

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.

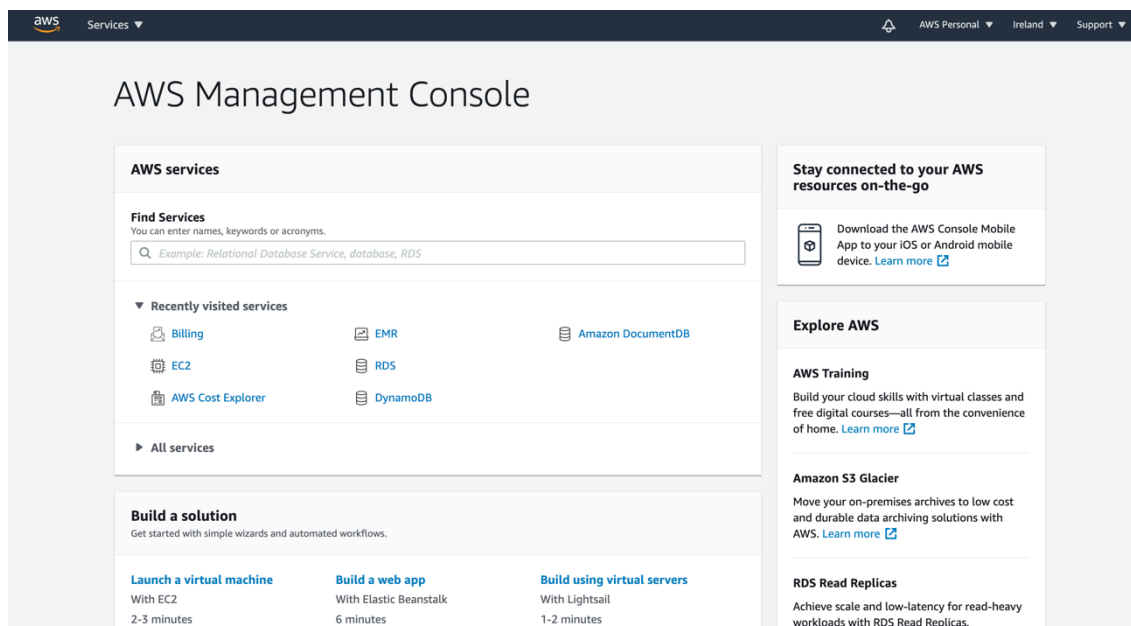
Objetivo

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

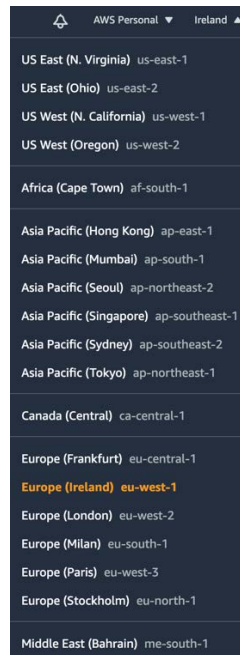
Pasos para la realización de la actividad

