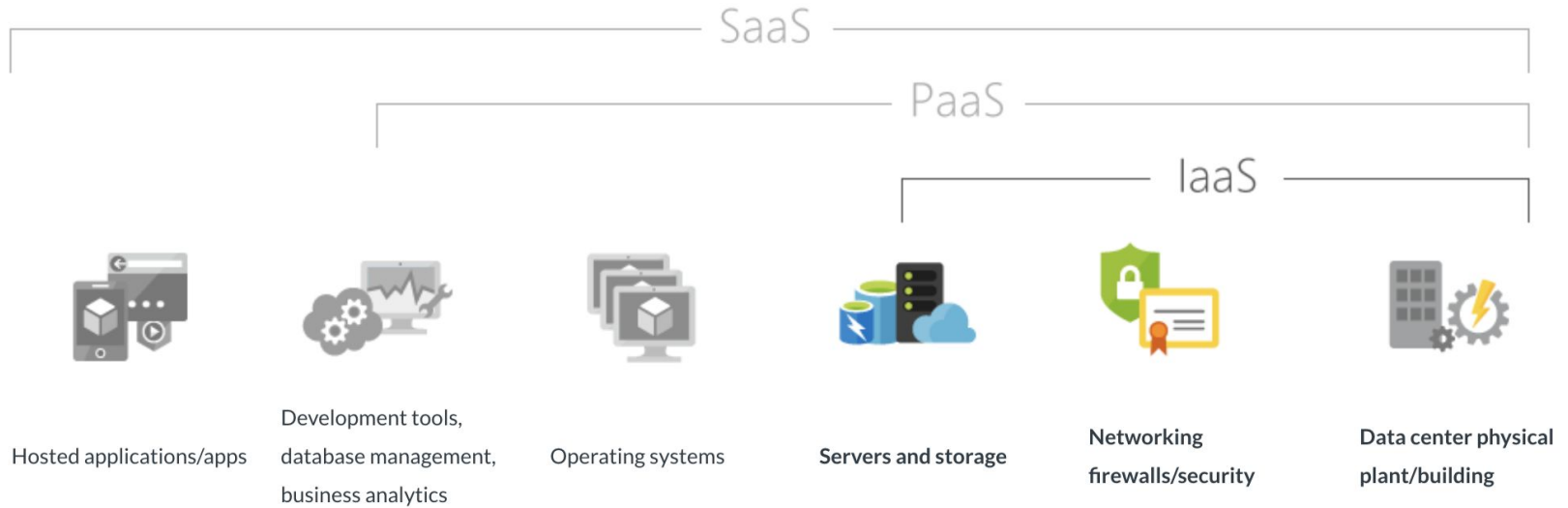
# **Infrastructure as a Service (IaaS)**

# IaaS

Se provee al consumidor la capacidad de adquirir bajo demanda recursos de procesamiento, almacenamiento, red, etc. donde se puede desplegar y ejecutar software arbitrario (incluye sistemas operativos y aplicaciones)

En este modelo los desarrolladores crean, configuran y mantienen máquinas virtuales junto con todo el software requerido para ejecutar sus aplicaciones.

# IaaS



# IaaS

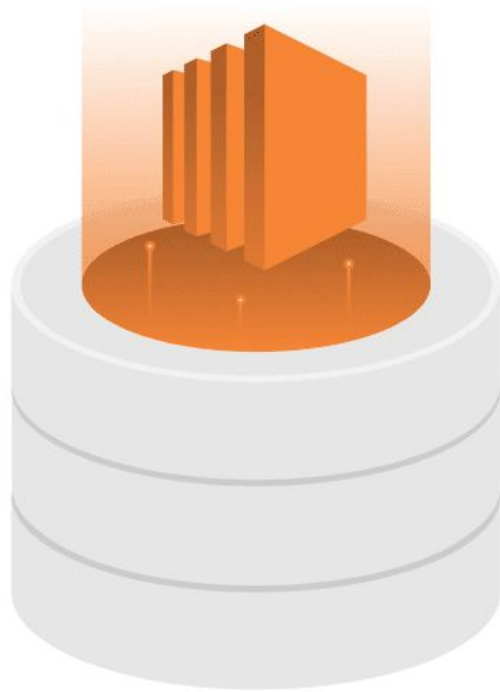
- Elimina la necesidad de inversión inicial y baja el costo
- Mejora la continuidad de negocio y facilita la recuperación frente a desastres
- Articula / Facilita la innovación
- Permite responder rápidamente a cambios de negocio
- Permite tener foco, liberando al equipo de tareas que no sean específicas del negocio
- Menor "time to market" (GO Live in seconds)

# IaaS en AWS

“Amazon Elastic Compute Cloud (Amazon EC2) es un servicio web que proporciona capacidad informática en la nube segura y de tamaño modificable. Está diseñado para simplificar el uso de la informática en la nube a escala web para los desarrolladores. La sencilla interfaz de servicios web de Amazon EC2 permite obtener y configurar capacidad con una fricción mínima. Proporciona un control completo sobre los recursos informáticos y le permite ejecutarse en el entorno informático probado de Amazon.”

IaaS en AWS

**Amazon  
EC2**





# EC2 Foundations



## Resources

Instances  
Storage  
Networking



## Availability

Regions and AZs  
Placement Groups  
Load Balancing  
Auto Scaling



## Management

Deployment  
Monitoring  
Administration



## Purchase Options

On Demand  
Reserved  
Spot

# Instances



## Resources

Instances

Storage

Networking



## Availability

Regions and AZs  
Placement Groups  
Load Balancing  
Auto Scaling



## Management

Deployment  
Monitoring  
Administration



## Purchase Options

On Demand  
Reserved  
Spot

# Instances

New EC2 Experience

EC2 Dashboard

EC2 Global View

Events

Tags

Limits

Instances

Instances

Instance Types

Launch Templates

Spot Requests

Savings Plans

Reserved Instances

Dedicated Hosts

Scheduled Instances

Capacity Reservations

Images

AMIs

Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

Network & Security

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

Load Balancing

Load Balancers

Target Groups

Resources

You are using the following Amazon EC2 resources in the US East (N. Virginia) Region:

Instances (running)0

Dedicated Hosts0

Elastic IPs0

Instances3

Key pairs1

Load balancers0

Placement groups0

Security groups11

Snapshots1

Volumes3

Easily size, configure, and deploy Microsoft SQL Server Always On availability groups on AWS using the AWS Launch Wizard for SQL Server.

Launch instance

To get started, launch an Amazon EC2 Instance, which is a virtual server in the cloud.

Launch instance

Migrate a server

Note: Your instances will launch in the US East (N. Virginia) Region

Scheduled events

US East (N. Virginia)

No scheduled events

Migrate a server

Use AWS Application Migration Service to simplify and expedite migration from physical, virtual, and cloud infrastructure to AWS.

Get started with AWS Application Migration Service

Quick ID filter

Filter by instance ID

Filter by tags

EC2 Global view

Service health

Region

US East (N. Virginia)

Status

This service is operating normally

Zones

Zone name	Zone ID
us-east-1a	use1-az6
us-east-1b	use1-az1
us-east-1c	use1-az2
us-east-1d	use1-az4
us-east-1e	use1-az3
us-east-1f	use1-az5

Enable additional Zones

Account attributes

Supported platforms

VPC

Default VPC

vpc-09591f0a0bb109207

Settings

EBS encryption

Zones

EC2 Serial Console

Default credit specification

Console experiments

Explore AWS

Save up to 90% on EC2 with Spot Instances

Optimize price-performance by combining EC2 purchase options in a single EC2 ASG.

Save Up to 45% on ML Inference

EC2 Inf1 instances provide high performance and lowest cost ML inference in the cloud.

Get Up to 40% Better Price Performance

T4g instances deliver the best price performance for burstable general purpose workloads in Amazon EC2.

