

# M1B1T2. Herramientas de Gestión del Dato

## Actividad guiada. 1

### **Infraestructura como servicio (IaaS) en AWS**

#### **Exposición de la tarea**

Has sido contratado por una multinacional como Data Engineer. Dentro de su estrategia definida para los próximos años, están empezando un proyecto para migrar sus aplicaciones a la nube. Para ello, han elegido Amazon Web Services (AWS) como proveedor de servicios en la nube.


Te han pedido crear una máquina virtual Windows en AWS donde se van a instalar las primeras aplicaciones.

#### **Objetivo**

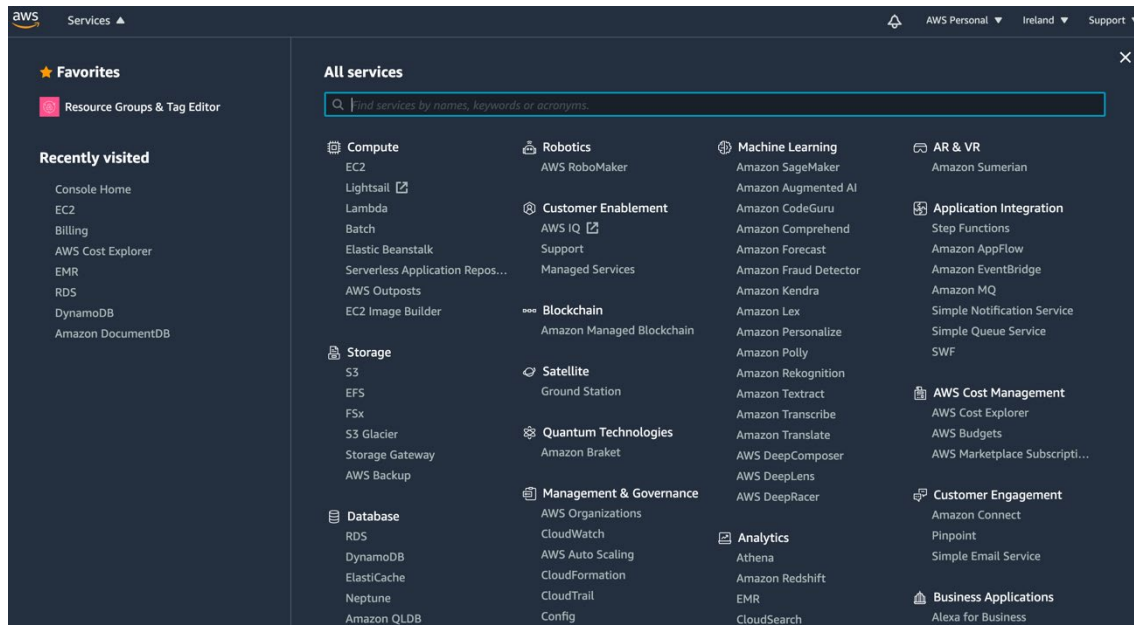
Dar los primeros pasos con AWS, utilizando los servicios Amazon EC2 y Amazon EBS.

## Pasos para la realización de la actividad

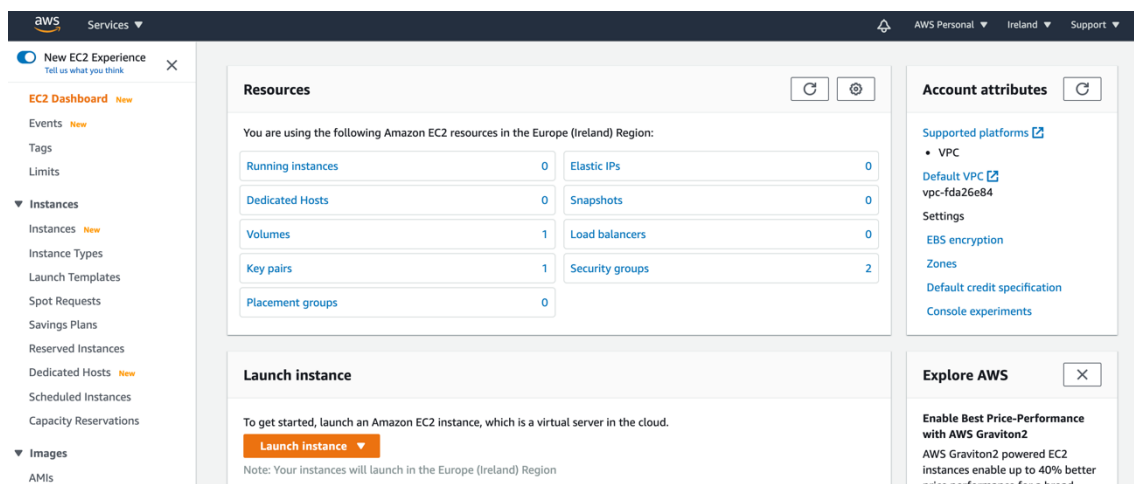
1. Accede a la consola de AWS, siguiendo los pasos de la 'Guía AWS Academy'
2. Deja la región que aparece por defecto.