1. Accede a la consola de AWS con tus credenciales:

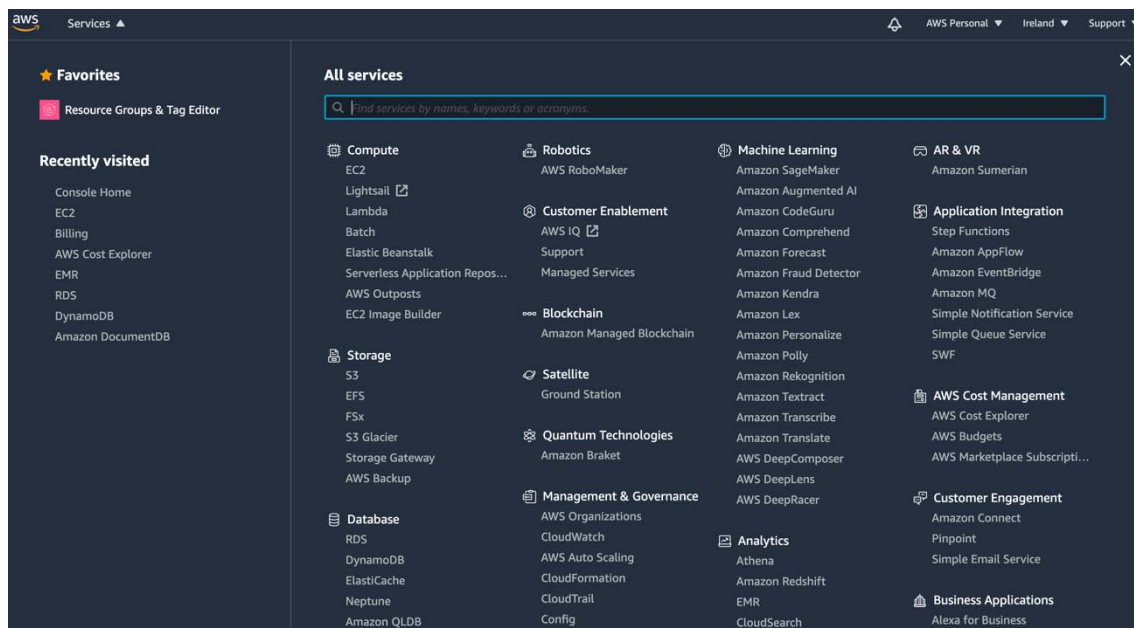
<https://console.aws.amazon.com/>



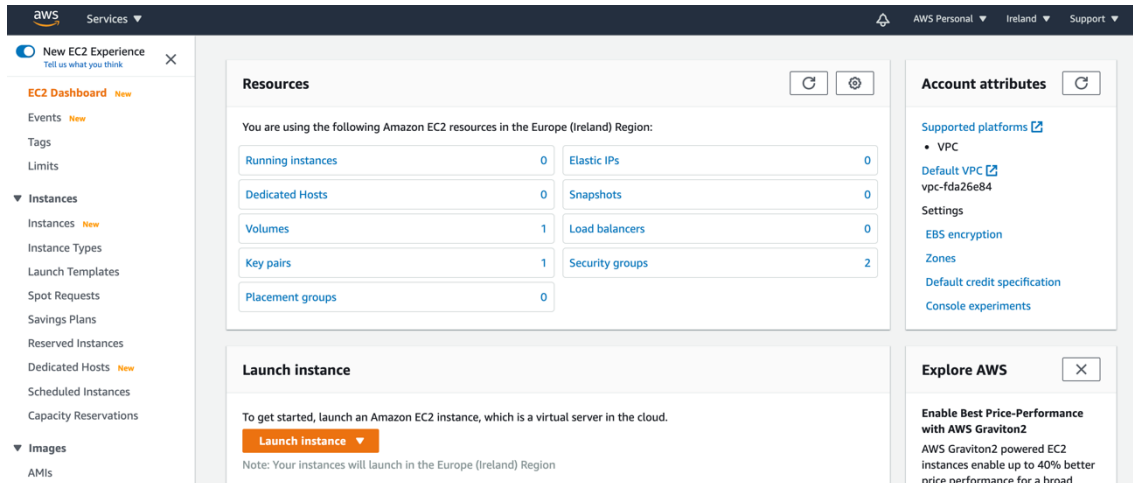
- Elige la región donde quieres trabajar. Para ello, selecciona el desplegable de regiones arriba a la derecha y elige la región de Irlanda (Irlanda es la región que ha elegido la multinacional para sus despliegues en la nube).



- 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”.



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



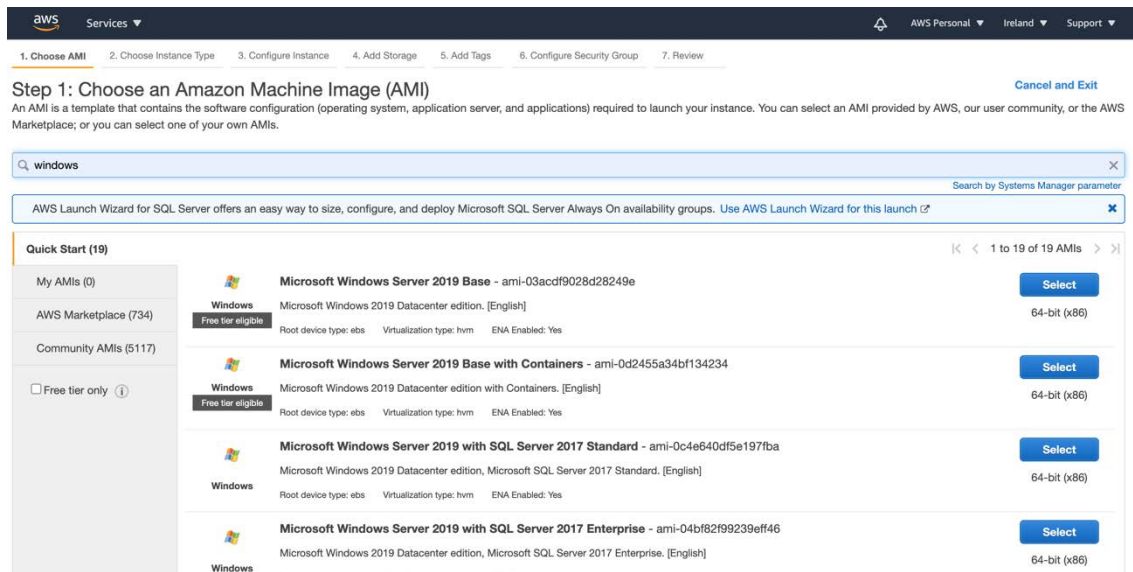
The screenshot shows the AWS Management Console for the EC2 service. The left sidebar contains navigation links for EC2 Dashboard, Events, Tags, Limits, Instances, Instance Types, Launch Templates, Spot Requests, Savings Plans, Reserved Instances, Dedicated Hosts, Scheduled Instances, Capacity Reservations, Images, and AMIs. The main content area is titled 'Resources' and shows a summary of EC2 resources in the Europe (Ireland) Region. It includes a table with counts for Running instances, Elastic IPs, Dedicated Hosts, Snapshots, Volumes, Load balancers, Key pairs, Security groups, and Placement groups. Below this is a 'Launch instance' section with a 'Launch instance' button. On the right, there are sections for 'Account attributes' (Supported platforms, VPC, Default VPC, Settings, EBS encryption, Zones, Default credit specification, Console experiments) and 'Explore AWS' (Enable Best Price-Performance with AWS Graviton2).