Additional information

Getting started guide

Documentation

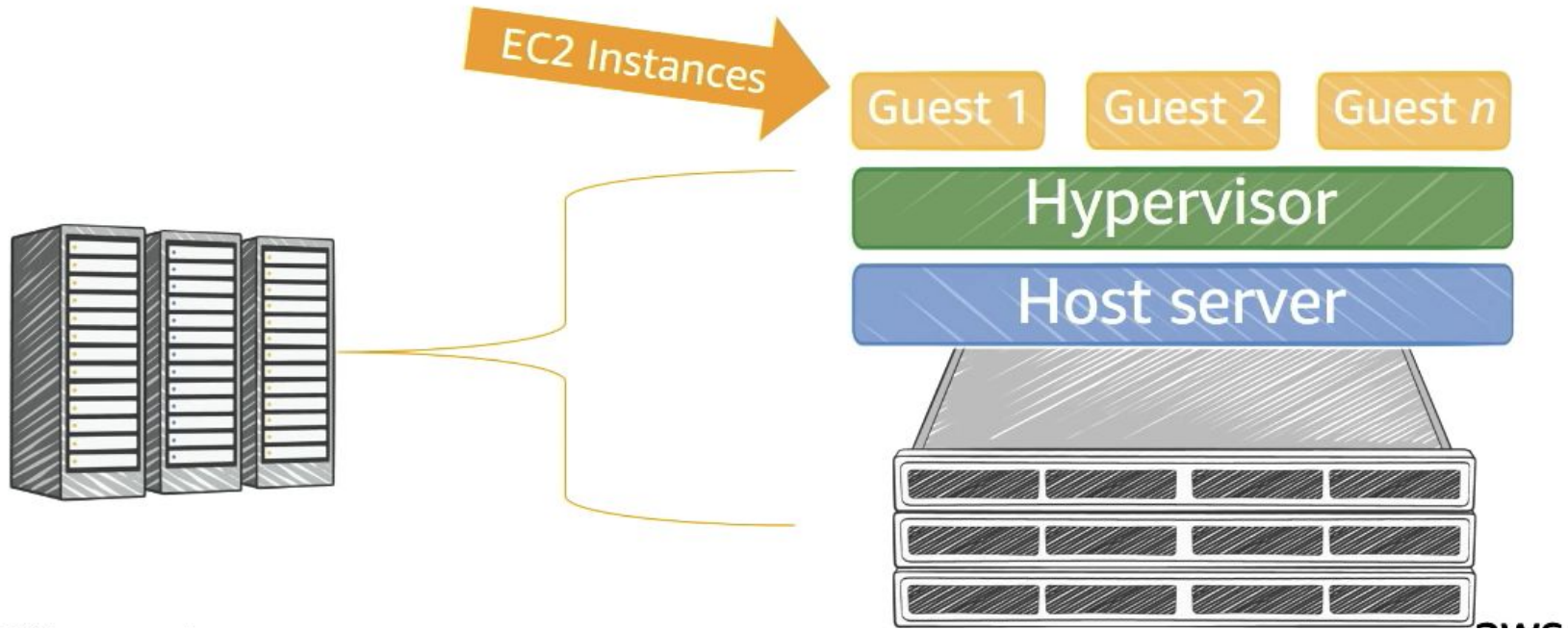
All EC2 resources

Forums

Pricing

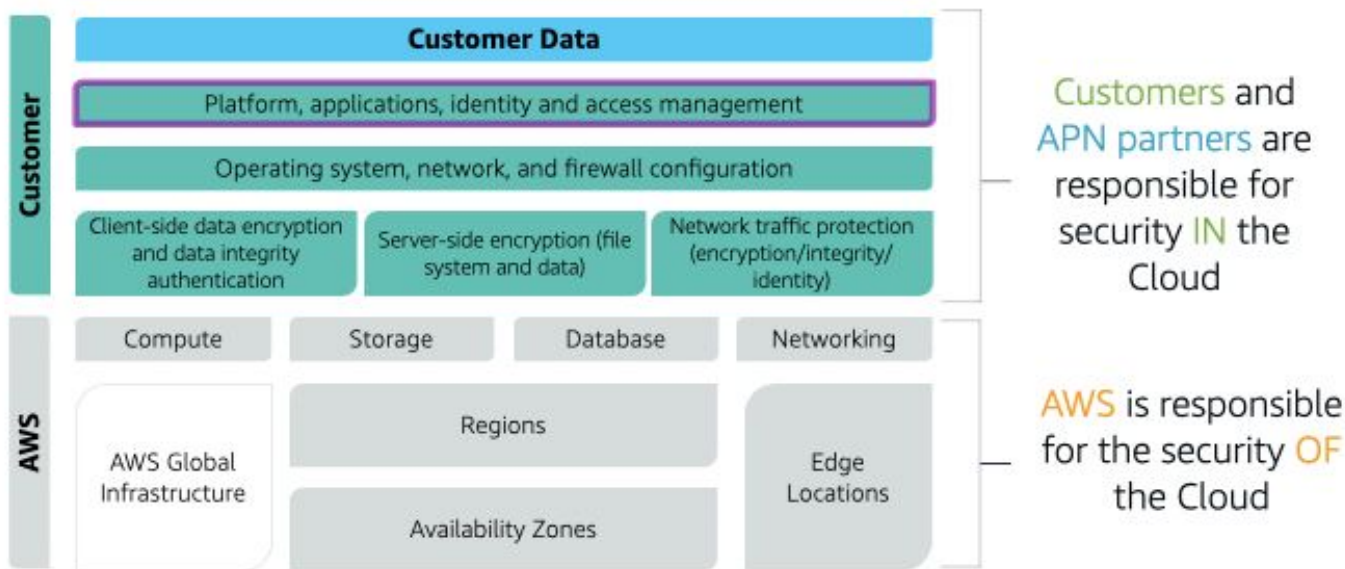
Contact us

# Instances



# Instances

## AWS shared responsibility model



# Instances

## → Responsabilidad de AWS en:

- ◆ Controles físicos: ingreso de personal, autorización, etc
- ◆ Controles ambientales: refrigeración DC, electricidad, etc
- ◆ Patch Management (en su infra)
- ◆ Configuration Management (de su infra)
- ◆ Entrenamiento de sus colaboradores

## → Responsabilidad del cliente en:

- ◆ Manejo de seguridad a nivel del S.O
- ◆ Cifrado de los datos / servicios (SSL/HTTPS)
- ◆ Entrenamiento de los sysadmin / operadores de los servicios

# Instances



Amazon Machine  
Image (AMI)

## Amazon maintained

Set of Linux and  
Windows images  
Kept up-to-date by  
Amazon in each  
region

## Community maintained

Images published  
by other AWS users  
Managed and  
maintained by  
Marketplace  
partners

## Your machine images

AMIs you have  
created from EC2  
instances  
Can be kept private  
or shared with other  
accounts

# Instances: AMIs

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)

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. You can select an AMI provided by AWS, our user community, or the AWS Marketplace; or you can select one of your own AMIs.

Cancel and Exit

Search for an AMI by entering a search term e.g. "Windows"

Search by Systems Manager parameter

1 to 44 of 44 AMIs

### Quick Start

My AMIs

AWS Marketplace

Community AMIs

☐ Free tier only



### Amazon Linux 2 AMI (HVM), SSD Volume Type - ami-087c17d1fe0178315 (64-bit x86) / ami-029c64b3c205e6cce (64-bit Arm)

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 approaching end of life on December 31, 2020 and has been removed from this wizard.

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

Select

☒ 64-bit (x86)  
☐ 64-bit (Arm)



### macOS Big Sur 11.6 - ami-0a3e62d0ab0b19c0f

The macOS Big Sur 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

Select

64-bit (Mac)



### macOS Catalina 10.15.7 - ami-03d1ad7baa47804a7

The macOS Catalina 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

Select

64-bit (Mac)



### macOS Mojave 10.14.6 - ami-07279d867534aacb6

The macOS Mojave 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

Select

64-bit (Mac)



### Red Hat Enterprise Linux 8 (HVM), SSD Volume Type - ami-0b0af3577fe5e3532 (64-bit x86) / ami-01fc429821bf114b4 (64-bit Arm)

Red Hat Enterprise Linux version 8 (HVM), EBS General Purpose (SSD) Volume Type

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

Select

☒ 64-bit (x86)  
☐ 64-bit (Arm)



### Are you launching a database instance? Try Amazon RDS.

Amazon Relational Database Service (RDS) makes it easy to set up, operate, and scale your database on AWS by automating time-consuming database management tasks. With RDS, you can easily deploy **Amazon Aurora**, **MariaDB**, **MySQL**, **Oracle**, **PostgreSQL**, and **SQL Server** databases on AWS. **Aurora** is a MySQL- and PostgreSQL-compatible, enterprise-class database at 1/10th the cost of commercial databases. [Learn more about RDS](#)

Launch a database using RDS

Hide



### SUSE Linux Enterprise Server 15 SP2 (HVM), SSD Volume Type - ami-0fde50fcbcd46f2f7 (64-bit x86) / ami-05f2f5f76d89313bb (64-bit Arm)

SUSE Linux Enterprise Server 15 Service Pack 2 (HVM), EBS General Purpose (SSD) Volume Type. Amazon EC2 AMI Tools preinstalled; Apache 2.2, MySQL 5.5, PHP 5.3, and Ruby 1.8.7 available.

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

Select

☒ 64-bit (x86)  
☐ 64-bit (Arm)



# Instances: Tipo

aws

Services

Search for services, features, marketplace products, and docs

[Option+5]

vocstarsoft/user869337=Mauricio\_Am\_mdola @ 7496-7068-6480

N. Virginia

Support

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 (- ECU's, 1 vCPU's, 2.5 GHz, -, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GiB)	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 <small>Free tier eligible</small>	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
<input type="checkbox"/>	t3	t3.micro	2	1	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.small	2	2	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.medium	2	4	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.large	2	8	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.xlarge	4	16	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3	t3.2xlarge	8	32	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3a	t3a.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3a	t3a.micro	2	1	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3a	t3a.small	2	2	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	t3a	t3a.medium	2	4	EBS only	Yes	Up to 5 Gigabit	Yes

Cancel Previous Review and Launch Next: Configure Instance Details

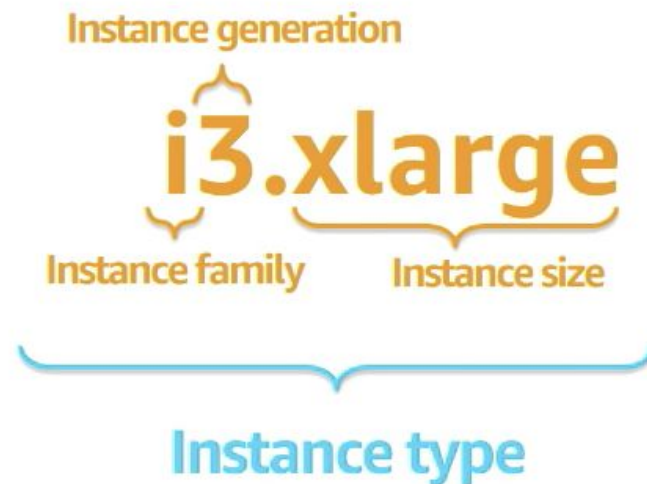
# Instances: Tipo

Amplia selección de tipos de instancias optimizados para adaptarse a diferentes casos de uso.

