

Logística Inteligente S.A.

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## Procedimiento de Creación de Ambiente

Los siguientes servicios fueron configurados en AWS Academy.

Se adjunta pantallazos como prueba de su implementación.

### Creación de instancia EC2 – ETL

#### 1. Identificar recursos

En este caso no hay instancias corriendo y por el tipo de servicio que queremos correr de acuerdo al flujo definido se creara una instancia básica t2.micro.

**Resources**

EC2 Global View

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

Instances (running)	0	Auto Scaling Groups	0	Capacity Reservations	0
Dedicated Hosts	0	Elastic IPs	1	Instances	2
Key pairs	0	Load balancers	0	Placement groups	0
Security groups	4	Snapshots	0	Volumes	0

**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

**Click en Launch Instance**

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Name  
ETL-Server [Add additional tags](#)

▼ **Application and OS Images (Amazon Machine Image)** [Info](#)

Including AMIs from AWS, Marketplace and the Community

An AMI is a template that contains the software configuration (operating system, application server, and applications) required to launch your instance. Search or Browse for AMIs if you don't see what you are looking for below

Q Search our full catalog including 1000s of application and OS images

Recents Quick Start

Amazon Linux macOS Ubuntu Windows Red Hat SUSE L

aws Mac ubuntu Microsoft Red Hat SUSE

Browse more AMIs  
Including AMIs from AWS, Marketplace and the Community

Amazon Machine Image (AMI)

Ubuntu Server 24.04 LTS (HVM), SSD Volume Type Free tier eligible

ami-0866a3c8686eaebea (64-bit (x86)) / ami-0325498274077fac5 (64-bit (Arm))  
Virtualization: hvm ENA enabled: true Root device type: ebs

Description  
Ubuntu Server 24.04 LTS (HVM), EBS General Purpose (SSD) Volume Type. Support available from Canonical  
(<http://www.ubuntu.com/cloud/services>).

Architecture 64-bit (x86)

AMI ID ami-0866a3c8686eaebea

Username ubuntu Verified provider

Para la arquitectura del servicio defino el nombre de la instancia es **ETL-server (Ubuntu 24.04 free tier)**

▼ **Key pair (login)** [Info](#)

You can use a key pair to securely connect to your instance. Ensure that you have access to the selected key pair before you launch the instance.

Key pair name - required

Select [Create new key pair](#)

Por seguridad, creamos las llaves de conexión (create new key pair - pem). Nota: Luego para usar a través de putty se convierten a tipo ppk usando puttyGen.

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Create key pair

×

Key pair name

Key pairs allow you to connect to your instance securely.

Enter key pair name

The name can include up to 255 ASCII characters. It can't include leading or trailing spaces.

Key pair type

☒ RSA  
RSA encrypted private and public key pair

☐ ED25519  
ED25519 encrypted private and public key pair

Private key file format

☒ .pem  
For use with OpenSSH

☐ .ppk  
For use with PuTTY

⚠ When prompted, store the private key in a secure and accessible location on your computer. You will need it later to connect to your instance. [Learn more](#)

Cancel

Create key pair

Luego garantizamos el acceso al equipo desde internet

▼ Network settings

Info

Edit

Network

Info

vpc-0e34af1a22144f8ad

Subnet

Info

No preference (Default subnet in any availability zone)

Auto-assign public IP

Info

Enable

Additional charges apply when outside of free tier allowance

Firewall (security groups)

Info

A security group is a set of firewall rules that control the traffic for your instance. Add rules to allow specific traffic to reach your instance.

☒ Create security group

☐ Select existing security group

We'll create a new security group called 'launch-wizard-3' with the following rules:

☒ Allow SSH traffic from  
Helps you connect to your instance

Anywhere  
0.0.0.0/0

☒ Allow HTTPS traffic from the internet  
To set up an endpoint, for example when creating a web server

☒ Allow HTTP traffic from the internet  
To set up an endpoint, for example when creating a web server

⚠ 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.

×

▼ Configure storage

Info

Advanced

1x  GiB  Root volume (Not encrypted)

La capacidad de la maquina será de 20GB

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## ▼ Summary

Number of instances [Info](#)

1

Software Image (AMI)

Canonical, Ubuntu, 24.04, amd64...[read more](#)  
ami-0866a3c8686eaeaba

Virtual server type (instance type)

t2.micro

Firewall (security group)

New security group


Storage (volumes)

1 volume(s) - 20 GiB

**Free tier:** In your first year includes 750 hours of t2.micro (or t3.micro in the Regions in which t2.micro is unavailable) instance usage on free tier AMIs per month, 750 hours of public IPv4 address usage per month, 30 GiB of EBS storage, 2 million IOs, 1 GB of snapshots, and 100 GB of bandwidth to the internet.