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 Launch Wizard Step 1: Choose an Amazon Machine Image (AMI). The top navigation bar includes links for 1. Choose AMI, 2. Choose Instance Type, 3. Configure Instance, 4. Add Storage, 5. Add Tags, 6. Configure Security Group, and 7. Review. The main content area is titled 'Step 1: Choose an Amazon Machine Image (AMI)' and includes a search bar with the text 'windows'. Below the search bar, there is a list of AMIs. The first two AMIs are 'Microsoft Windows Server 2019 Base' and 'Microsoft Windows Server 2019 Base with Containers', both marked as 'Free tier eligible'. The other two AMIs are 'Microsoft Windows Server 2019 with SQL Server 2017 Standard' and 'Microsoft Windows Server 2019 with SQL Server 2017 Enterprise'. Each AMI entry includes a 'Select' button and a '64-bit (x86)' label.

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 Elegible”. Si eliges otra, AWS cargará los costes asociados.


Services

AWS Personal
Ireland
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.

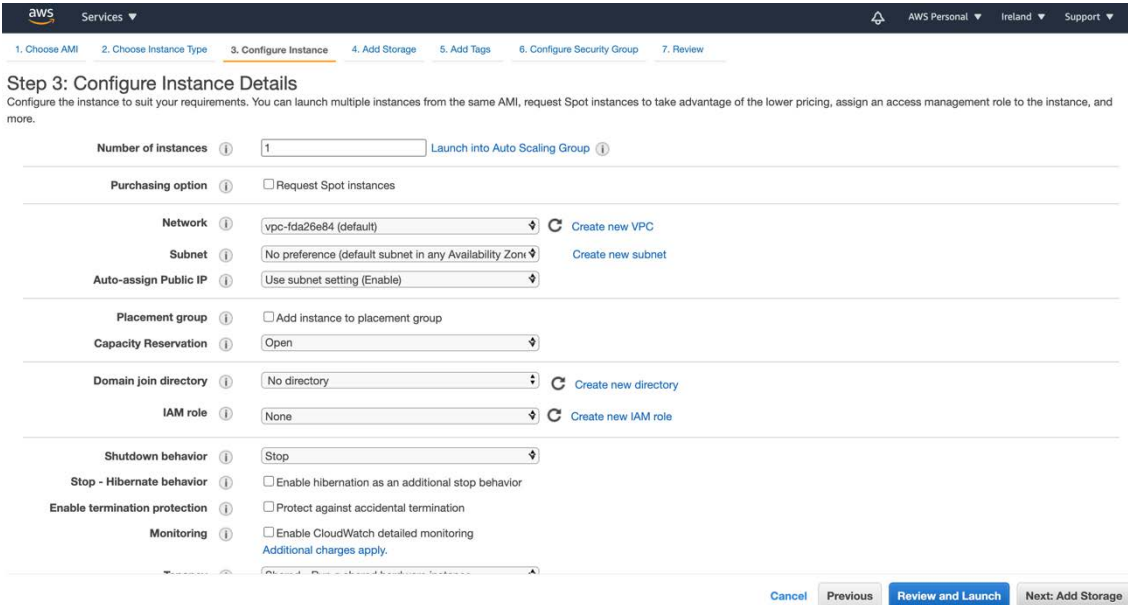
Filter by: All instance types Current generation Show/Hide Columns

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 Free tier eligible	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: 1 [Launch into Auto Scaling Group](#)

Purchasing option: ☐ Request Spot instances

Network: vpc-fda26e84 (default) [Create new VPC](#)

Subnet: No preference (default subnet in any Availability Zone) [Create new subnet](#)

Auto-assign Public IP: Use subnet setting (Enable)

Placement group: ☐ Add instance to placement group

Capacity Reservation: Open

Domain join directory: No directory [Create new directory](#)

IAM role: None [Create new IAM role](#)

