

Steps for installing PostgreSQL 15 on an AWS EC2 instance with Amazon Linux 2023:

Create Your EC2 Instance

Click on launch instance

The screenshot shows the AWS EC2 Instances page. On the left sidebar, the 'Instances' section is selected and highlighted with a red box. In the main content area, there is a table with one row. The row contains the instance ID (i-0322bac5bf2f596e8), name (pg_server), instance state (Terminated), instance type (t2.micro), status check (N/A), alarm status (View alarms), and availability zone (ap-south-1). At the top right of the table, there is a 'Launch instances' button, which is also highlighted with a red box.

Give any name for the instance

The screenshot shows the 'Launch an instance' wizard. The current step is 'Name and tags'. A red box highlights the 'Name' input field, which contains the text 'PG_SER'. To the right of the input field is a link 'Add additional tags'.

Select Amazon Linux

The screenshot shows the 'Select AMI' page. The 'Quick Start' tab is selected. A red box highlights the 'Amazon Linux' option, which is represented by a blue square icon with the AWS logo. Other options shown include macOS, Ubuntu, Windows, Red Hat, and SUSE. To the right, there is a search bar with the placeholder 'Search our full catalog including 1000s of application and OS images', a 'Browse more AMIs' link, and a note about including AMIs from AWS Marketplace and the Community. At the bottom, there is a summary for the 'Amazon Linux 2023 AMI'.

Amazon Linux 2023 AMI ami-04a37924fe27da53 (64-bit (x86), uefi-preferred) / ami-0846b753e2af0da6e (64-bit (Arm), uefi) Virtualization: hvm ENA enabled: true Root device type: ebs	Free tier eligible
--	--------------------

▼ Instance type [Info](#) | [Get advice](#)

Instance type

t2.micro Free tier eligible

Family: t2 1 vCPU 1 GiB Memory Current generation: true
On-Demand Linux base pricing: 0.0124 USD per Hour
On-Demand Windows base pricing: 0.017 USD per Hour
On-Demand RHEL base pricing: 0.0268 USD per Hour
On-Demand Ubuntu Pri base pricing: 0.0142 USD per Hour
On-Demand SUSE base pricing: 0.0124 USD per Hour

▼

All generations

[Compare instance types](#)

Additional costs apply for AMIs with pre-installed software

Create new key pair for remote connectivity.

▼ 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](#)

Create key pair

Key pair name

Key pairs allow you to connect to your instances securely.

ANY_name ANY_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

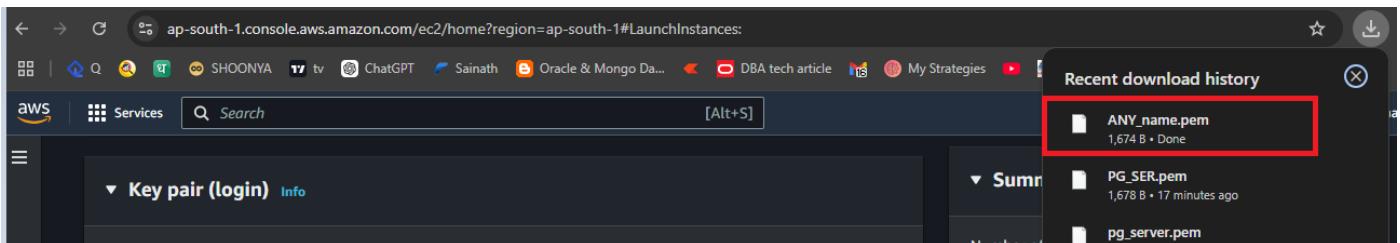
.pem
For use with OpenSSH

.ppk
For use with PuTTY

⚠ When generated, store the private key in a secure and accessible location.