Cancel

Launch instance

 Preview code

Finalmente click en Launch instance.

✓ Success

Successfully initiated launch of instance [\(i-08dd695a2bd1e6a34\)](#)

Para garantizar el acceso a la instancia EC2 se asignara una IP fija creada previamente:

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Instances (1) Info

Last updated less than a minute ago

Find Instance by attribute or tag (case-sensitive)

Instance state = running X Clear filters

	Name	Instance ID	Instance state
<input type="checkbox"/>	ETL-Server	i-08dd695a2bd1e6a34	Running

La IP creada mediante el servicio Elastic Ip Address es la siguiente:

Allocated IPv4 address	Type	Allocation ID
34.239.4.107	Public IP	eipalloc-009bd899dd701ffa6

Esta se asigna al servidor ETL-server creado.

34.239.4.107

Actions Associate Elastic IP address

Elastic IP address: 34.239.4.107

Resource type

Choose the type of resource with which to associate the Elastic IP address.

Instance

Network interface

If you associate an Elastic IP address with an instance that already has an Elastic IP address associated, the previously associated Elastic IP address will be disassociated, but the address will still be allocated to your account. [Learn more](#)

If no private IP address is specified, the Elastic IP address will be associated with the primary private IP address.

Instance

i-08dd695a2bd1e6a34

i-08dd695a2bd1e6a34 (ETL-Server) - running

Summary

<div>Allocated IPv4 address</div> <div>34.239.4.107</div>	<div>Type</div> <div>Public IP</div>	<div>Allocation ID</div> <div>eipalloc-009bd899dd701ffa6</div>	<div>Reverse DNS record</div> <div>-</div>
<div>Association ID</div> <div>eipassoc-0ddd37c419879f858</div>	<div>Scope</div> <div>VPC</div>	<div>Associated instance ID</div> <div>i-08dd695a2bd1e6a34</div>	<div>Private IP address</div> <div>172.31.43.128</div>
<div>Network interface ID</div> <div>eni-089b3ce69f84543f3</div>	<div>Network interface owner account ID</div> <div>175407202680</div>	<div>Public DNS</div> <div>ec2-34-239-4-107.compute-1.amazonaws.com</div>	<div>NAT Gateway ID</div> <div>-</div>
<div>Address pool</div> <div>Amazon</div>	<div>Network border group</div> <div>us-east-1</div>		