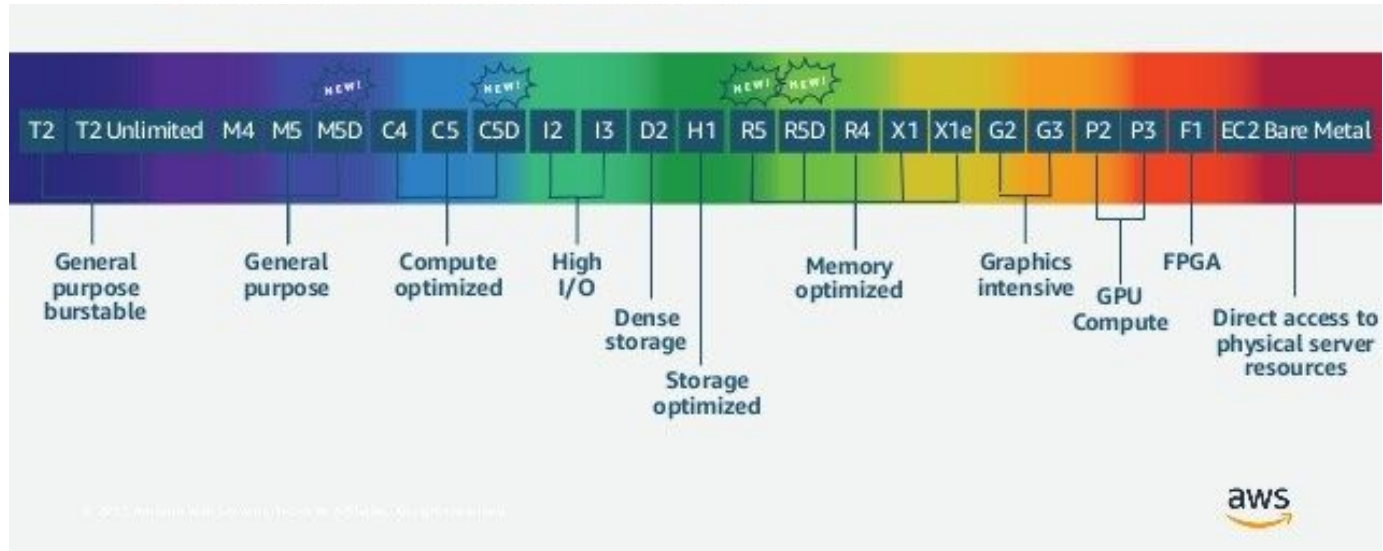
Combinaciones de capacidad de CPU, memoria, almacenamiento y redes.

Cada tipo de instancia incluye uno o varios tamaños de instancia, lo que le permite escalar recursos según los requisitos de la carga de trabajo.

# Instances: Tipo



# Instances: Tipo



<https://aws.amazon.com/es/ec2/instance-types/>

# Instances: Tipo

## Uso general

Optimizadas para informática

Optimizadas para memoria

Informática acelerada

Optimizadas para almacenamiento

Características de las instancias

Medición del rendimiento de las instancias

## Uso general

Las instancias de uso general brindan una combinación equilibrada de recursos informáticos, de memoria y de red. Además, pueden usarse para distintas cargas de trabajo. Estas instancias son ideales para las aplicaciones que usan estos recursos en partes iguales, como los servidores web y los repositorios de código.

Mac

T4g

T3

T3a

T2

M6g

M6i

M5

M5a

M5n

M5zn

M4

A1

Las instancias Mac funcionan con equipos Apple Mac mini y vienen integradas al sistema Nitro de AWS. La familia EC2 ofrece a los desarrolladores acceso a macOS para que puedan desarrollar, crear, probar y firmar aplicaciones que requieren el IDE Xcode.

- Procesadores Intel core i7 con 3,2 GHz (turbo de 4,6 GHz)
- 6 núcleos físicos/12 núcleos lógicos
- 32 GiB de memoria
- El almacenamiento de la instancia está disponible a través de Amazon Elastic Block Store (EBS)
- Las instancias Mac son instancias dedicadas bare-metal a las que se puede acceder en la consola EC2 como alojamientos dedicados

Tamaño de la instancia	CPU virtual	Memoria (GiB)	Almacenamiento de la instancia	Ancho de banda de red (Gbps)	Ancho de banda de EBS (Mbps)
mac1.metal	12	32	Solo EBS	10	8000

Casos de uso

Desarrollo, creación, prueba y firma de aplicaciones iOS, iPadOS, macOS, WatchOS y tvOS en el IDE Xcode

Cada CPU virtual es un subproceso de un núcleo Intel Xeon o AMD EPYC, excepto en el caso de las instancias M6g, A1, T2 y m3.medium.

Cada CPU virtual en una instancia T4g y M6g es un núcleo de un procesador AWS Graviton2.

Cada CPU virtual en una instancia A1 es un núcleo de un procesador Graviton de AWS.

† AVX, AVX2 y las redes mejoradas solo están disponibles en las instancias lanzadas con AMI HVM.

\* Número predeterminado y máximo de CPU virtuales disponible para este tipo de instancia. Puede especificar un número personalizado de CPU virtuales al ejecutar este tipo de instancia. Si desea obtener más detalles acerca de los totales válidos de CPU virtuales y cómo empezar a usar esta característica, consulte la página de documentación relacionada con este tema [aquí](#).

## Listado de tipos

# Storage



## Resources

Instances

Storage

Networking



## Availability

Regions and AZs  
Placement Groups  
Load Balancing  
Auto Scaling



## Management

Deployment  
Monitoring  
Administration



## Purchase Options

On Demand  
Reserved  
Spot

# Storage

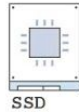
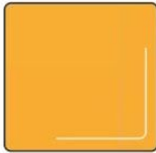
Dos tipos de storage asociados directamente a la instancia:

- Instance store
- Elastic Block store

# Storage

## EC2 Instance Store

- Local to instance
- Non-persistent data store
- Data not replicated (by default)
- No snapshot support
- SSD or HDD

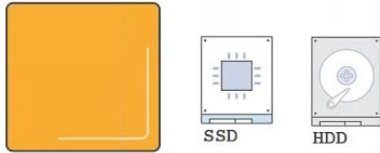




# Storage

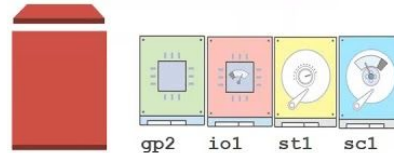
## EC2 Instance Store

- Local to instance
- Non-persistent data store
- Data not replicated (by default)
- No snapshot support
- SSD or HDD




## Elastic Block Store

- Persistent block storage volumes
- 99.999% availability
- Automatically replicated within its Availability Zone (AZ)
- Point-in-time snapshot support
- Modify volume type as needs change
- SSD or HDD
- Auto recovery



# Storage: Instance store

 Services ▾

Search for services, features, marketplace products, and docs [Option+S]

[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-0699a041095ac5492	<input type="text" value="8"/>	<input type="text" value="General Purpose SSD (gp2)"/>	100 / 3000	N/A	<input checked="" type="checkbox"/>	<input type="text" value="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.

# Storage: EBS

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

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Volume Type ⓘ	Device ⓘ	Snapshot ⓘ	Size (GiB) ⓘ	Volume Type ⓘ	IOPS ⓘ	Throughput (MB/s) ⓘ	Delete on Termination ⓘ	Encryption ⓘ
Root	/dev/xvda	snap-0699a041095ac5492	<input type="text" value="8"/>	General Purpose SSD (gp2) ▼	100 / 3000	N/A	<input checked="" type="checkbox"/>	Not Encrypted ▼
EBS ▼	/dev/sdb ▼	<input type="text" value="Search (case-insensit)"/>	<input type="text" value="8"/>	General Purpose SSD (gp2) ▼	100 / 3000	N/A	<input type="checkbox"/>	Not Encrypted ▼ <span>✕</span>

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.

# Storage: EBS

Services

Search for services, features, marketplace products, and docs [Option+S]

New EC2 Experience

EC2 Dashboard

EC2 Global View

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Instances

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Dedicated Hosts

Scheduled Instances

Capacity Reservations

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AMIs

Elastic Block Store

Volumes

Snapshots

Lifecycle Manager

Network & Security

Security Groups

Elastic IPs

Placement Groups

Key Pairs

Network Interfaces

Load Balancing

Load Balancers

MADE WITH CIFOX

Resources

EC2 Global view

You are using the following Amazon EC2 resources in the US East (N. Virginia) Region:

Instances (running)	0	Dedicated Hosts	0	Elastic IPs	0	Instances	3
Key pairs	1	Load balancers	0	Placement groups	0	Security groups	11
Snapshots	1	Volumes	3				

1

 Easily size, configure, and deploy Microsoft SQL Server Always On availability groups on AWS using the AWS Launch Wizard for SQL Server. [Learn more](#)

Launch instance

To get started, launch an Amazon EC2 Instance, which is a virtual server in the cloud.