	N. Virginia ▲
<b>US East (N. Virginia)</b>	<b>us-east-1</b>
US East (Ohio)	us-east-2
US West (N. California)	us-west-1
US West (Oregon)	us-west-2
Africa (Cape Town)	af-south-1
Asia Pacific (Hong Kong)	ap-east-1
Asia Pacific (Jakarta)	ap-southeast-3
Asia Pacific (Mumbai)	ap-south-1
Asia Pacific (Osaka)	ap-northeast-3
Asia Pacific (Seoul)	ap-northeast-2
Asia Pacific (Singapore)	ap-southeast-1
Asia Pacific (Sydney)	ap-southeast-2
Asia Pacific (Tokyo)	ap-northeast-1
Canada (Central)	ca-central-1
Europe (Frankfurt)	eu-central-1
Europe (Ireland)	eu-west-1
Europe (London)	eu-west-2

- Elige el servicio con el que quieres trabajar. Para ello, selecciona el desplegable “Services”, arriba a la izquierda y elige EC2, dentro de la categoría “Compute”.



- Aparece la página principal del servicio Amazon EC2. Para crear una nueva máquina virtual, pulsa el botón “Launch Instance”.

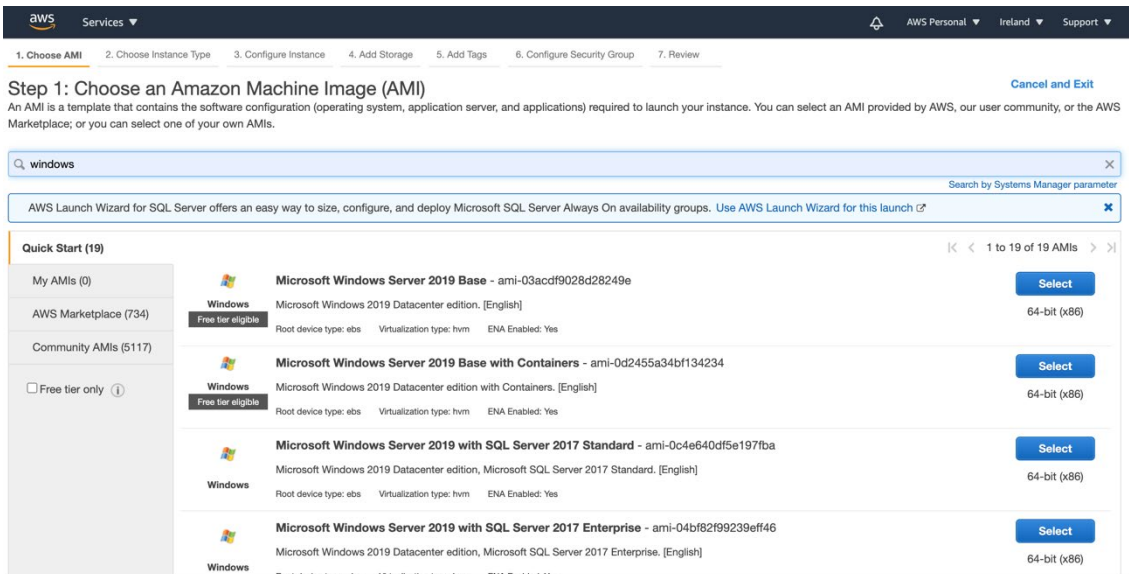


5. Aparecerán todas las Amazon Machine Image (AMI) que puedes elegir. Como quieres una instancia de tipo Windows, en el campo de búsqueda, escribe “Windows”.

Elige el AMI llamado “Microsoft Windows Server 2019 Base”.

### IMPORTANTE

Elige de entre las que indiquen “Free Tier Eligible”. Si eliges otra, AWS cargará los costes asociados.