Shutdown behavior: Stop

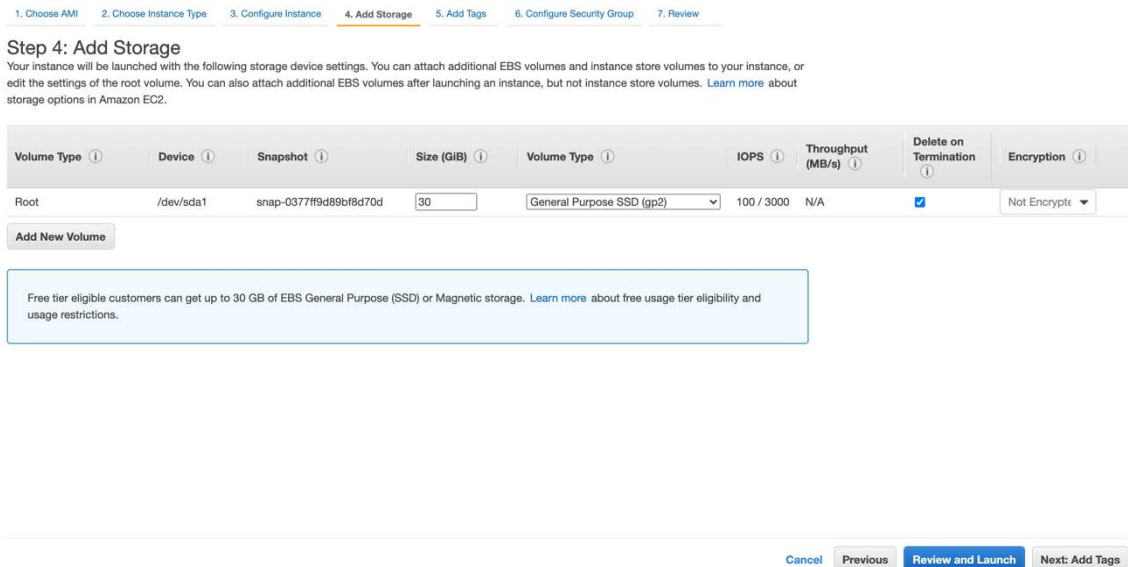
Stop - Hibernate behavior: ☐ Enable hibernation as an additional stop behavior

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”.



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-0377ff9d89bf8d70d	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”.

Services

AWS Personal
Ireland
Support

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
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

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”.

Services

AWS Personal
Ireland
Support

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:

Description:

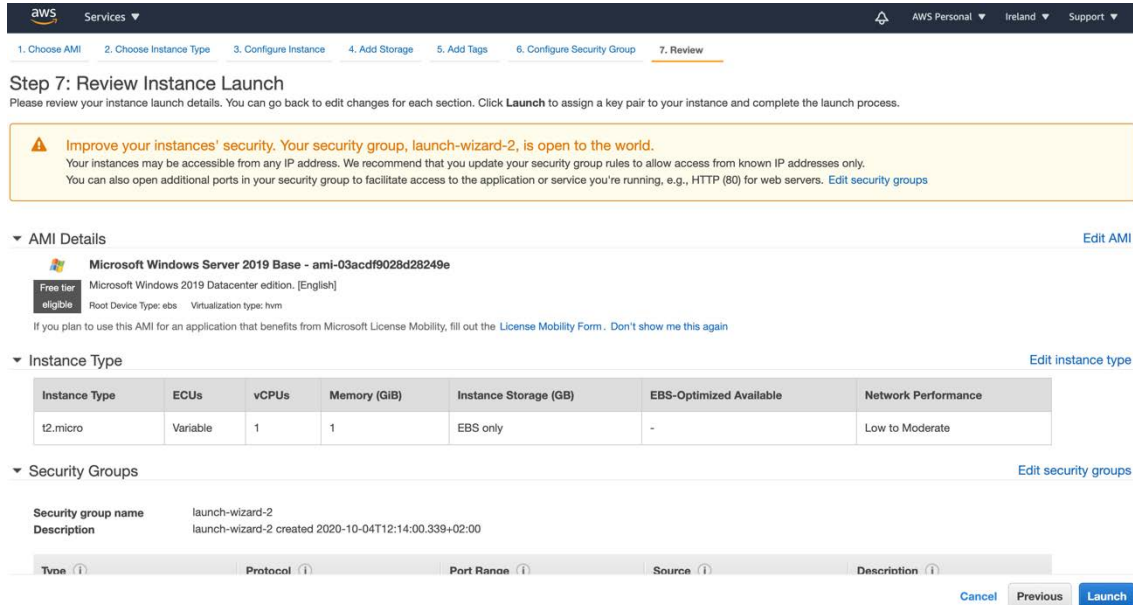
Type	Protocol	Port Range	Source	Description
RDP	TCP	3389	Custom 0.0.0.0/0	e.g. SSH for Admin Desktop

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

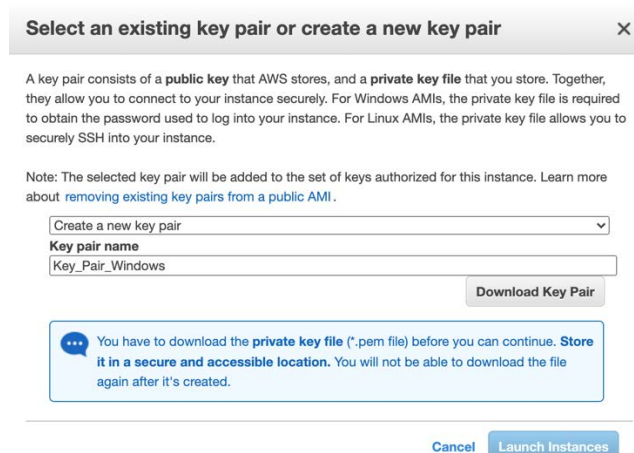
[Cancel](#) [Previous](#) [Launch](#)

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](#).