Launch instance

Migrate a server

Note: Your instances will launch in the US East (N. Virginia) Region

Scheduled events

US East (N. Virginia)

No scheduled events

Migrate a server

Use AWS Application Migration Service to simplify and expedite migration from physical, virtual, and cloud infrastructure to AWS.

[Get started with AWS Application Migration Service](#)

Quick ID filter

Enter a resource ID

Create filter

Service health

Service Health Dashboard

Region

US East (N. Virginia)

Status

1

 This service is operating normally

Zones

Zone name	Zone ID
us-east-1a	use1-az6
us-east-1b	use1-az1
us-east-1c	use1-az2
us-east-1d	use1-az4
us-east-1e	use1-az3
us-east-1f	use1-az5

Enable additional Zones

# Networking



## Resources

Instances

Storage

Networking



## Availability

Regions and AZs

Placement Groups

Load Balancing

Auto Scaling



## Management

Deployment

Monitoring

Administration



## Purchase Options

On Demand

Reserved

Spot

# Networking

Conceptos nuevos:

- VPC: Virtual Private Cloud
- Subnets
- Route Tables
- Internet Gateway
- Security Groups
- Network ACLs

# Networking: VPC



## Virtual Private Cloud

Provision a logically isolated cloud where you can launch AWS resources into a virtual network

# Networking: VPC



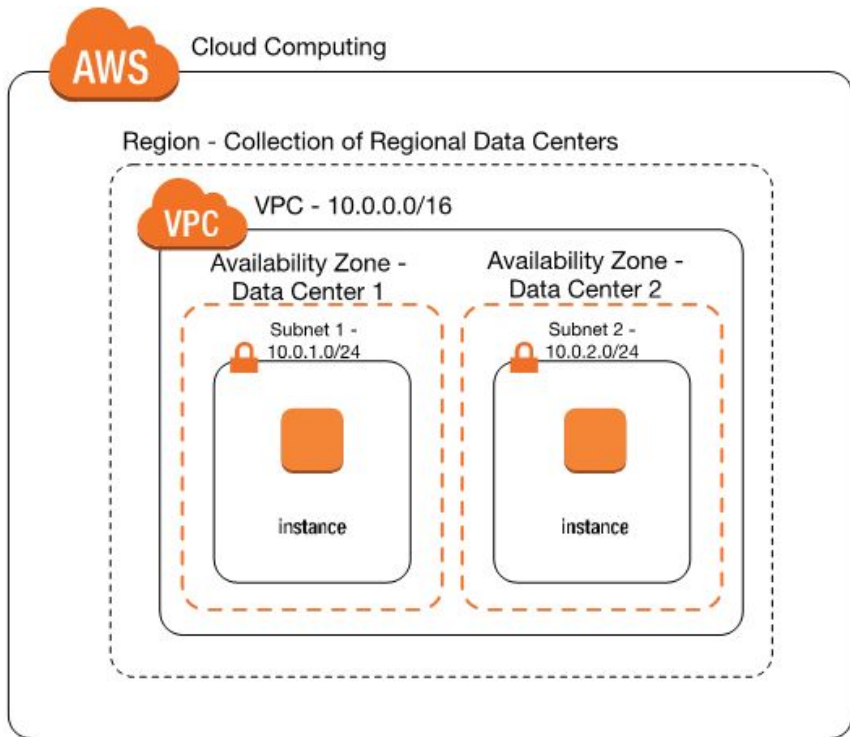
## Virtual Private Cloud

Provision a logically isolated cloud where you can launch AWS resources into a virtual network

- 📦 A private, virtual network in the AWS Cloud
  - Uses same concepts as on premise networking
- 📦 Allows complete control of network configuration
  - Ability to isolate and expose resources inside VPC
- 📦 Offers several layers of security controls
  - Ability to allow and deny specific internet and internal traffic
- 📦 Other AWS services deploy into VPC
  - Services inherent security built into network



# Networking: VPC



The screenshot shows the AWS Management Console, specifically the **EC2 Dashboard** for the **US East (N. Virginia)** region. The dashboard displays various resources and provides options to launch or migrate instances.

**Resources**

You are using the following Amazon EC2 resources in the US East (N. Virginia) Region:

Instances (running)	Dedicated Hosts	Elastic IPs	Instances
0	0	0	3

Key pairs	Load balancers	Placement groups	Security groups
1	0	0	11

Snapshots	Volumes
1	3

[Easily size, configure, and deploy Microsoft SQL Server Always On availability groups on AWS using the AWS Launch Wizard for SQL Server. Learn more](#)

**Launch instance**

To get started, launch an Amazon EC2 instance, which is a virtual server in the cloud.

[Launch instance](#) [Migrate a server](#)

Note: Your instances will launch in the US East (N. Virginia) Region.

**Scheduled events**

**US East (N. Virginia)**  
No scheduled events

**Migrate a server**

Use AWS Application Migration Service to simplify and expedite migration from physical, virtual, and cloud infrastructure to AWS.  
[Get started with AWS Application Migration Service](#)

**Quick ID filter**

Enter a resource ID [Create filter](#)

**Service health**

Region: US East (N. Virginia) Status: [Service Health Dashboard](#)  
This service is operating normally.

**Zones**

Zone name	Zone ID
us-east-1a	us-east-1a-z1
us-east-1b	us-east-1b-z1
us-east-1c	us-east-1c-z1
us-east-1d	us-east-1d-z1
us-east-1e	us-east-1e-z1
us-east-1f	us-east-1f-z1

[Enable additional Zones](#)

# Networking: Subnets



Cloud Computing

Region - Collection of Regional Data Centers

VPC

VPC - 10.0.0.0/16

Availability Zone -  
Data Center 1

Subnet 1 -  
10.0.1.0/24



instance

Availability Zone -  
Data Center 2

Subnet 2 -  
10.0.2.0/24



instance

CIDR range example:

172.31.0.0/16

1010 1100 0001 1111 0000 0000 0000 0000



Recomendaciones:

- /16 VPCs (65,536 direcciones)
- /24 Subnets (253 direcciones)
- Usar múltiples zonas de disponibilidad mediante múltiples subnets.

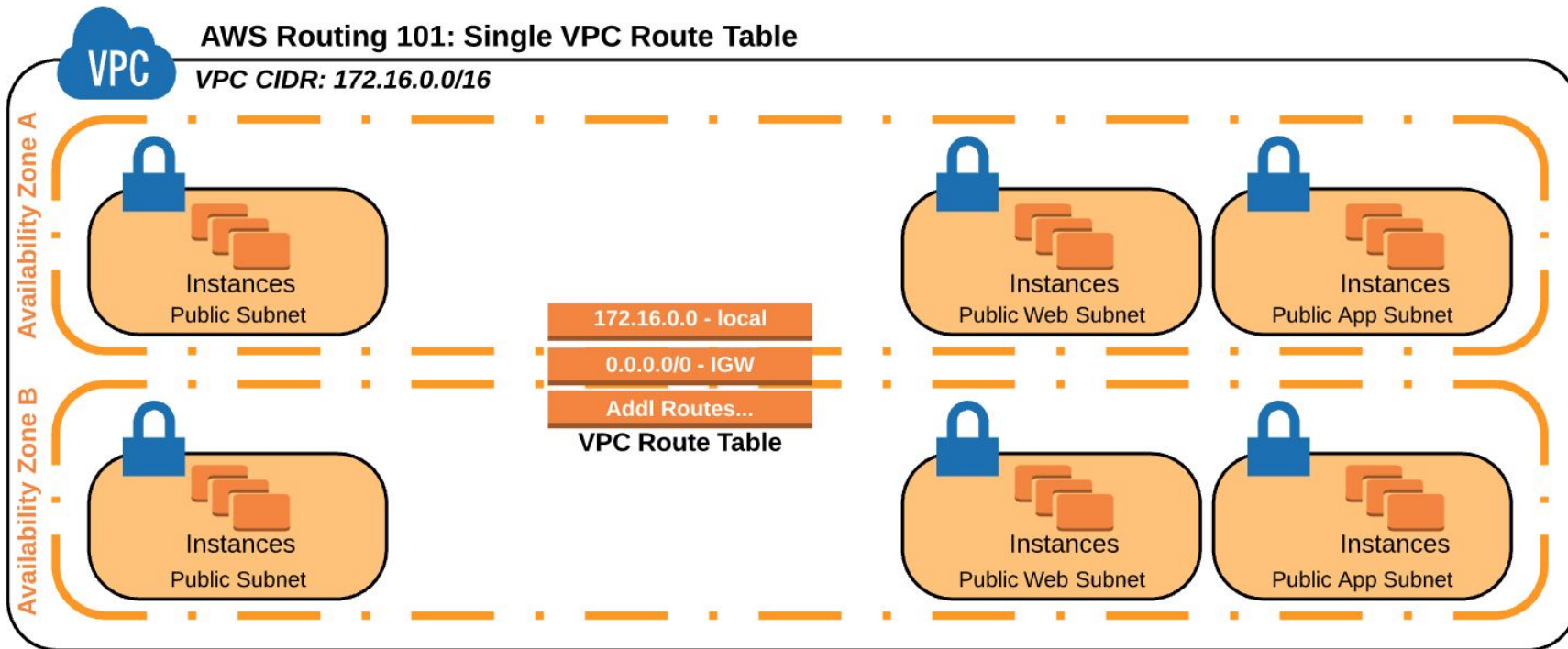
# Networking: Route tables

Las tablas de ruteo contienen conjuntos de reglas, denominadas rutas, que se usan para determinar adónde se dirige el tráfico de red desde su subred o gateway.