The screenshot shows the AWS IAM console interface. At the top, there's a navigation bar with 'AWS Services' and a search bar. Below the navigation bar, there's a progress bar with steps: 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, 7. Review. The current step is 'Step 1: Choose an Amazon Machine Image (AMI)'. A search bar contains the text 'windows'. Below the search bar, there's a list of AMIs. The first AMI is 'Microsoft Windows Server 2019 Base' with ID 'ami-03acdf9028d28249e'. It is marked as 'Free tier eligible'. The second AMI is 'Microsoft Windows Server 2019 Base with Containers' with ID 'ami-0d2455a34bf134234'. It is also marked as 'Free tier eligible'. The third AMI is 'Microsoft Windows Server 2019 with SQL Server 2017 Standard' with ID 'ami-0c4e640df5e197fba'. The fourth AMI is 'Microsoft Windows Server 2019 with SQL Server 2017 Enterprise' with ID 'ami-04bf82f99239eff46'. Each AMI has a 'Select' button next to it.

6. En este paso, elige el tipo de instancia EC2 de acuerdo a tus necesidades (número de vCPUs, memoria, etc.). En este caso, selecciona la segunda opción y pulsa el botón “Next: Configure Instance Details”.

### IMPORTANTE

Debes elegir de entre las que indiquen “Free Tier Eligible”. Si eliges otra, AWS cargará los costes asociados.

**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 types** **Current generation** [Show/Hide Columns](#)

Currently selected: t2.micro (Variable ECUs, 1 vCPUs, 2.5 GHz, Intel Xeon Family, 1 GiB memory, EBS only)

	Family	Type	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance	IPv6 Support
<input type="checkbox"/>	General purpose	t2.nano	1	0.5	EBS only	-	Low to Moderate	Yes
<input checked="" type="checkbox"/>	General purpose	t2.micro <small>Free tier eligible</small>	1	1	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.small	1	2	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.medium	2	4	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.large	2	8	EBS only	-	Low to Moderate	Yes
<input type="checkbox"/>	General purpose	t2.xlarge	4	16	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t2.2xlarge	8	32	EBS only	-	Moderate	Yes
<input type="checkbox"/>	General purpose	t3a.nano	2	0.5	EBS only	Yes	Up to 5 Gigabit	Yes
<input type="checkbox"/>	General purpose	t3a.micro	2	1	EBS only	Yes	Up to 5 Gigabit	Yes

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Configure Instance Details](#)

7. Configura los detalles de la instancia. Deja los valores por defecto y pulsa el botón “Next: Add Storage”.

**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:  [Launch into Auto Scaling Group](#)

Purchasing option: ☐ Request Spot instances

Network:  [Create new VPC](#)

Subnet:  [Create new subnet](#)

Auto-assign Public IP:

Placement group: ☐ Add instance to placement group

Capacity Reservation:

Domain join directory:  [Create new directory](#)

IAM role:  [Create new IAM role](#)

Shutdown behavior:

Stop - Hibernate behavior: ☐ Enable hibernation as an additional stop behavior

Enable termination protection: ☐ Protect against accidental termination

Monitoring: ☐ Enable CloudWatch detailed monitoring  
[Additional charges apply.](#)

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Storage](#)

8. Configura el almacenamiento de la instancia correspondiente al servicio Amazon EBS. Mantén los valores por defecto y pulsa el botón “Next: Add Tags”.

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/sda1	snap-0377f9d89bf8d70d	30	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.

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Add Tags](#)

9. En este paso se permite añadir etiquetas. No añadas ninguna y pulsa el botón “Next: Configure Security Group”.

AWS Services

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

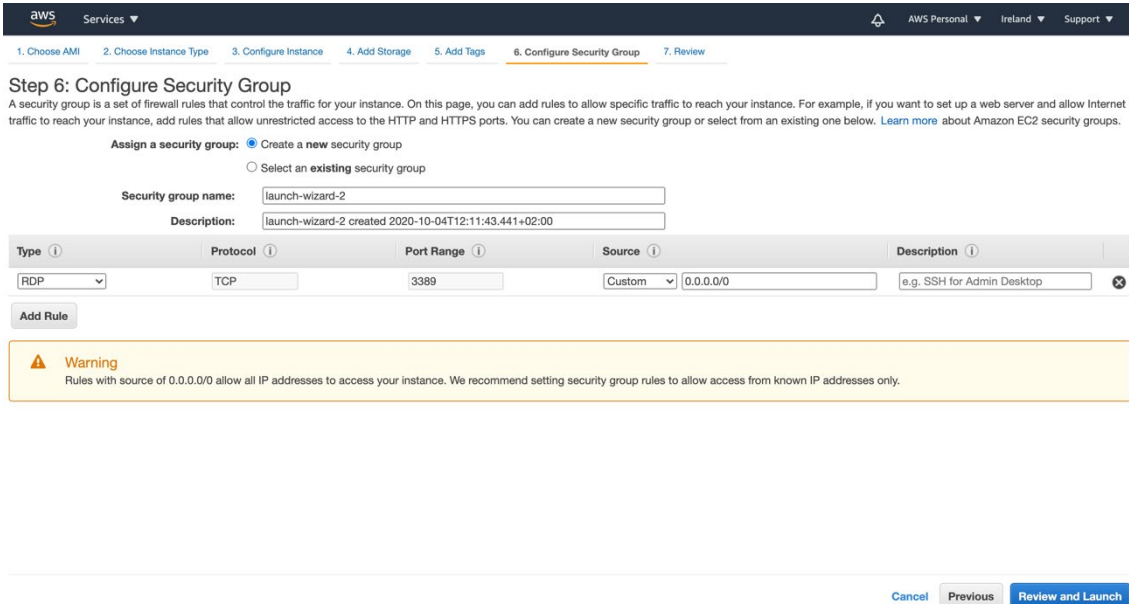
A tag consists of a case-sensitive key-value pair. For example, you could define a tag with key = Name and value = Webserver. A copy of a tag can be applied to volumes, instances or both. Tags will be applied to all instances and volumes. [Learn more](#) about tagging your Amazon EC2 resources.