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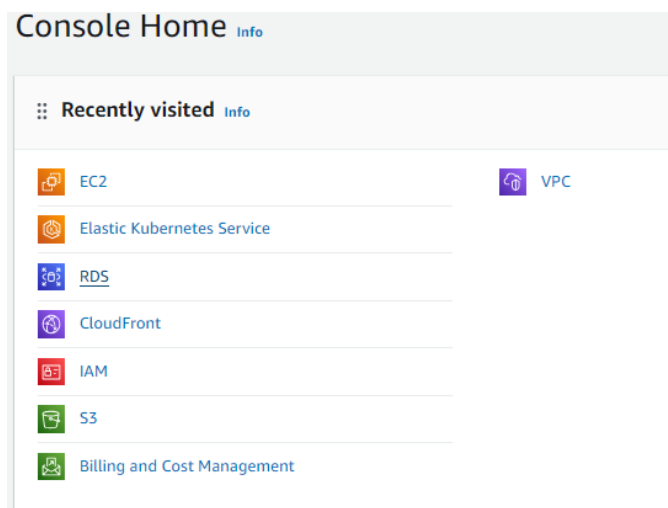
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```
ubuntu@ip-172-31-43-128: ~  
ubuntu@ip-172-31-43-128:~$  
ubuntu@ip-172-31-43-128:~$  
ubuntu@ip-172-31-43-128:~$  
ubuntu@ip-172-31-43-128:~$
```

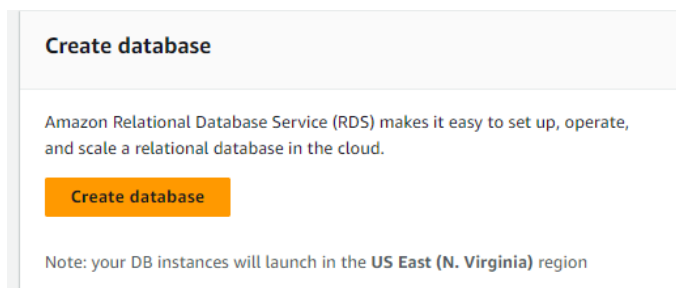
La instancia esta conectada a través de Putty con el usuario ubuntu utilizando las credenciales de seguridad.

## Creación de instancia RDS

Sobre la consola de servicios de AWS se busca el servicio RDS



Se crea la base de datos









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**Engine options**

Engine type [Info](#)

<input type="radio"/> Aurora (MySQL Compatible) 	<input type="radio"/> Aurora (PostgreSQL Compatible) 
<input type="radio"/> MySQL 	<input type="radio"/> MariaDB 
<input checked="" type="radio"/> PostgreSQL 	<input type="radio"/> Oracle 

Se escoge para esta arquitectura PostgreSQL

Engine version

PostgreSQL 16.3-R2 ▼

☐ **Enable RDS Extended Support** [Info](#)  
Amazon RDS Extended Support is a [paid offering](#). By selecting this option, you consent to being charged for this offering if you are running your database major version past the RDS end of standard support date for that version. Check the end of standard support date for your major version in the [RDS for PostgreSQL documentation](#).

**Templates**  
Choose a sample template to meet your use case.

<input type="radio"/> <b>Production</b> Use defaults for high availability and fast, consistent performance.	<input type="radio"/> <b>Dev/Test</b> This instance is intended for development use outside of a production environment.	<input checked="" type="radio"/> <b>Free tier</b> Use RDS Free Tier to develop new applications, test existing applications, or gain hands-on experience with Amazon RDS. <a href="#">Info</a>
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Se escoge la BD básica y free tier

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### Settings

#### DB instance identifier [Info](#)

Type a name for your DB instance. The name must be unique across all DB instances owned by your AWS account in the current AWS Region.

The DB instance identifier is case-insensitive, but is stored as all lowercase (as in "mydbinstance"). Constraints: 1 to 60 alphanumeric characters or hyphens. First character must be a letter. Can't contain two consecutive hyphens. Can't end with a hyphen.

#### ▼ Credentials Settings

##### Master username [Info](#)

Type a login ID for the master user of your DB instance.

1 to 16 alphanumeric characters. The first character must be a letter.

##### Credentials management

You can use AWS Secrets Manager or manage your master user credentials.

☐ **Managed in AWS Secrets Manager - most secure**  
RDS generates a password for you and manages it throughout its lifecycle using AWS Secrets Manager.

☒ **Self managed**  
Create your own password or have RDS create a password that you manage.

☐ **Auto generate password**

Amazon RDS can generate a password for you, or you can specify your own password.

##### Master password [Info](#)

##### Password strength [Neutral](#)

Minimum constraints: At least 8 printable ASCII characters. Can't contain any of the following symbols: / ' \* @

##### Confirm master password [Info](#)

Se configura el nombre de la instancia, en este caso database-cloud, el usuario para conexión postgres y con un password y su respectiva confirmación.

### Instance configuration

The DB instance configuration options below are limited to those supported by the engine that you selected above.

#### DB instance class [Info](#)

##### ▼ Hide filters

☒ **Include previous generation classes**

☐ Standard classes (includes m classes)

☐ Memory optimized classes (includes r and x classes)

☒ **Burstable classes (includes t classes)**

db.t3.micro

2 vCPUs 1 GiB RAM Network: Up to 2,085 Mbps

Para el procesamiento requerido se puede configurar una db.t3.micro

### Storage

#### Storage type [Info](#)

Provisioned IOPS SSD (io2) storage volumes are now available.

General Purpose SSD (gp3)


Performance scales independently from storage

#### Allocated storage [Info](#)

20

GiB

Minimum: 20 GiB. Maximum: 6,144 GiB

 After you modify the storage for a DB instance, the status of the DB instance will be in storage-optimization. Your instance will remain available as the storage-optimization operation completes. [Learn more](#)

#### ► Advanced settings

Baseline IOPS of 3,000 IOPS and storage throughput of 125 MiBps are included for allocated storage less than 400 GiB.

#### ► Storage autoscaling



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Almacenamiento de 20 GB storage