Toda VPC tiene una regla por defecto

Es posible asignar diferentes tablas de ruteo a diferentes sub-net

# Networking: Route tables



# Networking: Route tables

VPC > Route tables > rtb-0b25d606110f50ca1

rtb-0b25d606110f50ca1

🔔 You can now check network connectivity with Reachability Analyzer

## Details [info](#)

Route table ID

🔑 rtb-0b25d606110f50ca1

VPC

[vpc-09591f0a0bb109207](#)

Main

🔑 Yes

Owner ID

🔑 749670686480

Explicit subnet associations

–

## Routes

Subnet associations

Edge associations

Route propagation

Tags

## Routes (2)

🔍 Filter routes

Both ▼

Destination ▼	Target ▼	Status
172.31.0.0/16	local	🟢 Active
0.0.0.0/0	<a href="#">igw-0c162759493b7f6d2</a>	🟢 Active

# Networking: Internet Gateway

Componente de la VPC de escalado horizontal, redundante y de alta disponibilidad que permite la comunicación entre las instancias de la VPC e Internet.

Sirve para dos fines:

- Proporcionar un objetivo en tablas de ruteo de VPC para el tráfico direccionable de Internet
- Realizar la conversión de las direcciones de red (NAT) para las instancias que tengan asignadas direcciones IPv4 públicas.

# Networking: Internet Gateway

VPC > Route tables > rtb-0b25d606110f50ca1

rtb-0b25d606110f50ca1

 You can now check network connectivity with Reachability Analyzer

## Details [info](#)

Route table ID

 rtb-0b25d606110f50ca1

VPC

[vpc-09591f0a0bb109207](#)

Main

 Yes

Owner ID

 749670686480

Explicit subnet associations

–

**Routes**

Subnet associations

Edge associations



Route propagation

Tags

## Routes (2)



Both 

Destination	Target	Status
172.31.0.0/16	local	 Active
0.0.0.0/0	<a href="#">igw-0c162759493b7f6d2</a>	 Active

# Networking: Security Groups

- Funcionan como un firewall virtual de la instancia para controlar el tráfico entrante y saliente.
- Hasta cinco grupos de seguridad por instancia.
- Actúan a nivel de la instancia, no en el de la subred. Por lo tanto, cada instancia de la subred puede asignarse a distintos conjuntos de grupos de seguridad.
- Son stateful: cuando se crea una regla de inbound para permitir tráfico, se permite además el tráfico de retorno.



# Networking: Security Groups

The screenshot displays the AWS Management Console interface for the EC2 service. The top navigation bar includes the AWS logo, a search bar, and user account information. The left sidebar contains a navigation menu with categories like EC2 Dashboard, Instances, Images, Elastic Block Store, Network & Security, Load Balancing, and Auto Scaling. The main content area is divided into several sections:

- Resources:** A summary of EC2 resources in the US East (N. Virginia) Region, including Instances (running), Dedicated Hosts, Elastic IPs, Key pairs, Load balancers, Placement groups, Security groups, Snapshots, and Volumes.
- Launch instance:** A section for getting started, launching an Amazon EC2 Instance, with buttons for "Launch instance" and "Migrate a server".
- Scheduled events:** A section for viewing scheduled events for the US East (N. Virginia) Region.
- Migrate a server:** A section for using AWS Application Migration Service to simplify and expedite migration from physical, virtual, and cloud infrastructure to AWS.
- Quick ID filter:** A section for creating a filter based on a resource ID.
- Service health:** A section for checking the status of the service, indicating that the service is operating normally.
- Zones:** A table listing the available Availability Zones in the region.
- Account attributes:** A section for viewing account attributes, including supported platforms, VPC, Default VPC, Settings, EBS encryption, Zones, EC2 Serial Console, Default credit specification, and Console experiments.
- Explore AWS:** A section for exploring AWS services, including Get Up to 40% Better Price Performance, Save up to 90% on EC2 with Spot Instances, and Save Up to 45% on ML Inference.
- Additional information:** A section for getting started guide, documentation, all EC2 resources, forums, pricing, and contact us.
- Help topics:** A section for finding help topics, such as "What steps do I need to take before changing the instance type of my EC2 Linux instance?".

Zone name	Zone ID
us-east-1a	use1-az6
us-east-1b	use1-az1
us-east-1c	use1-az2
us-east-1d	use1-az4
us-east-1e	use1-az3
us-east-1f	use1-az5

# Networking: Network ACLs

Agregan una capa más de seguridad.

- Las ACLs soportan reglas de denied, por lo que podemos filtrar tráfico proveniente de orígenes no conocidos, botnets, etc.
- Son stateless, es decir, el tráfico de respuesta de una regla de inbound está sujeto a que exista una regla de outbound
- Todo VPC viene con una NACL por omisión que habilita todo el tráfico de salida y entrada
- Se pueden crear NACLs custom, en cuyo caso, la regla por omisión es "denied all"

# Networking: Network ACLs


VPC > Network ACLs > acl-0560f6211db64e856

acl-0560f6211db64e856

Actions ▾

## Details [Info](#)

Network ACL ID

 acl-0560f6211db64e856

Associated with

6 Subnets

Default

Yes

VPC ID

[vpc-09591f0a0bb109207](#)

Owner

 749670686480

Inbound rules

Outbound rules

Subnet associations

Tags

 You can now check network connectivity with Reachability Analyzer

[Run Reachability Analyzer](#)



✕

## Inbound rules (2)

[Edit inbound rules](#)



< 1 > 

Rule number	Type	Protocol	Port range	Source	Allow/Deny
100	All traffic	All	All	0.0.0.0/0	 Allow
*	All traffic	All	All	0.0.0.0/0	 Deny

# Disponibilidad / Confiabilidad



## Resources

Instances  
Storage  
Networking



## Availability

Regions and AZs  
Placement Groups  
Load Balancing  
Auto Scaling



## Management

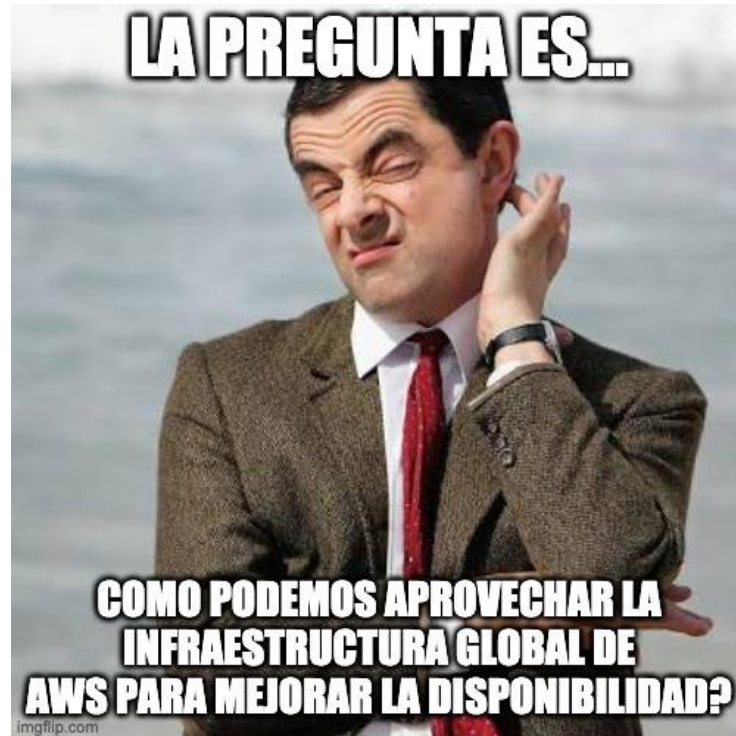
Deployment  
Monitoring  
Administration



## Purchase Options

On Demand  
Reserved  
Spot

# Disponibilidad / Confiabilidad



# Disponibilidad / Confiabilidad

AWS provee varios servicios para ayudar en este área:

- Placement Groups
- Load Balancers
- Auto-scaling

# Disponibilidad: Placement Groups

Son el mecanismo para influir, usando distintas estrategias, cómo se distribuyen las instancias en el hardware subyacente.