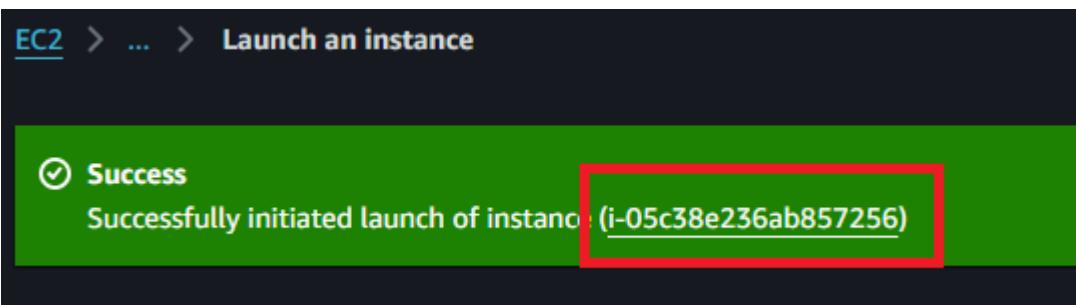
Cancel Create key pair

It will download the key to connect to the server from putty.



Launch the instance creation

A screenshot of the AWS EC2 'Launch an instance' wizard. The 'Configure security group' step is completed. A red box highlights the 'Launch instance' button at the bottom right.



Initializing

A screenshot of the AWS EC2 'Instances' page. The newly launched instance, 'PG_SER' (i-05c38e236ab857256), is shown in the 'Running' state with a status of 'Initializing'. A red box highlights the instance row.

Ready to use

A screenshot of the AWS EC2 'Instances' page. The instance 'PG_SER' is now in the 'Running' state with a status of '2/2 checks passed'. A red box highlights the instance row.

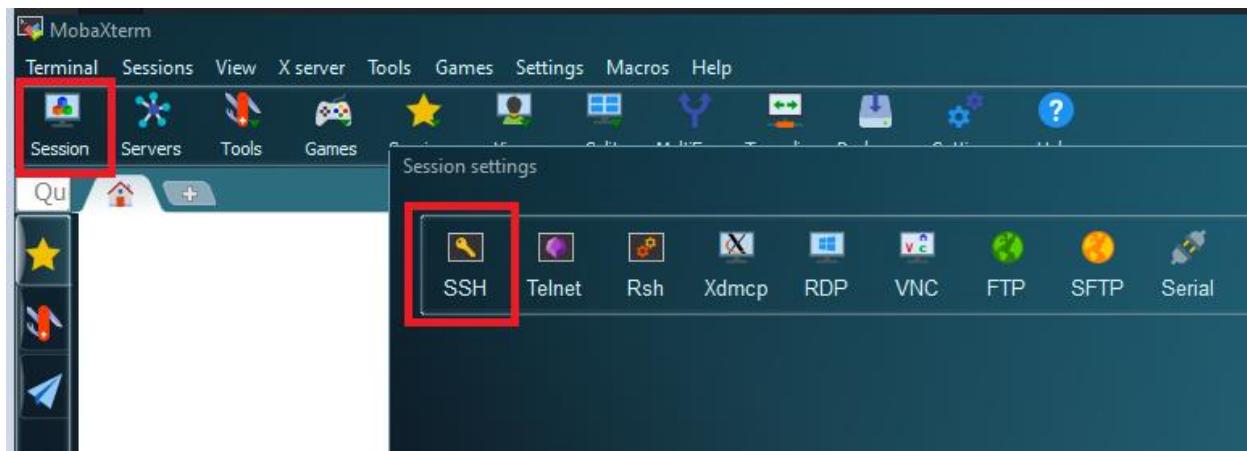
- Use SSH to connect to your EC2 instance. This example uses `ec2-user` as the default user.