Key (128 characters maximum)	Value (256 characters maximum)	Instances ⓘ	Volumes ⓘ
<p>This resource currently has no tags</p> <p>Choose the <a href="#">Add tag</a> button or <a href="#">click to add a Name tag</a>.</p> <p>Make sure your <a href="#">IAM policy</a> includes permissions to create tags.</p>			

[Add Tag](#) (Up to 50 tags maximum)

[Cancel](#) [Previous](#) [Review and Launch](#) [Next: Configure Security Group](#)

10. Configura el “Security Group”, que es la pieza que ponemos por delante de nuestra instancia para evitar accesos no deseados. Mantén los valores por defecto que te permitirán conectarte con un cliente Remote Desktop Client (RDP). Pulsa el botón “Review and Launch”.



**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:**

**Description:**

Type	Protocol	Port Range	Source	Description
RDP	TCP	3389	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop

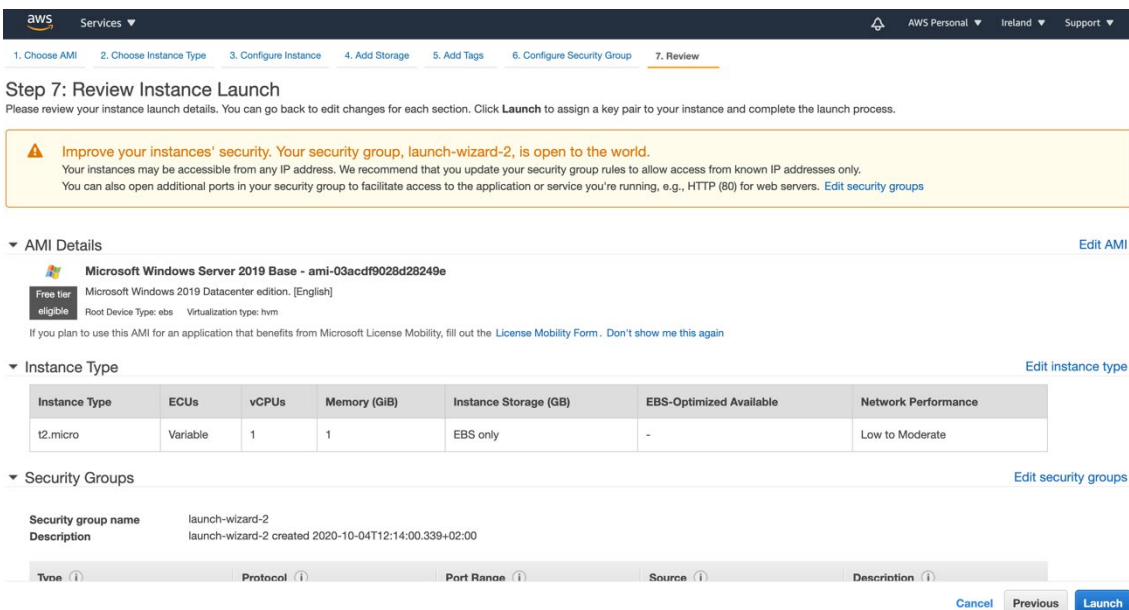
[Add Rule](#)

**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](#)

11. Este paso, muestra todo lo que has configurado. Pulsa el botón “Launch” para lanzar tu máquina virtual.



**Step 7: Review Instance Launch**


Please review your instance launch details. You can go back to edit changes for each section. Click **Launch** to assign a key pair to your instance and complete the launch process.