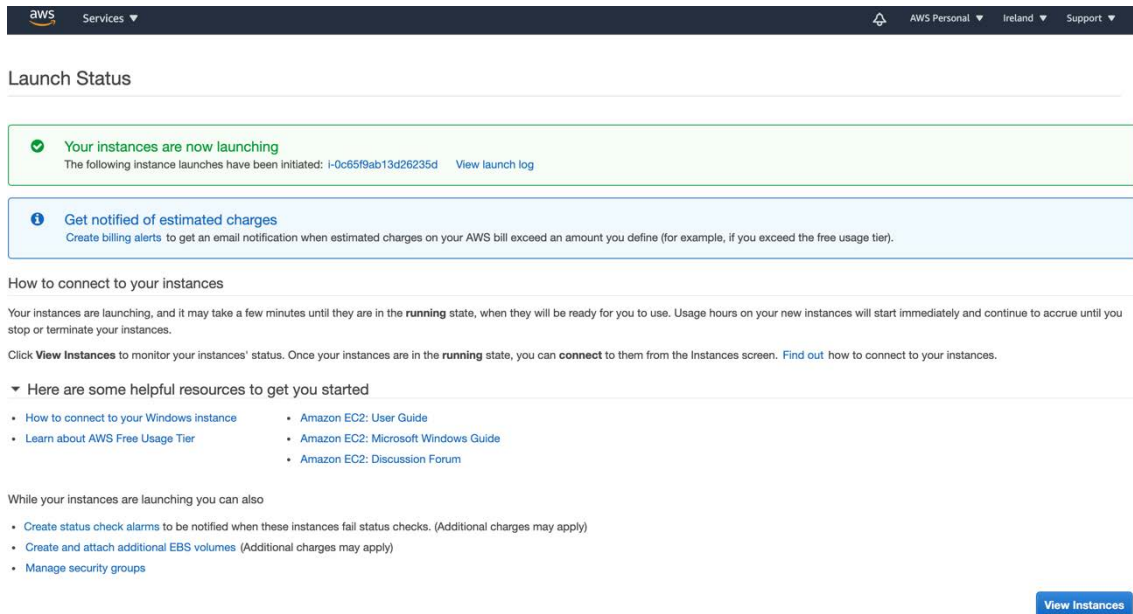
Create a new key pair

[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”.



Launch Status

✓ **Your instances are now launching**
The following instance launches have been initiated: i-0c65f9ab13d26235d [View launch log](#)

ℹ **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

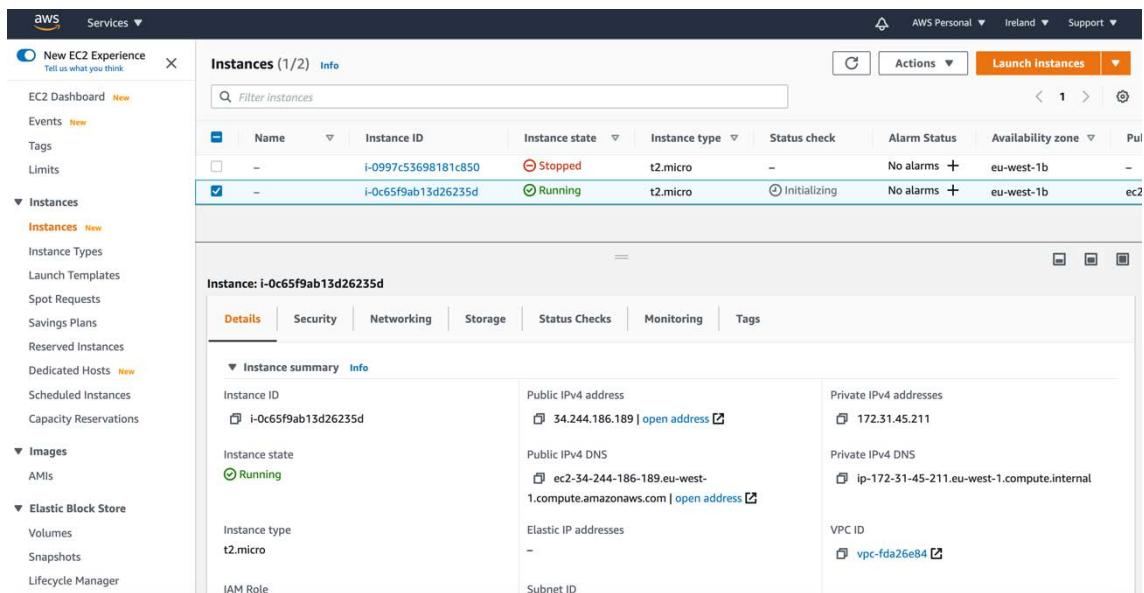
- [How to connect to your Windows instance](#)
- [Learn about AWS Free Usage Tier](#)
- [Amazon EC2: User Guide](#)
- [Amazon EC2: Microsoft Windows Guide](#)
- [Amazon EC2: Discussion Forum](#)

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](#)

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



Instances (1/2) Info

Filter instances

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	ec2-34-244-186-189.eu-west-1.compute.amazonaws.com