Instances (1/1) Info		Last updated 5 minutes ago	C	Connect	Instance state ▾	Actions ▾	Launch instances	▼
<input type="text"/> Find Instance by attribute or tag (case-sensitive)						All states	▼	
Instance ID = i-05c38e236ab857256 X		Clear filters		< 1 > ⚙️				
✓	Name ↴	▼	Instance ID	Instance state	▼	Instance type	▼	Status check
✓	PG_SER		i-05c38e236ab857256	✓ Running	? Q	t2.micro		✓ 2/2 checks passed View alarms + ap-south-1

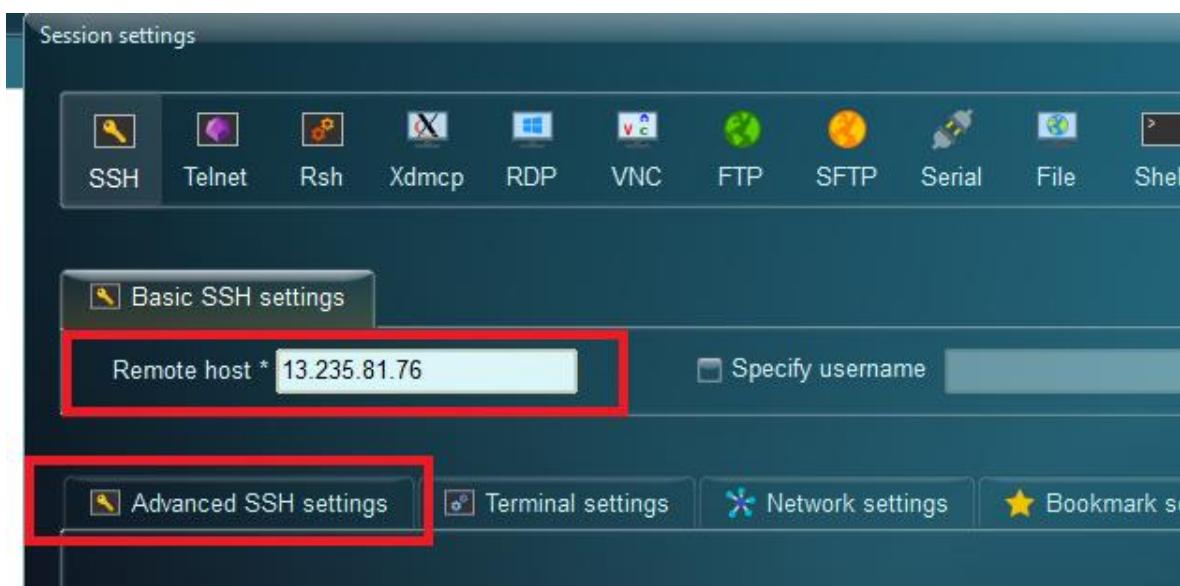
Instance summary for i-05c38e236ab857256 (PG_SER) Info		C	Connect	Instance state ▾	Actions ▾
Updated less than a minute ago					
Instance ID	Instance ID	Public IPv4 address	Private IPv4 addresses		
<input type="checkbox"/> i-05c38e236ab857256		<input type="checkbox"/> 13.235.81.76 open address 🔗	<input type="checkbox"/> 172.31.3.83		
IPv6 address	Instance state	Public IPv4 DNS			
-	✓ Running	<input type="checkbox"/> ec2-13-235-81-76.ap-south-1.compute.amazonaws.com			
		open address 🔗			