Tres tipos:

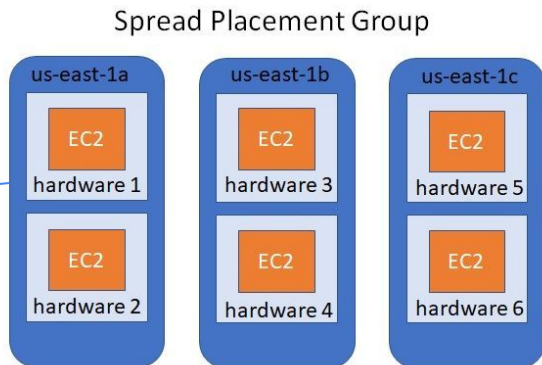
- Cluster
- Spread
- Partition

# Disponibilidad: Placement Groups

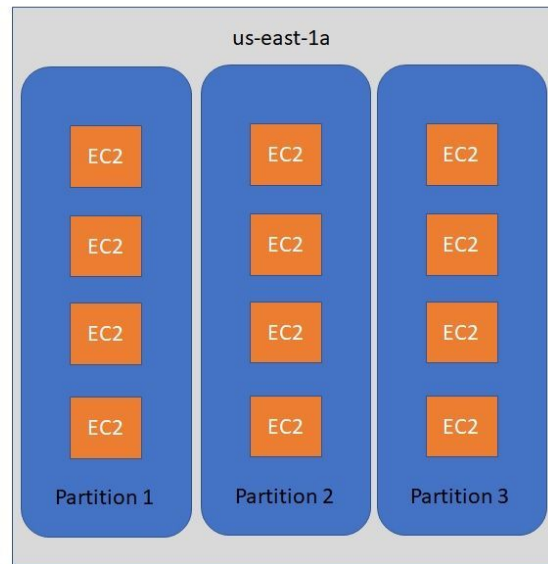
Mejor  
performance



Mejor  
disponibilidad

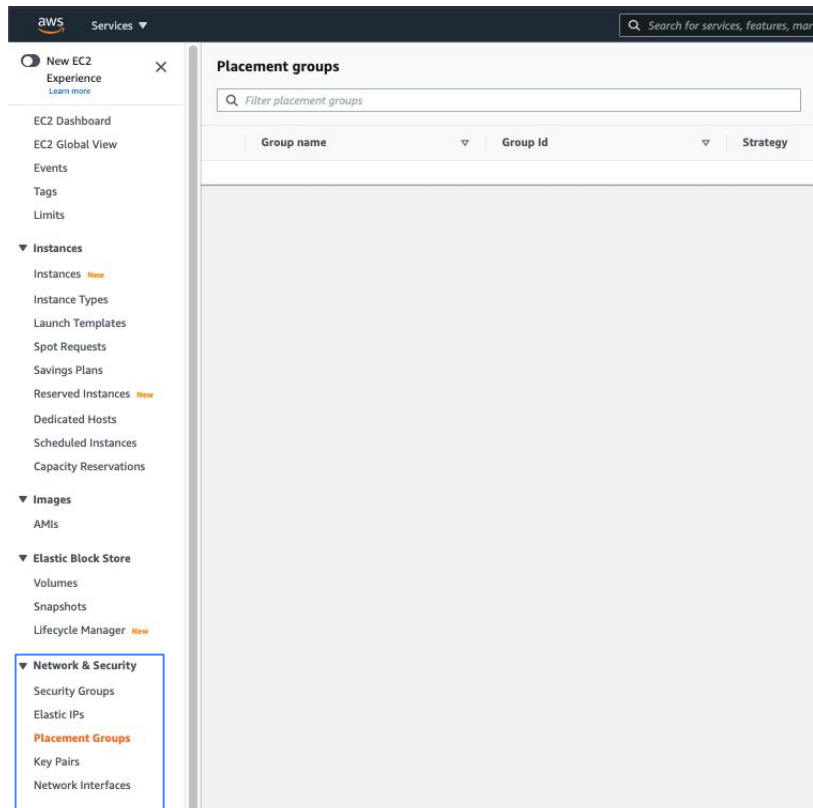


Partition Placement Group





# Disponibilidad: Placement Groups



# Disponibilidad: Load Balancers

Existen 4 tipos:

- Clásico
- De aplicación
- De red
- Gateway LB


# Disponibilidad: Load Balancers

## Select load balancer type

Elastic Load Balancing supports four types of load balancers: Application Load Balancers, Network Load Balancers, Gateway Load Balancers, and Classic Load Balancers. Choose the load balancer type that meets your needs.

[Learn more about which load balancer is right for you](#)

**Application Load Balancer**




[Create](#)

Choose an Application Load Balancer when you need a flexible feature set for your web applications with HTTP and HTTPS traffic. Operating at the request level, Application Load Balancers provide advanced routing and visibility features targeted at application architectures, including microservices and containers.

[Learn more >](#)

**Network Load Balancer**




[Create](#)

Choose a Network Load Balancer when you need ultra-high performance, TLS offloading at scale, centralized certificate deployment, support for UDP, and static IP addresses for your application. Operating at the connection level, Network Load Balancers are capable of handling millions of requests per second securely while maintaining ultra-low latencies.

[Learn more >](#)

**Gateway Load Balancer**



[Create](#)

Choose a Gateway Load Balancer when you need to deploy and manage a fleet of third-party virtual appliances that support GENEVE. These appliances enable you to improve security, compliance, and policy controls.

[Learn more >](#)


**Classic Load Balancer**

**PREVIOUS GENERATION**  
for HTTP, HTTPS, and TCP

[Create](#)

Choose a Classic Load Balancer when you have an existing application running in the EC2-Classic network.

[Learn more >](#)

AWS will be retiring the EC2-Classic network on August 15, 2022. [Learn more](#) .

# Disponibilidad: Load Balancers

→ Clásico

Proporciona equilibrio de carga básico en varias instancias de Amazon EC2 y funciona tanto en el nivel de solicitud como en el nivel de conexión. Load Balancer layer 4.

ATENCIÓN: se retira en Agosto 2022

# Disponibilidad: Load Balancers

→ De Red

Adecuado para equilibrar la carga del tráfico del protocolo de control de transmisión (TCP) y UDP, del protocolo de datagramas de usuario y de Transport Layer Security (TLS)

A nivel de conexión (capa 4), dirige el tráfico hacia destinos dentro de Amazon Virtual Private Cloud (Amazon VPC) y es capaz de controlar millones de solicitudes por segundo

# Disponibilidad: Load Balancers

→ De Aplicaciones

Adecuado para el equilibrio de carga del tráfico HTTP y HTTPS.

A nivel de solicitud individual (capa 7), dirige el tráfico a los destinos dentro de Amazon Virtual Private Cloud (Amazon VPC) en función del contenido de la solicitud.

Es el reemplazo al LB clásico.

# Disponibilidad: Load Balancers

→ Gateway LB

Es un tipo especial de LBs. Se utiliza para balancear appliances de terceros cómo firewalls o detectores de intrusos.

# Disponibilidad: Auto-scaling

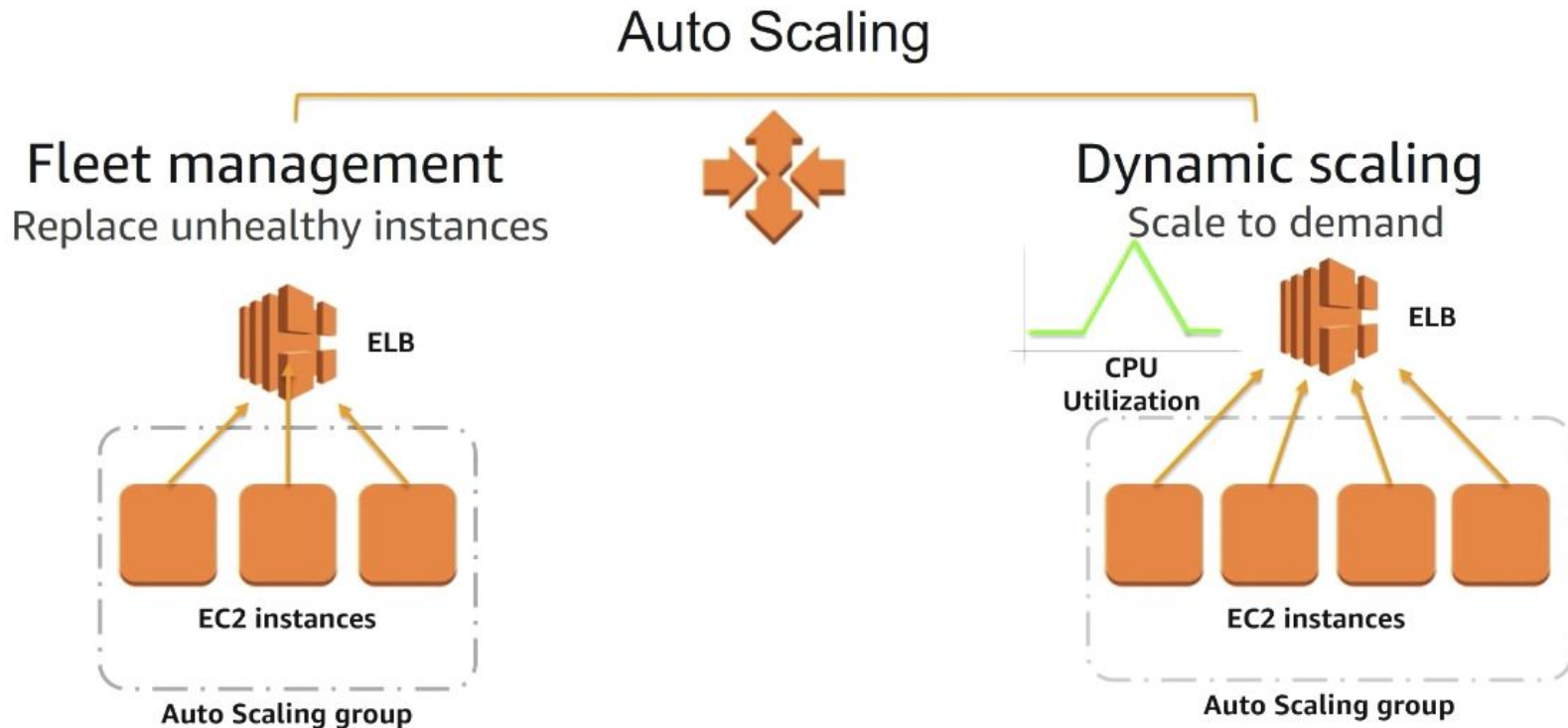
Es una funcionalidad de EC2 que se utiliza para agregar capacidad de cómputo dinámicamente.