**Improve your instances' security. Your security group, launch-wizard-2, is open to the world.**

Your instances may be accessible from any IP address. We recommend that you update your security group rules to allow access from known IP addresses only.

You can also open additional ports in your security group to facilitate access to the application or service you're running, e.g., HTTP (80) for web servers. [Edit security groups](#)

**AMI Details** [Edit AMI](#)

 **Microsoft Windows Server 2019 Base - ami-03acdf9028d28249e**

Free tier eligible | Microsoft Windows 2019 Datacenter edition, [English]  
Root Device Type: ebs | Virtualization type: hvm

If you plan to use this AMI for an application that benefits from Microsoft License Mobility, fill out the [License Mobility Form](#). Don't show me this again

**Instance Type** [Edit instance type](#)

Instance Type	ECUs	vCPUs	Memory (GiB)	Instance Storage (GB)	EBS-Optimized Available	Network Performance
t2.micro	Variable	1	1	EBS only	-	Low to Moderate

**Security Groups** [Edit security groups](#)

**Security group name:** launch-wizard-2  
**Description:** launch-wizard-2 created 2020-10-04T12:14:00.339+02:00

Type	Protocol	Port Range	Source	Description
RDP	TCP	3389	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop

[Cancel](#)
[Previous](#)
[Launch](#)

12. Nos va a pedir que creemos un par de claves, pública y privada, necesarias para poder conectarnos a nuestra instancia. Elegimos la opción “Create a new key pair”, le damos un nombre y damos al botón “Download Key Pair”. Nos generará un archivo con extensión “pem”.

### IMPORTANTE

Debes guardar en lugar seguro el archivo descargado, si no, no podrás acceder a tu instancia.

A continuación, pulsa el botón “Launch Instances”.

Select an existing key pair or create a new key pair

A key pair consists of a **public key** that AWS stores, and a **private key file** that you store. Together, they allow you to connect to your instance securely. For Windows AMIs, the private key file is required to obtain the password used to log into your instance. For Linux AMIs, the private key file allows you to securely SSH into your instance.

Note: The selected key pair will be added to the set of keys authorized for this instance. Learn more about [removing existing key pairs from a public AMI](#).

Create a new key pair

Key pair name

Key\_Pair\_Windows

Download Key Pair

You have to download the **private key file** (\*.pem file) before you can continue. **Store it in a secure and accessible location.** You will not be able to download the file again after it's created.

Cancel

Launch Instances

13. La siguiente pantalla indicará que tu instancia se está arrancando. Para verla, pulsa el botón “View Instances”.

aws

Services

AWS Personal

Ireland

Support

Launch Status

Your instances are now launching

The following instance launches have been initiated: [i-0c65f9ab13d26235d](#) [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).

How to connect to your instances

Your instances are launching, and it may take a few minutes until they are in the **running** state, when they will be ready for you to use. Usage hours on your new instances will start immediately and continue to accrue until you stop or terminate your instances.

Click **View Instances** to monitor your instances' status. Once your instances are in the **running** state, you can **connect** to them from the Instances screen. [Find out](#) how to connect to your instances.

Here are some helpful resources to get you started

How to connect to your Windows instance

Learn about AWS Free Usage Tier

Amazon EC2: User Guide

Amazon EC2: Microsoft Windows Guide

Amazon EC2: Discussion Forum

While your instances are launching you can also

Create status check alarms to be notified when these instances fail status checks. (Additional charges may apply)

Create and attach additional EBS volumes (Additional charges may apply)