MobaXterm to connect:
Use the below link to download MobaXterm

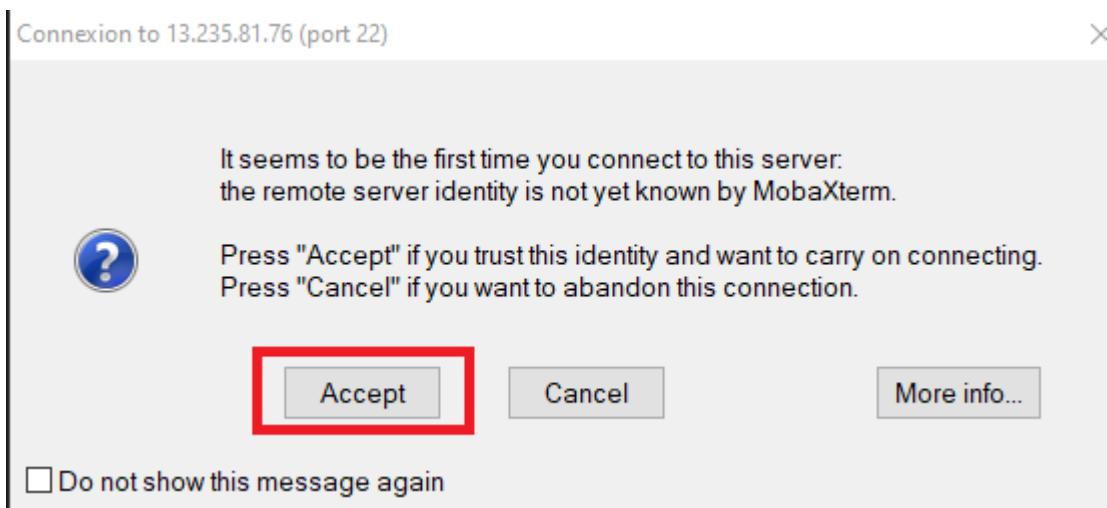