## ▼ Storage autoscaling


### Storage autoscaling [Info](#)

Provides dynamic scaling support for your database's storage based on your application's needs.

☐ **Enable storage autoscaling**

Enabling this feature will allow the storage to increase after the specified threshold is exceeded.

Se deshabilita la opción de autoscaling para evitar costos adicionales no requeridos.

**Connectivity** [Info](#) 

**Compute resource**  
Choose whether to set up a connection to a compute resource for this database. Setting up a connection will automatically change connectivity settings so that the compute resource can connect to this database.


☒ **Don't connect to an EC2 compute resource**  
Don't set up a connection to a compute resource for this database. You can manually set up a connection to a compute resource later.

☐ **Connect to an EC2 compute resource**  
Set up a connection to an EC2 compute resource for this database.

**Virtual private cloud (VPC)** [Info](#)  
Choose the VPC. The VPC defines the virtual networking environment for this DB instance.

Default VPC (vpc-0e34af1a22144f8ad) ▼  
6 Subnets, 6 Availability Zones

Only VPCs with a corresponding DB subnet group are listed.

 After a database is created, you can't change its VPC.

**DB subnet group** [Info](#)  
Choose the DB subnet group. The DB subnet group defines which subnets and IP ranges the DB instance can use in the VPC that you selected.

default ▼  
6 Subnets, 6 Availability Zones

**Public access** [Info](#)

☒ **Yes**  
RDS assigns a public IP address to the database. Amazon EC2 instances and other resources outside of the VPC can connect to your database. Resources inside the VPC can also connect to the database. Choose one or more VPC security groups that specify which resources can connect to the database.

☐ **No**  
RDS doesn't assign a public IP address to the database. Only Amazon EC2 instances and other resources inside the VPC can connect to your database. Choose one or more VPC security groups that specify which resources can connect to the database.

**VPC security group (firewall)** [Info](#)  
Choose one or more VPC security groups to allow access to your database. Make sure that the security group rules allow the appropriate incoming traffic.


☒ **Choose existing**  
Choose existing VPC security groups

☐ **Create new**  
Create new VPC security group

Por defecto no se conectara a una instancia EC2, se deja acceso publico habilitado para garantizar la conexión.

**Monitoring**

☐ **Turn on Performance Insights**

 **Additional configuration**  
Enhanced Monitoring

Se deja deshabilitado el monitoreo

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### Estimated monthly costs

The Amazon RDS Free Tier is available to you for 12 months. Each calendar month, the free tier will allow you to use the Amazon RDS resources listed below for free:

- 750 hrs of Amazon RDS in a Single-AZ db.t2.micro, db.t3.micro or db.t4g.micro Instance.
- 20 GB of General Purpose Storage (SSD).
- 20 GB for automated backup storage and any user-initiated DB Snapshots.

[Learn more about AWS Free Tier.](#)

When your free usage expires or if your application use exceeds the free usage tiers, you simply pay standard, pay-as-you-go service rates as described in the [Amazon RDS Pricing page](#).

You are responsible for ensuring that you have all of the necessary rights for any third-party products or services that you use with AWS services.

Cancel Create database

Se crea la base de datos (click Create database)

<a href="#">database-cloud</a>	Creating	Instance	PostgreSQL	us-east-1c	db.t3.micro
--------------------------------	----------	----------	------------	------------	-------------

**Creating database database-cloud**  
Your database might take a few minutes to launch. You can use settings from database-cloud to simplify configuration of [suggested database add-ons](#) while we finish creating your DB for you.

## Connectivity & security

### Endpoint & port

Endpoint

database-cloud.cenfi8vp6ne5.us-east-1.rds.amazonaws.com

Port

5432

La base de datos queda creada y habilitada la dirección es **database-cloud.cenfi8vp6ne5.us-east-1.rds.amazonaws.com**

Para garantizar el acceso se realiza un test a través de un cliente de conexión de base de datos como DBeaver.

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Server

Connect by: ☒ Host ☐ URL

URL:

Host:  Port:

Database:  ☒ Show all databases

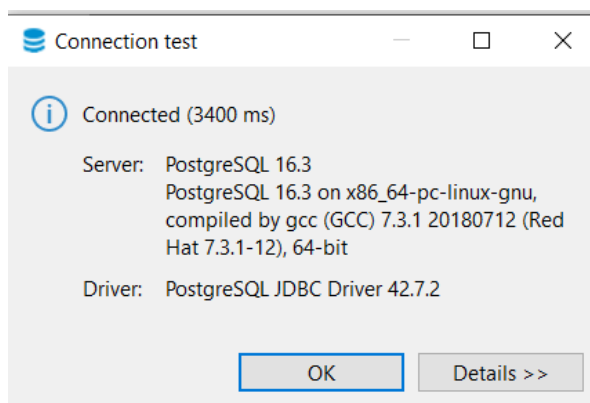
Authentication

Authentication:

Username:

Password:  ☒ Save password

Se colocan las credenciales y el host de la BD que esta en AWS.



El resultado es la conexión correcta de SQL.

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### Creación de ambiente de jupyter hub dentro de instancia EC2 creada anteriormente:

Ingreso a la instancia mediante programa de Putty con usuario **ubuntu**.