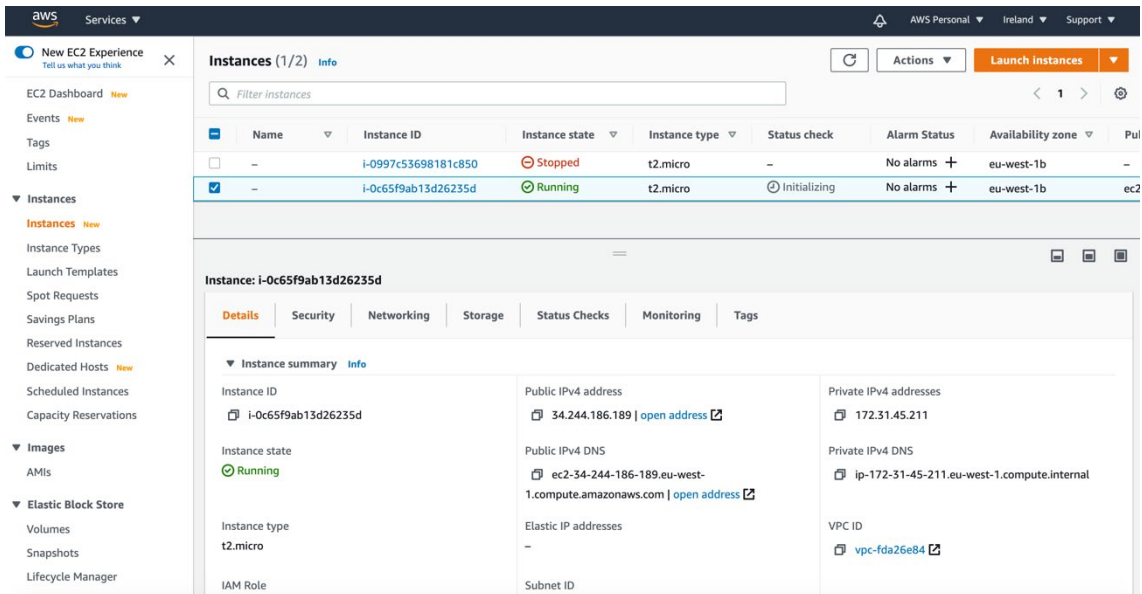
Manage security groups

View Instances

8



14. En el apartado “Instances”, puedes ver tus instancias. Si seleccionas una de ellas, puedes ver todos sus detalles.



**Instances (1/2)**

Name	Instance ID	Instance state	Instance type	Status check	Alarm Status	Availability zone	Public IP address
-	i-0997c53698181c850	Stopped	t2.micro	-	No alarms +	eu-west-1b	-
-	i-0c65f9ab13d26235d	Running	t2.micro	Initializing	No alarms +	eu-west-1b	ec2

**Instance: i-0c65f9ab13d26235d**

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

**Instance summary**

- Instance ID: i-0c65f9ab13d26235d
- Instance state: **Running**
- Instance type: t2.micro
- IAM Role: -

**Public IPv4 address**: 34.244.186.189 | [open address](#)

**Public IPv4 DNS**: ec2-34-244-186-189.eu-west-1.compute.amazonaws.com | [open address](#)

**Private IPv4 addresses**: 172.31.45.211

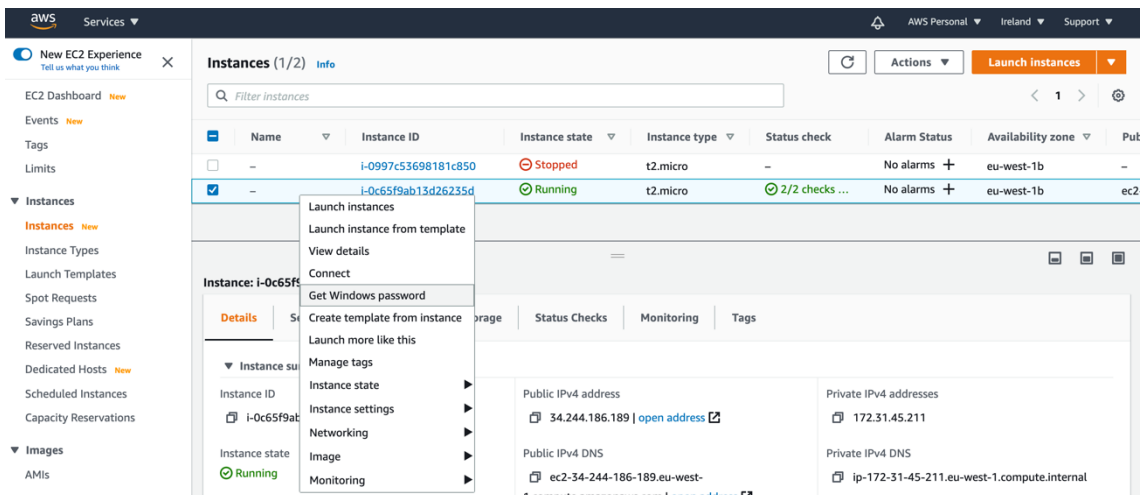
**Private IPv4 DNS**: ip-172-31-45-211.eu-west-1.compute.internal

**Elastic IP addresses**: -

**VPC ID**: vpc-fda26e84

**Subnet ID**: -

15. Para poder conectarte a tu instancia, tienes que conocer el usuario y la contraseña. Para ello, en la lista de instancias, selecciona la tuya, luego, pulsa botón derecho y, después, selecciona “Get Windows password”.