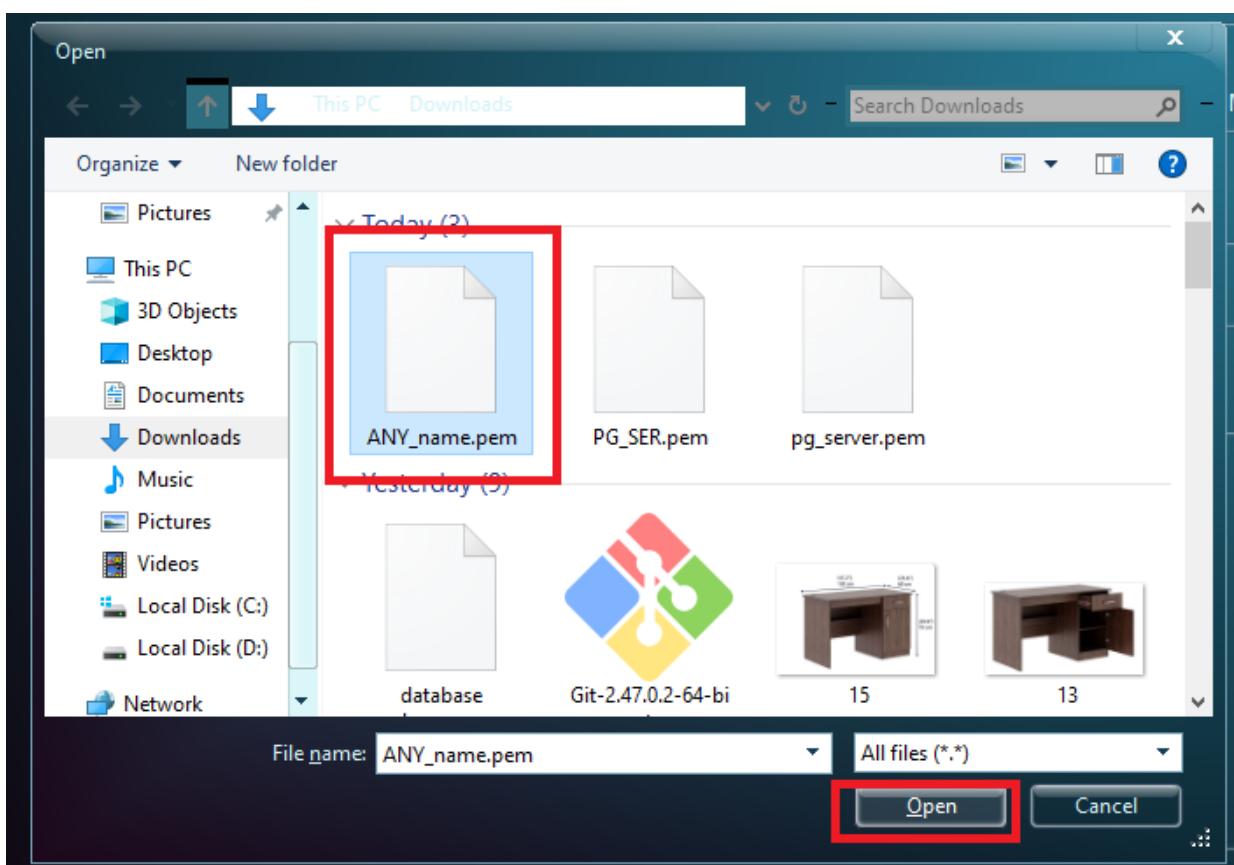
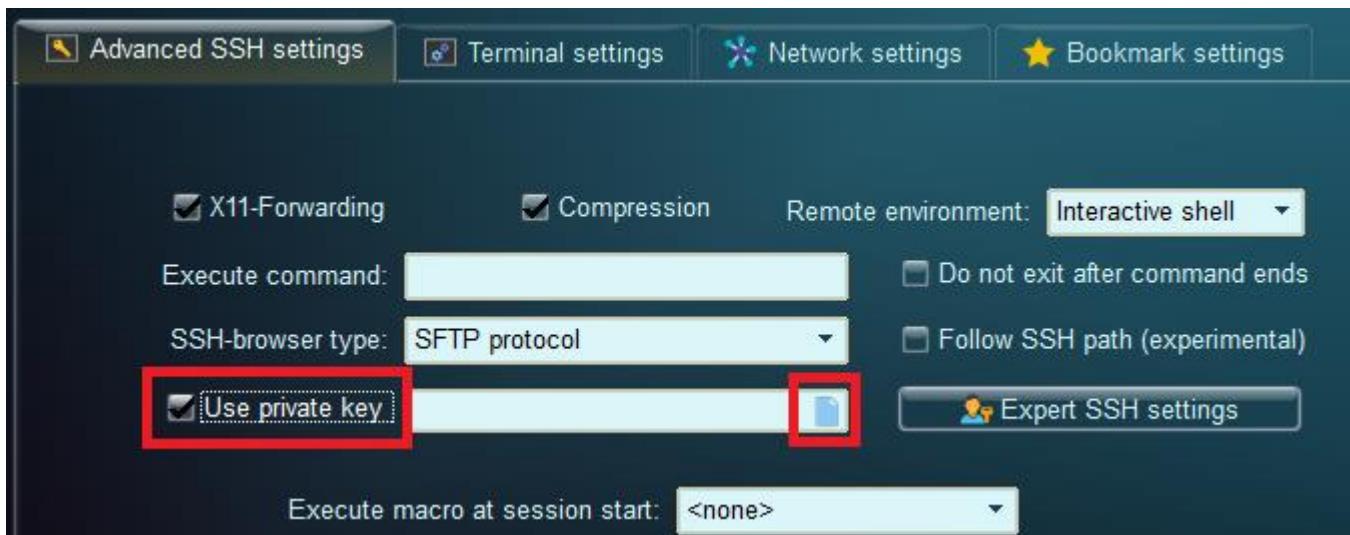
<https://mobaxterm.mobatek.net/download-home-edition.html>