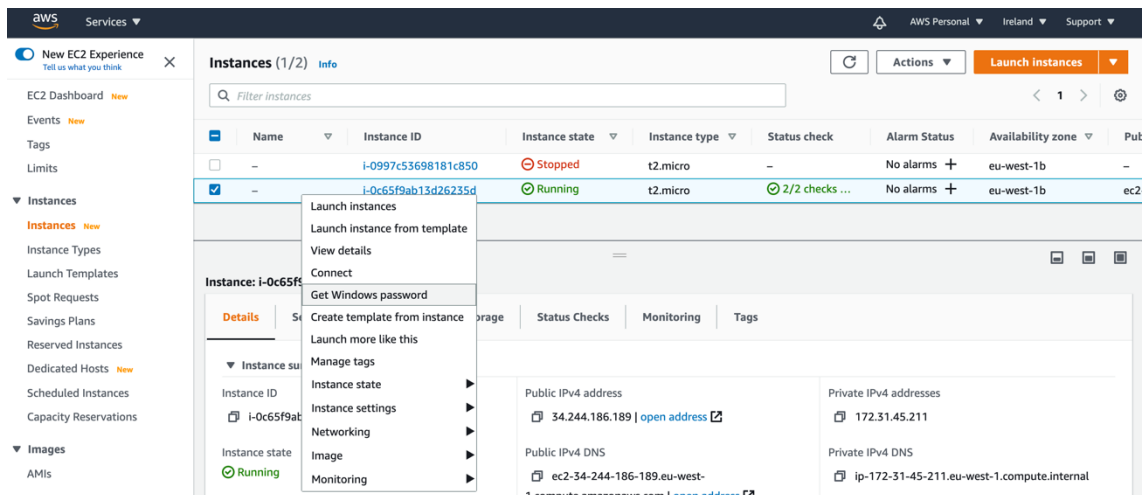
Instance: i-0c65f9ab13d26235d

Details Security Networking Storage Status Checks Monitoring Tags

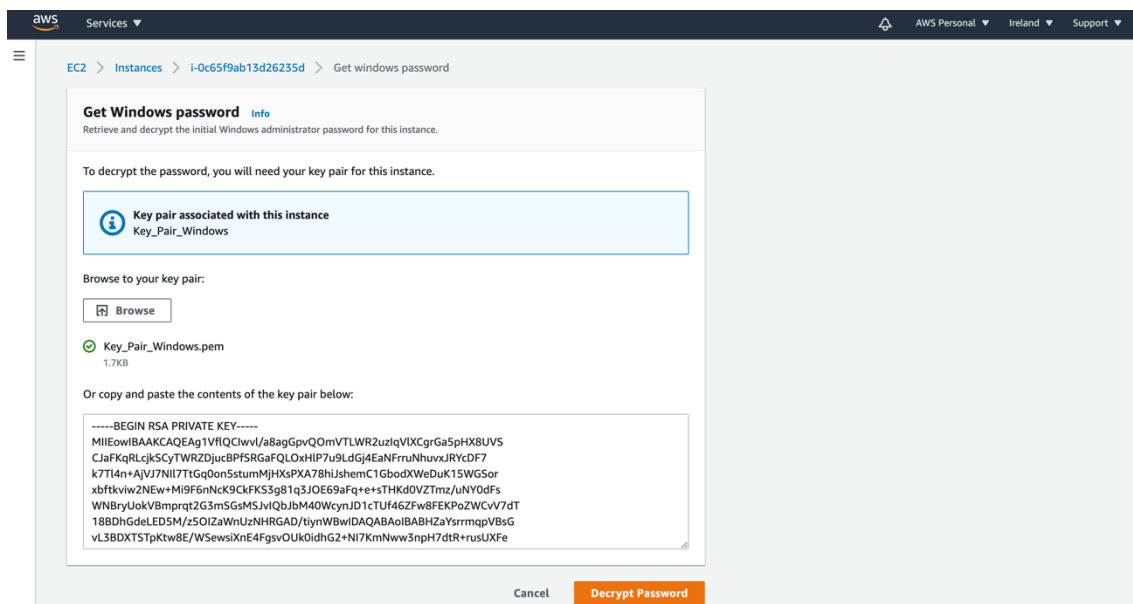
▼ Instance summary Info

Instance ID i-0c65f9ab13d26235d	Public IPv4 address 34.244.186.189 open address	Private IPv4 addresses 172.31.45.211
Instance state Running	Public IPv4 DNS ec2-34-244-186-189.eu-west-1.compute.amazonaws.com open address	Private IPv4 DNS ip-172-31-45-211.eu-west-1.compute.internal
Instance type t2.micro	Elastic IP addresses –	VPC ID vpc-fda26e84
IAM Role	Subnet ID	