**Instances (1/2)**

Name	Instance ID	Instance state	Instance type	Status check	Alarm Status	Availability zone	Public IP address
-	i-0997c53698181c850	Stopped	t2.micro	-	No alarms +	eu-west-1b	-
-	i-0c65f9ab13d26235d	Running	t2.micro	2/2 checks ...	No alarms +	eu-west-1b	ec2

**Instance: i-0c65f9ab13d26235d**

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

**Instance summary**

- Instance ID: i-0c65f9ab13d26235d
- Instance state: **Running**
- Instance type: t2.micro
- IAM Role: -

**Public IPv4 address**: 34.244.186.189 | [open address](#)

**Public IPv4 DNS**: ec2-34-244-186-189.eu-west-1.compute.amazonaws.com | [open address](#)

**Private IPv4 addresses**: 172.31.45.211

**Private IPv4 DNS**: ip-172-31-45-211.eu-west-1.compute.internal

**Elastic IP addresses**: -

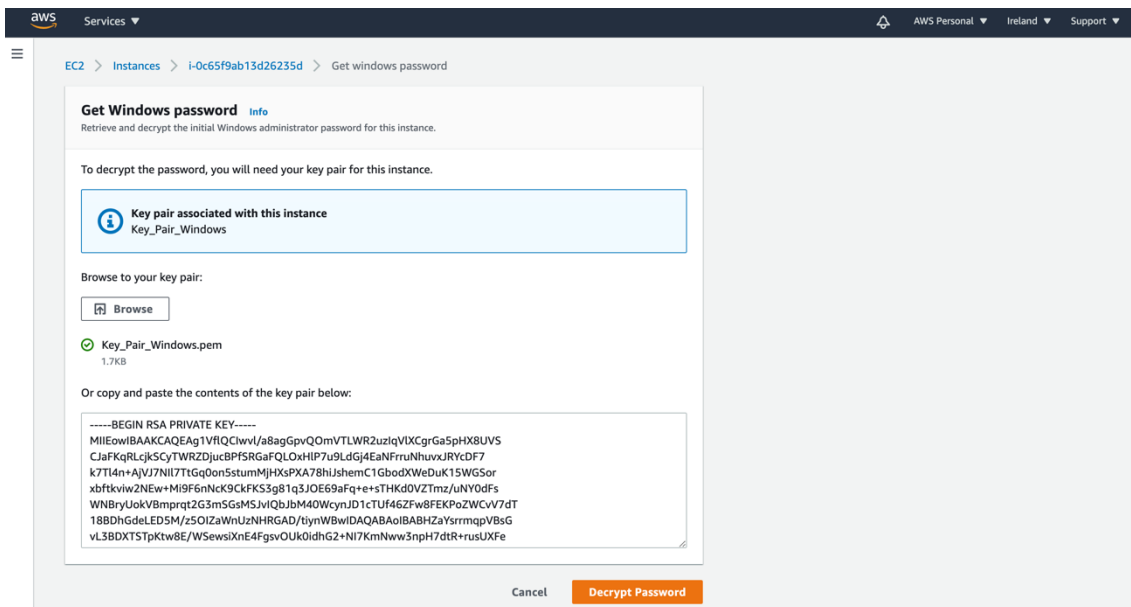
**VPC ID**: vpc-fda26e84

**Subnet ID**: -

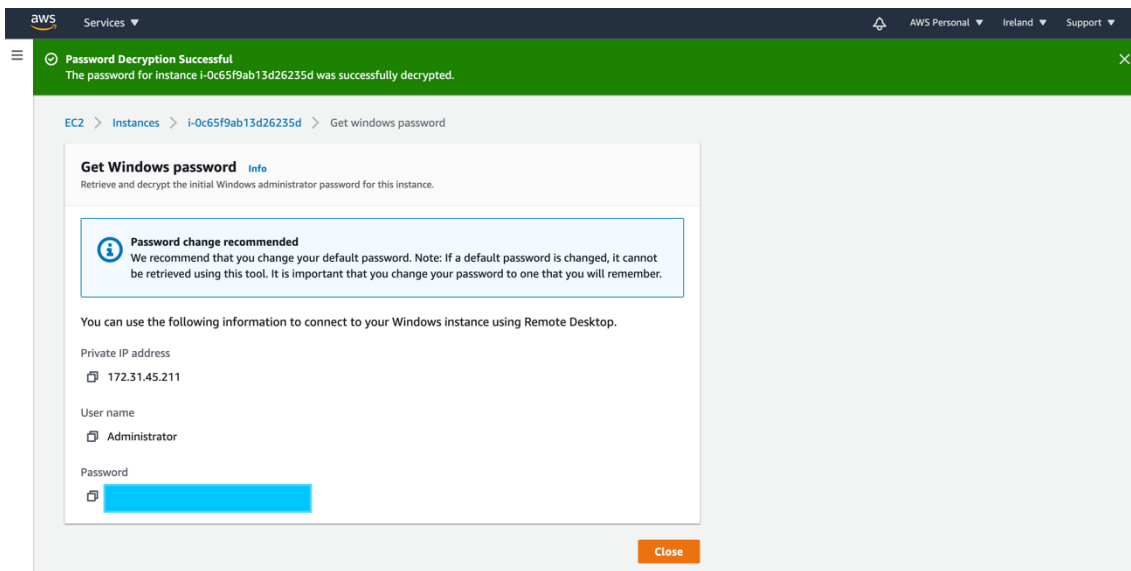
**Context Menu:**

- Launch instances
- Launch instance from template
- View details
- Connect
- Get Windows password**
- Create template from instance
- Launch more like this
- Manage tags
- Instance settings
- Networking
- Image
- Monitoring

16. Pulsa el botón “Browse” y elige el fichero \*.pem” que guardaste en el paso 12. A continuación, pulsa el botón “Decrypt password”:



17. Se muestra el usuario y la contraseña y debes guardar esta información:

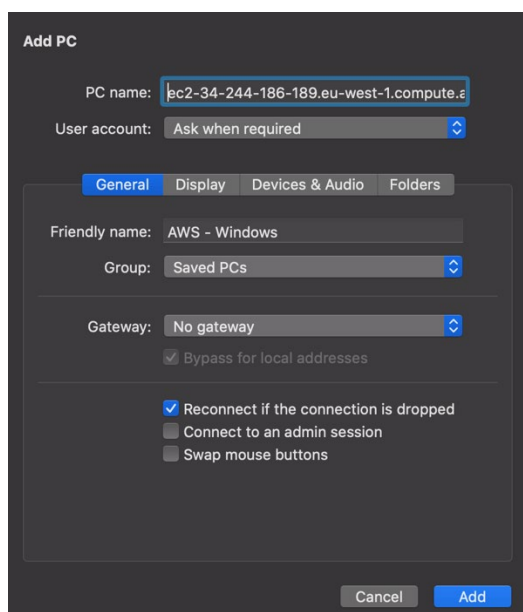


## Resultado

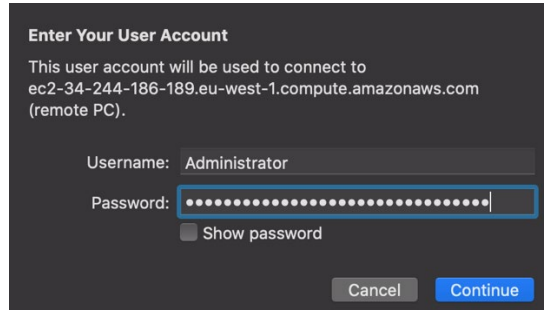