```
ubuntu@ip-172-31-43-128: ~  
System information as of Sun Oct 13 21:46:35 UTC 2024  
  
System load:  0.0          Processes:      110  
Usage of /:   9.0% of 18.33GB Users logged in:  0  
Memory usage: 23%         IPv4 address for enX0: 172.31.43.128  
Swap usage:   0%  
  
Expanded Security Maintenance for Applications is not enabled.  
  
0 updates can be applied immediately.  
  
Enable ESM Apps to receive additional future security updates.  
See https://ubuntu.com/esm or run: sudo pro status  
  
The list of available updates is more than a week old.  
To check for new updates run: sudo apt update  
  
Last login: Fri Oct 11 16:53:49 2024 from 191.156.113.116  
To run a command as administrator (user "root"), use "sudo <command>".  
See "man sudo_root" for details.  
  
ubuntu@ip-172-31-43-128:~$
```

Se corren los siguientes comandos:

- `sudo apt update`
- `sudo apt install python3 python3-dev git curl -y`

```
ubuntu@ip-172-31-43-128:~$ sudo apt update  
Hit:1 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble InRelease  
Get:2 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-updates InRelease [1  
6 kB]  
Hit:3 http://us-east-1.ec2.archive.ubuntu.com/ubuntu noble-backports InRelease  
Hit:4 http://security.ubuntu.com/ubuntu noble-security InRelease  
Fetched 126 kB in 0s (335 kB/s)  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
12 packages can be upgraded. Run 'apt list --upgradable' to see them.  
ubuntu@ip-172-31-43-128:~$
```

```
ubuntu@ip-172-31-43-128:~$ sudo apt install python3 python3-dev git curl -y  
Reading package lists... Done  
Building dependency tree... Done  
Reading state information... Done  
python3 is already the newest version (3.12.3-0ubuntu2).
```

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```
Running kernel seems to be up-to-date.

No services need to be restarted.

No containers need to be restarted.

No user sessions are running outdated binaries.

No VM guests are running outdated hypervisor (qemu) binaries on this host.
ubuntu@ip-172-31-43-128:~$
```

Se corre el siguiente comando para la instalación de Jupyter Hub:

- `curl -L https://tljh.jupyter.org/bootstrap.py | sudo -E python3 --admin ubuntu`

```
ubuntu@ip-172-31-43-128:~$ curl -L https://tljh.jupyter.org/bootstrap.py | sudo
-E python3 --admin ubuntu
```

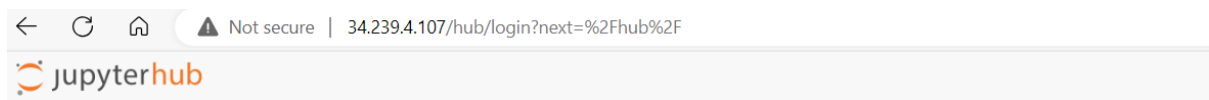
Luego de unos minutos queda habilitado TLJH

```
Installing TLJH installer...
Running TLJH installer...
Setting up admin users
Granting passwordless sudo to JupyterHub admins...
Setting up user environment...
Downloading & setting up user environment...
Downloading conda installer https://github.com/conda-forge/miniforge/releases/download/23.1.0-1/Mambaforge-23.1.0-1-Linux-x86_64.sh
Downloaded conda installer https://github.com/conda-forge/miniforge/releases/download/23.1.0-1/Mambaforge-23.1.0-1-Linux-x86_64.sh in 1.2s
/opt/tljh/user has pip==23.0.1, it will be upgraded to pip>=23.1.2
Setting up JupyterHub...
Downloading traefik 2.10.1 from https://github.com/traefik/traefik/releases/download/v2.10.1/traefik_v2.10.1_linux_amd64.tar.gz...
Created symlink /etc/systemd/system/multi-user.target.wants/jupyterhub.service -> /etc/systemd/system/jupyterhub.service.
Created symlink /etc/systemd/system/multi-user.target.wants/traefik.service -> /etc/systemd/system/traefik.service.
Waiting for JupyterHub to come up (1/20 tries)
Done!
```