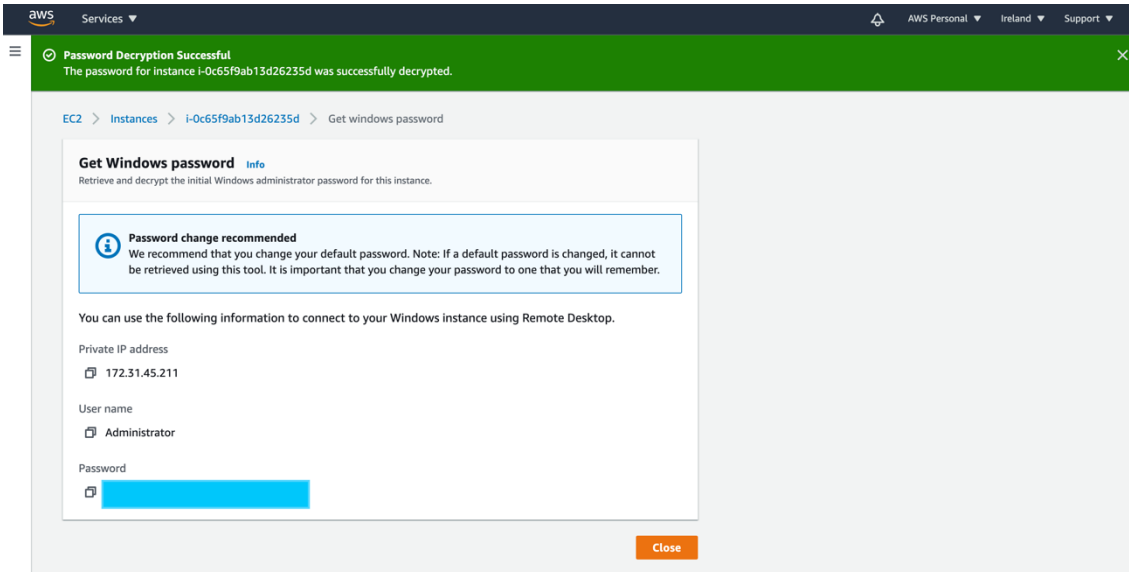
15. Para poder conectarte a tu instancia, tienes que conocer el usuario y la contraseña. Para ello, en la lista de instancias, selecciona la tuya, luego, pulsa botón derecho y, después, selecciona “Get Windows password”.



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:



The screenshot shows the AWS Management Console interface. At the top, there is a dark blue header with the AWS logo and navigation links. Below the header, a green banner displays a success message: "Password Decryption Successful. The password for instance i-0c65f9ab13d26235d was successfully decrypted." The main content area shows the "Get Windows password" page for the EC2 instance i-0c65f9ab13d26235d. The page includes a "Password change recommended" warning and provides the following information for connecting to the instance via Remote Desktop:

- Private IP address: 172.31.45.211
- User name: Administrator
- Password: [Redacted]

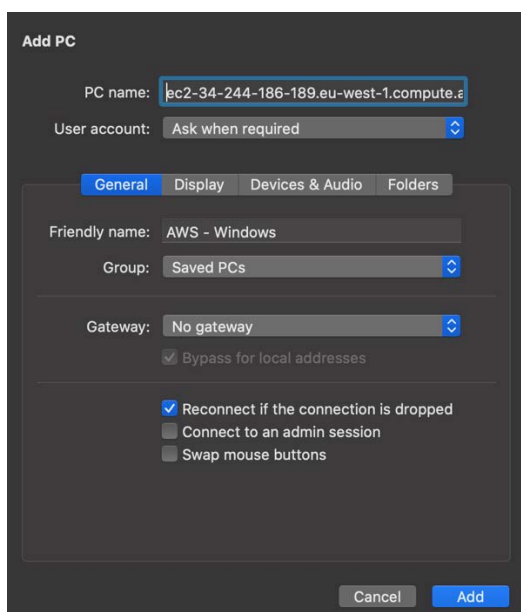
A "Close" button is located at the bottom right of the page.

Resultado

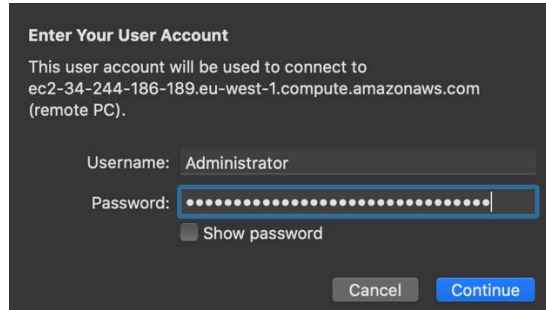
Una vez que has arrancado tu máquina virtual Windows, debes acceder utilizando un cliente RDP (Remote Desktop Client) desde tu PC:

- **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.



Enter Your User Account

This user account will be used to connect to
ec2-34-244-186-189.eu-west-1.compute.amazonaws.com
(remote PC).