Una vez que has arrancado tu máquina virtual Windows, debes acceder utilizando un cliente RDP (Remote Desktop Client) desde tu PC:

- **Windows:** Windows incluye un cliente de RDP de forma predeterminada. Para verificarlo, escribe **mstsc** en la ventana del símbolo del sistema. Si el equipo no reconoce este comando, consulta la página de inicio de Windows y busca la descarga de la aplicación del Escritorio remoto de Microsoft.
- **Mac OS X:** Descarga la aplicación “Escritorio remoto de Microsoft” desde la Mac App Store.
- **Linux:** Usa [Remmina](#).

Abre el cliente RDP y añade una nueva conexión. Te pedirá la IP de tu máquina virtual. La obtienes en el campo Public IPv4 DNS del detalle de la instancia (Ejemplo: ec2-34-244-186-189.eu-west-1.compute.amazonaws.com). Pulsa el botón “Add” (La imagen corresponde al cliente en RDP en Mac OS X. En Windows la imagen podría variar):



Una vez añadida la nueva conexión, Pulsa “Conectar” y te pedirá el usuario y contraseña que obtuviste en el paso 17.



Y ya tendrás acceso a tu máquina virtual en Windows. En ella, podrás instalar las aplicaciones que tu cliente te pida.



## IMPORTANTE

Una vez que dejes de trabajar con tu máquina virtual, debes pararla, para que AWS no te cobre por el uso. Para ello, haz clic con el botón derecho sobre la instancia:

-> Instance state -> Stop Instance

Cuando quieras volver a utilizarla, haz clic con el botón derecho sobre la instancia:

-> Instance state -> Start Instance