Se ingresa al portal mediante la url `http:// 34.239.4.107`

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**Sign in**

Warning: JupyterHub seems to be served over an unsecured HTTP connection. We strongly recommend enabling HTTPS for JupyterHub.

**Username:**

**Password:**

**Sign in**

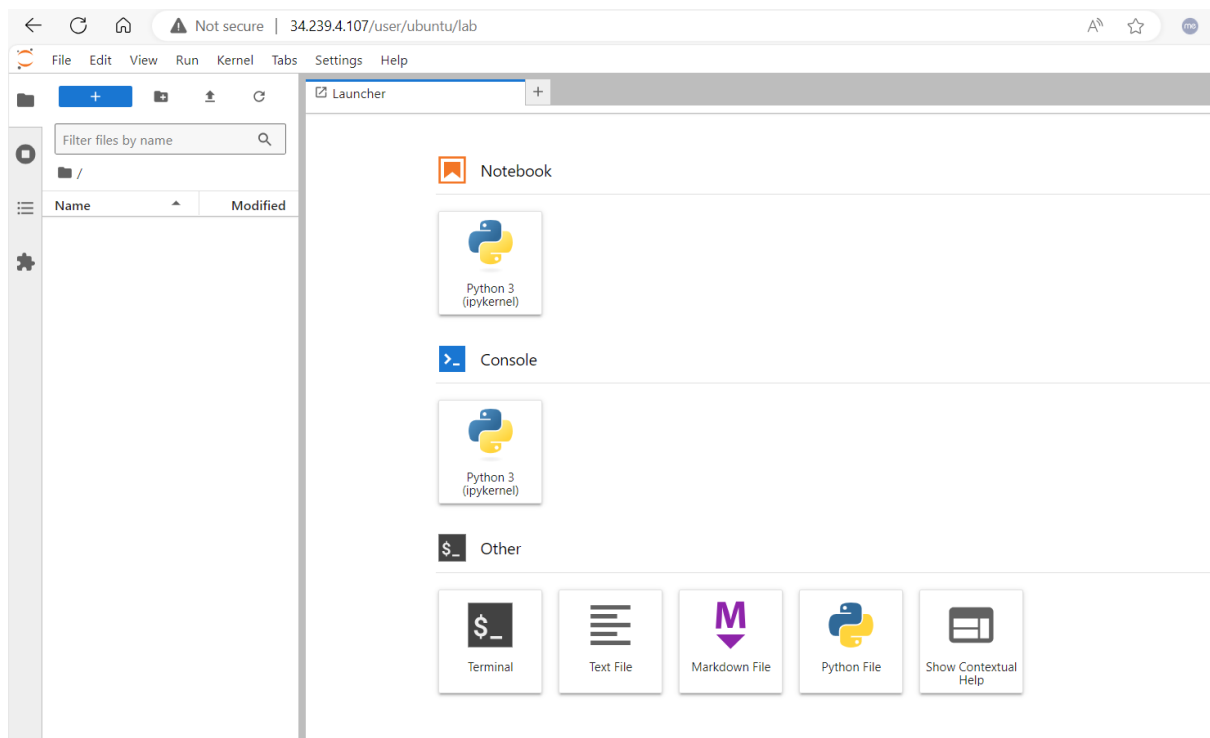
Luego se configura al usuario **ubuntu**

```
ubuntu@ip-172-31-43-128:~$ sudo passwd ubuntu
New password:
Retype new password:
passwd: password updated successfully
ubuntu@ip-172-31-43-128:~$ █
```

Al ingresar el usuario **ubuntu** y password configurado

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Se habilita la consola de jupyter hub y la administración del ambiente correspondiente.