Cumple dos funciones principales:

- Reemplazar instancias no saludables
- Escalar instancias de forma horizontal



# Disponibilidad: Auto-scaling



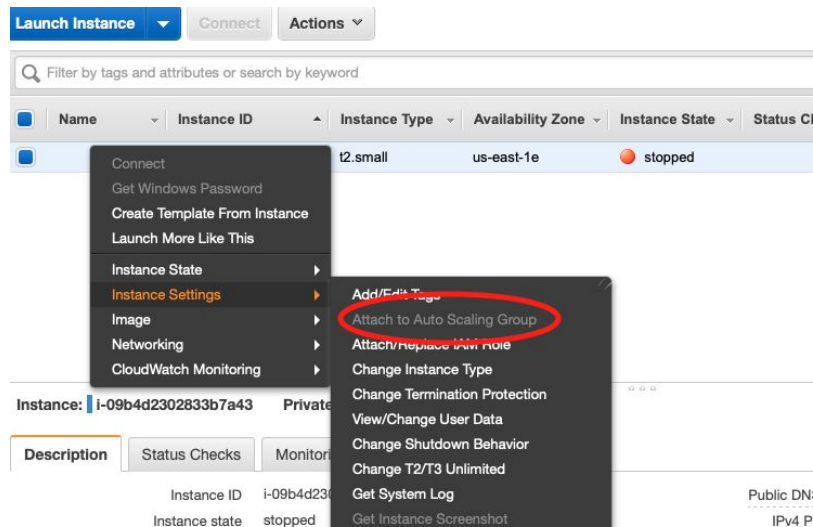
# Disponibilidad: Auto-scaling

Los auto scaling groups se pueden crear a partir de una instancia o a partir de un Launch Configuration ó Launch Template

# Disponibilidad: Auto-scaling

A partir de una instancia

- La instancia debe estar encendida
- La AMI debe existir todavía
- La instancia no puede pertenecer a otro Grupo



# Disponibilidad: Auto-scaling

A partir de un launch configuration / Template

aws Services Resource Groups EC2

New EC2 Experience  
Learn more

Dedicated Hosts  
Scheduled Instances  
Capacity Reservations

IMAGES  
AMIs

ELASTIC BLOCK STORE  
Volumes  
Snapshots  
Lifecycle Manager

NETWORK & SECURITY  
Security Groups  
Elastic IPs  
Placement Groups  
Key Pairs  
Network Interfaces

LOAD BALANCING  
Load Balancers  
Target Groups

**AUTO SCALING**  
Launch Configurations  
**Auto Scaling Groups**

Auto Scaling Group: auto-scaling-group

Details Activity History Scaling Policies

## Create Auto Scaling Group

Complete this wizard to create your Auto Scaling group. First, choose either a launch configuration or a launch template to specify the parameters that your Auto Scaling group uses to launch instances.

### ☐ Launch Configuration

You can continue to use your launch configurations if they support the Amazon EC2 features you need. [Learn more](#)

[Create a new launch configuration](#)

### ☒ Launch Template **New**

Launch templates give you the option of launching one type of instance types and purchase options. Launch templates include features and can be updated and versioned. [Learn more](#)

[Create new launch template](#)

Filter launch templates...						
Name	Launch Template Id	Default Version	Latest Version	Create Time	Created by	
<input type="checkbox"/> template-de-prueba	lt-0fb912e1f1139dfe31	1	1	Wed Sep 02 22:27:01 GMT-300 2020	arn:aws:sts::426225307926:assumed-role/vocstartsof	
<input type="checkbox"/> test-template	lt-0200f836c9208ce78	1	1	Wed Sep 02 00:14:15 GMT-300 2020	arn:aws:sts::426225307926:assumed-role/vocstartsof	

# Management



## Resources

Instances  
Storage  
Networking



## Availability

Regions and AZs  
Placement Groups  
Load Balancing  
Auto Scaling



## Management

Deployment  
Monitoring  
Administration



## Purchase Options

On Demand  
Reserved  
Spot

# Management: Despliegue

## Launch Parameters

Instance Type

EBS Volume

AMI ID

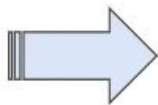
Network Interface

Tags

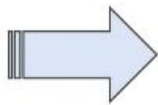
User Data

Block Device Mapping

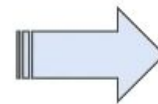
Placement



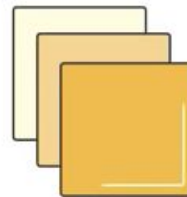
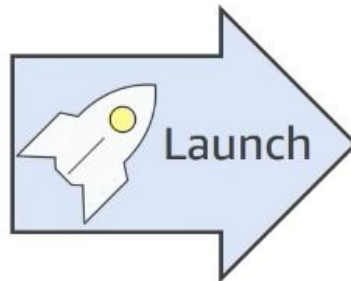
Console



CLI



API



Instances

# Management: Despliegue

Desplegar instancias puede ser tan simple cómo:

- Tener un template con todos los datos
- Usar las APIs y código
- Embeber en scripts comandos de la Cli

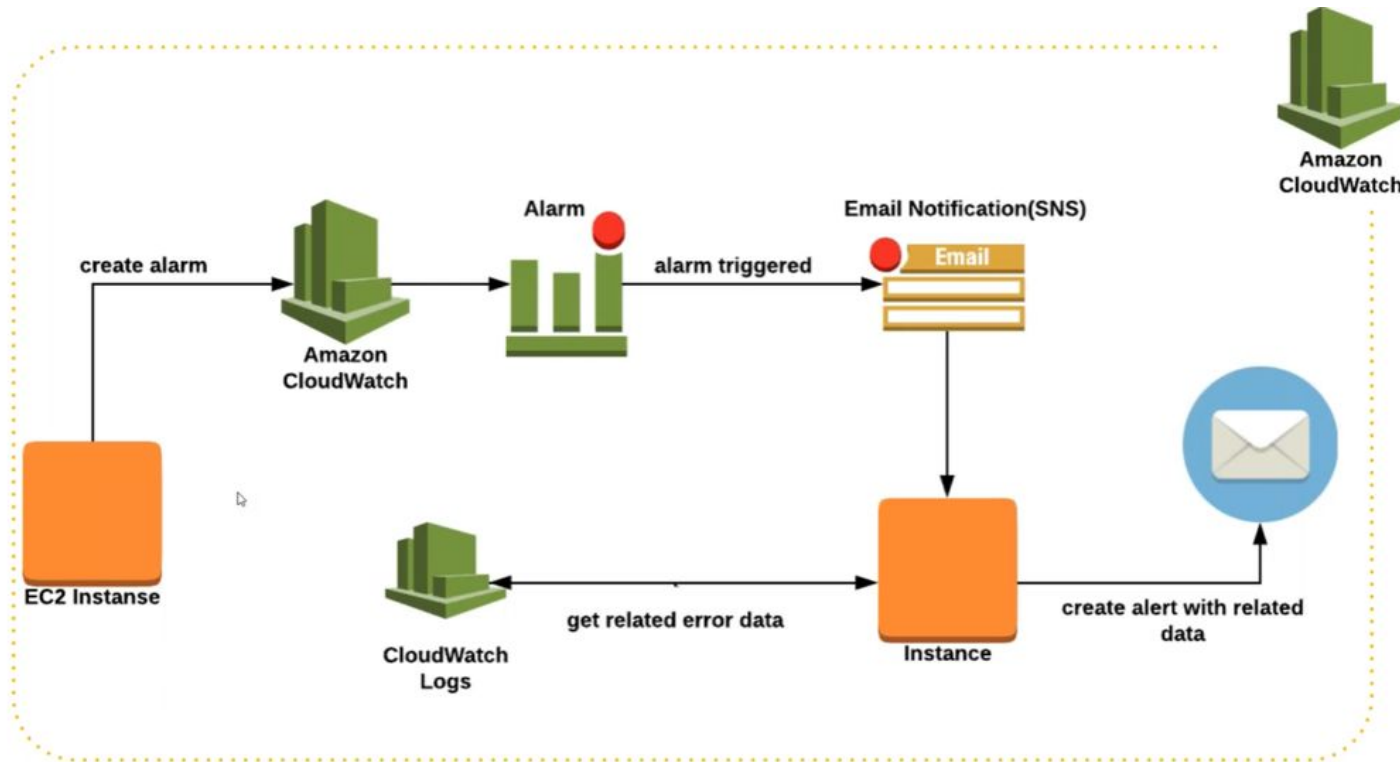
# Management: Monitoreo / Trazabilidad

AWS Integra varias herramientas para monitorear nuestra infraestructura y nuestra cuenta:

- AWS Cloudwatch
- AWS CloudTrail



# Management: CloudWatch



# Management: CloudWatch

The screenshot shows the AWS CloudWatch console interface. At the top, there's a dark navigation bar with the AWS logo, a 'Services' dropdown, and a search bar. Below this, a left-hand navigation pane is visible, featuring a 'CloudWatch' header with a close button, a 'New menu experience' toggle, and a 'Favorites' section. The main navigation categories are 'Dashboards', 'Alarms', 'Logs', 'Metrics', 'Events', 'Application monitoring', 'Insights', and 'Getting Started'. The 'Dashboards' category is selected and expanded, showing sub-items like 'In alarm', 'All alarms', 'Billing', 'Log groups', 'Logs Insights', 'All metrics', 'Explorer', 'Streams', 'Rules', and 'Event Buses'. The main content area displays a notification about the new design for CloudWatch Custom Dashboards, followed by a 'Dashboards' section with a 'Create dashboard' button. Below this, a table header 'Name' is shown, and a message states 'You have no CloudWatch dashboards. Please create a dashboard.'