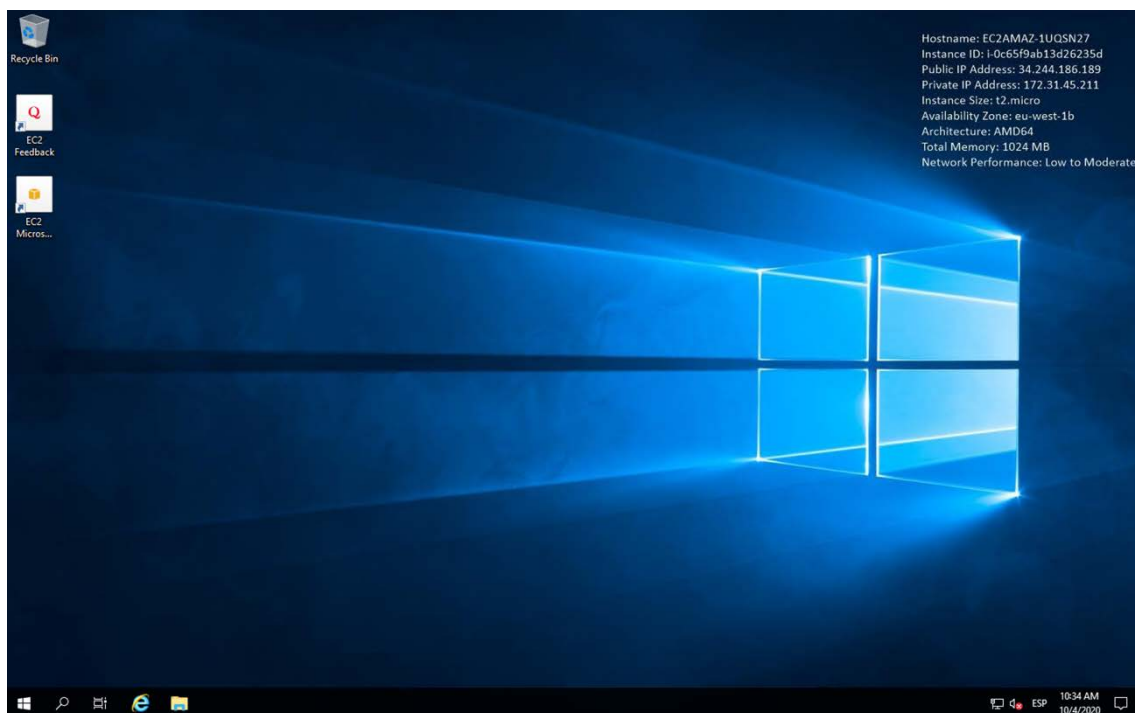
Username: Administrator

Password: [Masked]

☐ Show password

Cancel Continue

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



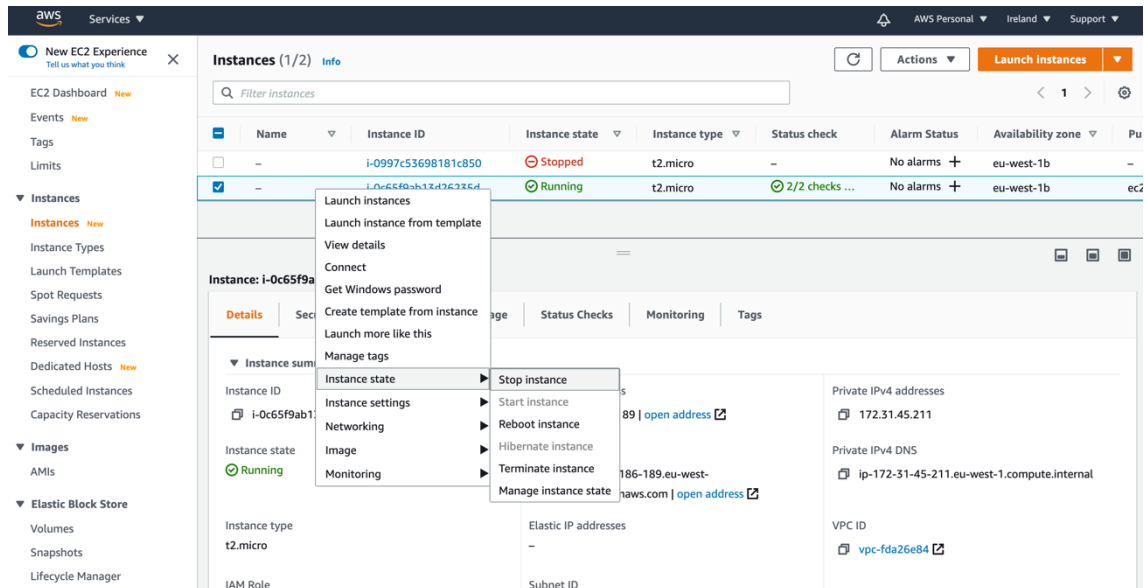
IMPORTANTE

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



The screenshot shows the AWS Management Console interface for EC2 Instances. The left sidebar contains navigation links for various services. The main content area displays a table of instances. One instance, 'i-0c65f9ab1', is selected, and a context menu is open over it. The menu includes options such as 'Launch instances', 'View details', 'Connect', 'Get Windows password', 'Create template from instance', 'Launch more like this', 'Manage tags', 'Instance state', 'Instance settings', 'Networking', 'Image', 'Monitoring', 'Stop instance', 'Start instance', 'Reboot instance', 'Hibernate instance', 'Terminate instance', and 'Manage instance state'. The instance details panel on the right shows information for the selected instance, including its ID, state (Running), type (t2.micro), and various network and IAM settings.