**CloudWatch** X

☒ New menu experience

Favorites ▶

**Dashboards**

▼ Alarms ⚠️ 🔔 🔔

- In alarm
- All alarms
- Billing

▼ Logs

- Log groups
- Logs Insights

▼ Metrics

- All metrics
- Explorer
- Streams

▼ Events

- Rules
- Event Buses

▶ Application monitoring

▶ Insights

- Settings

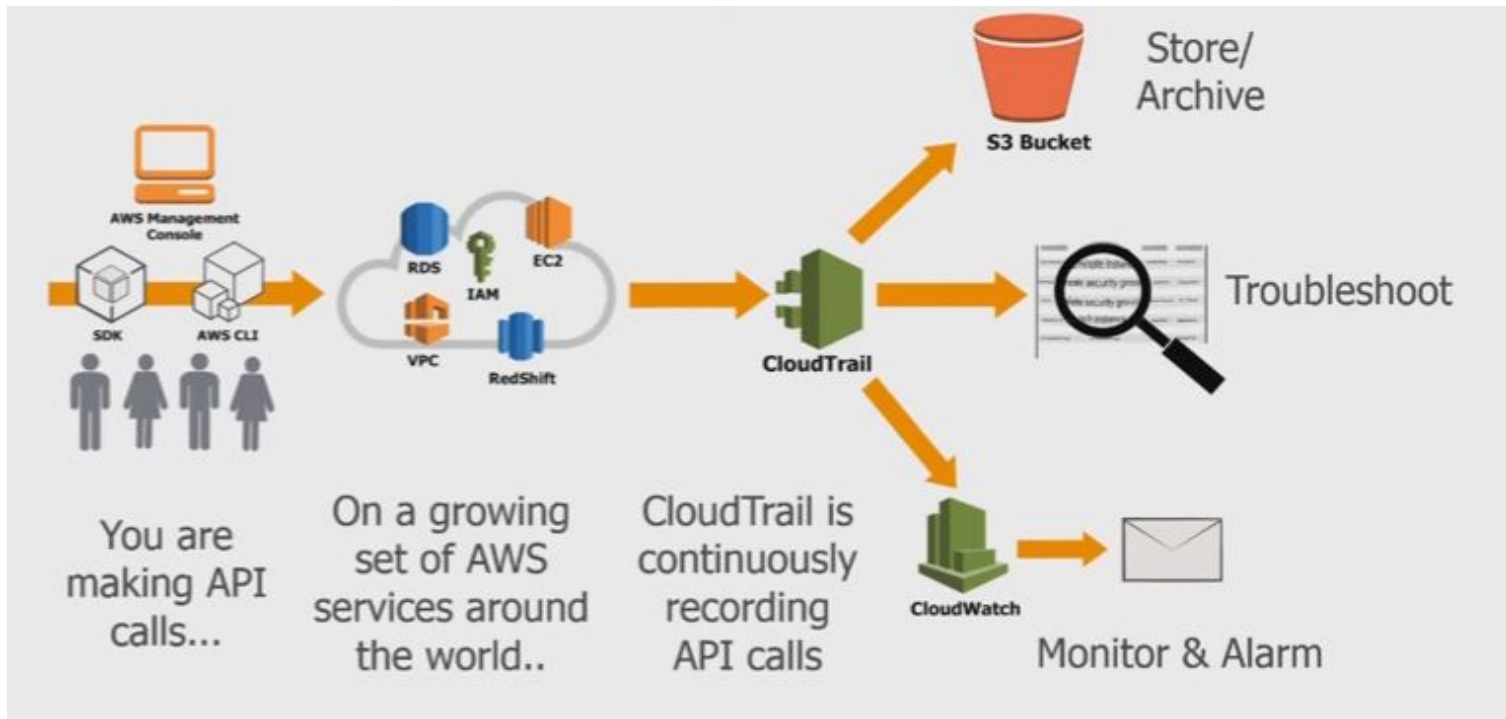
Getting Started

**Dashboards**


Create dashboard

Name
You have no CloudWatch dashboards. Please <a href="#">create a dashboard</a> .

# Management: CloudTrail




# Management: CloudTrail

 Services ▾

Search for services, features, marketplace products, and docs [Option+S]

vocstartsof/user869337=Mauricio\_Am\_ndola @ 745

☰

 **Now use IAM Access Analyzer on a CloudTrail trail**  
IAM Access Analyzer lets you implement least privilege permissions by generating IAM policies based on CloudTrail logs. [Learn more](#)

Management & Governance

## AWS CloudTrail


Continuously log your AWS account activity


Use CloudTrail to meet your governance, compliance, and auditing needs for your AWS accounts.


**Create a trail with AWS CloudTrail**

Get started with AWS CloudTrail by creating a trail to log your AWS account activity.


[Create a trail](#)

**Pricing**   
[Pricing](#)


**Getting started**   
[What is AWS CloudTrail?](#)  
[How AWS CloudTrail works](#)  
[Services that integrate with AWS CloudTrail](#)

**More resources**   
[Documentation](#)  
[FAQs](#)  
[API reference](#)


### How it works




**Capture**  
Record activity in AWS services as AWS CloudTrail events



**Store**  
AWS CloudTrail delivers events to the AWS CloudTrail console, Amazon S3 buckets, and optionally Amazon CloudWatch Logs



**Act**  
Use Amazon CloudWatch Alarms and Events to take action when important events are detected



**Review**  
View recent events in the AWS CloudTrail console, or analyze log files with Amazon Athena

# Costos



## Resources

Instances  
Storage  
Networking



## Availability

Regions and AZs  
Placement Groups  
Load Balancing  
Auto Scaling



## Management

Deployment  
Monitoring  
Administration



## Purchase Options

On Demand  
Reserved  
Spot

# Costos

Varias opciones de compra. Dependiendo del estado de madurez de nuestra organización y la adopción de cloud services, es la opción que más nos conviene:

- On-demand
- Reserved
- Spot instances

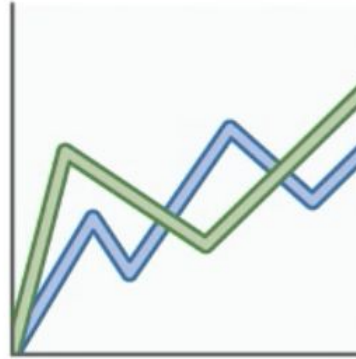
# Costos: On-demand

→ On-demand

Sin compromisos a largo plazo

Facilidad para escalar

Se paga por segundo!



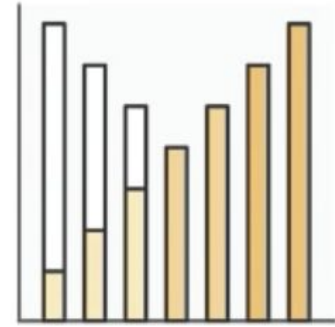
# Costos: Reserved

→ Reserved

Compromiso de 1 y 3 años

Descuentos significativos en función del tiempo de compromiso

Se paga por segundo!





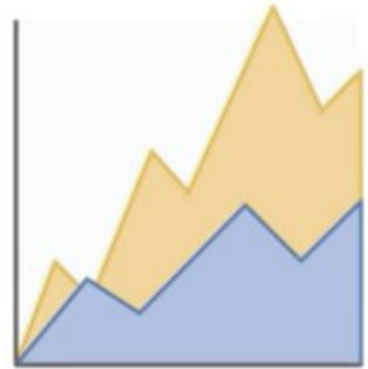
# Costos: Spot

→ Spot

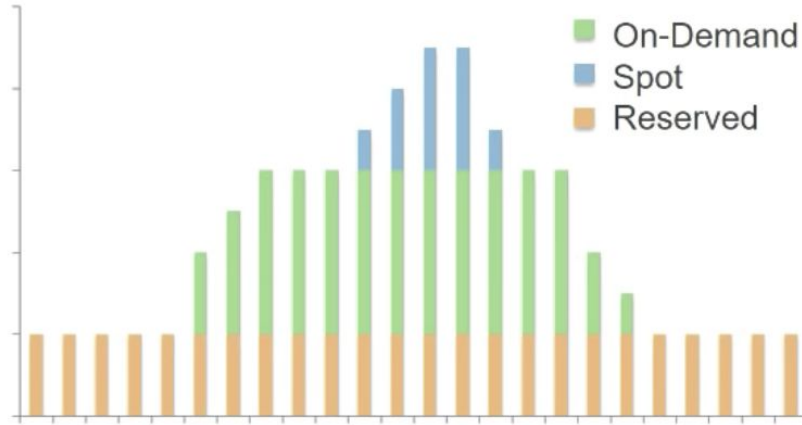
Usar capacidad “de sobra” de ec2

Descuentos de hasta 90% sobre precio a demanda

Trabajos no críticos, tiempo flexible



# Costos: Best choice



- Instancias reservadas para carga conocida o constante
- On demand para escalar fuera de lo esperado
- Spot para cosas puntuales, no productivas