IP Address : Public IPv4 address



Browse the key location and select the key which we have downloaded



Postgresql Installation:

Check for Available Updates

- Run the `dnf update` command to ensure all installed packages are up-to-date. It's also useful to check if there are newer releases of Amazon Linux 2023 available.

sudo dnf update

```
[ec2-user@ip-172-31-1-19 ~]$ sudo dnf update
Last metadata expiration check: 0:04:10 ago on Fri Nov  1 07:02:45 2024.
=====
WARNING:
A newer release of "Amazon Linux" is available.

Available Versions:

Version 2023.6.20241028:
Run the following command to upgrade to 2023.6.20241028:

dnf upgrade --releasever=2023.6.20241028

Release notes:
https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.6.20241028.html

Version 2023.6.20241031:
Run the following command to upgrade to 2023.6.20241031:

dnf upgrade --releasever=2023.6.20241031

Release notes:
https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.6.20241031.html

=====
Dependencies resolved.
Nothing to do.
Complete!
```

Install PostgreSQL 15 and

Server Packages

- Install PostgreSQL 15 along with the required server packages using `dnf`. This command will also pull in necessary dependencies.

```
sudo dnf install -y postgresql15.x86_64 postgresql15-server
```

```
[ec2-user@ip-172-31-1-19 ~]$ sudo dnf install -y postgresql15.x86_64 postgresql15-server
Last metadata expiration check: 0:04:16 ago on Fri Nov  1 07:02:45 2024.
Dependencies resolved.

=====
Package           Architecture      Version       Repository   Size
=====
Installing:
postgresql15      x86_64          15.8-1.amzn2023.0.1    amazonlinux  1.6 M
postgresql15-server x86_64          15.8-1.amzn2023.0.1    amazonlinux  6.3 M
Installing dependencies:
libicu             x86_64          67.1-7.amzn2023.0.3    amazonlinux  9.6 M
postgresql15-private-libs x86_64      15.8-1.amzn2023.0.1    amazonlinux  145 k

Transaction Summary
=====
Install 4 Packages

Total download size: 18 M
Installed size: 65 M
Downloading Packages:
(1/4): postgresql15-private-libs-15.8-1.amzn2023.0.1.x86_64.rpm          1.4 MB/s | 145 kB   00:00
(2/4): postgresql15-15.8-1.amzn2023.0.1.x86_64.rpm                      9.3 MB/s | 1.6 MB   00:00
(3/4): libicu-67.1-7.amzn2023.0.3.x86_64.rpm                         35 MB/s | 9.6 MB   00:00
(4/4): postgresql15-server-15.8-1.amzn2023.0.1.x86_64.rpm                  17 MB/s | 6.3 MB   00:00

Total                                         34 MB/s | 18 MB   00:00

Running transaction check
Transaction check succeeded.
Running transaction test
Transaction test succeeded.
Running transaction
  Preparing :                                                 1/1
  Installing : postgresql15-private-libs-15.8-1.amzn2023.0.1.x86_64          1/4
  Installing : postgresql15-15.8-1.amzn2023.0.1.x86_64                      2/4
  Installing : libicu-67.1-7.amzn2023.0.3.x86_64                         3/4
  Verifying  : postgresql15-server-15.8-1.amzn2023.0.1.x86_64                  4/4

WARNING:
A newer release of "Amazon Linux" is available.

Available Versions:

Version 2023.6.20241028:
Run the following command to upgrade to 2023.6.20241028:
  dnf upgrade --releasever=2023.6.20241028
  Release notes:
  https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.6.20241028.html

Version 2023.6.20241031:
Run the following command to upgrade to 2023.6.20241031:
  dnf upgrade --releasever=2023.6.20241031
  Release notes:
  https://docs.aws.amazon.com/linux/al2023/release-notes/relnotes-2023.6.20241031.html

=====

Installed:
  libicu-67.1-7.amzn2023.0.3.x86_64          postgresql15-15.8-1.amzn2023.0.1.x86_64          postgresql15-private-libs-15.8-1.amzn2023.0.1.x86_64

Complete!
```

Initialize the PostgreSQL Database

- After installation, initialize the database by running the PostgreSQL setup command. This will create the necessary data directory for PostgreSQL.

```
sudo postgresql-setup --initdb
```

```
[ec2-user@ip-172-31-1-19 ~]$ sudo postgresql-setup --initdb
  * Initializing database in '/var/lib/pgsql/data'
  * Initialized, logs are in /var/lib/pgsql/initdb_postgresql.log
```

Start and Enable PostgreSQL Service

- Start the PostgreSQL service and enable it to start automatically on boot.

```
sudo systemctl start postgresql
sudo systemctl enable postgresql
[ec2-user@ip-172-31-1-19 ~]$ sudo systemctl start postgresql
[ec2-user@ip-172-31-1-19 ~]$ sudo systemctl enable postgresql
Created symlink /etc/systemd/system/multi-user.target.wants/postgresql.service → /usr/lib/systemd/system/postgresql.service.
```

- Check the status to confirm it's running:

```
sudo systemctl status postgresql
[ec2-user@ip-172-31-1-19 ~]$ sudo systemctl status postgresql

● postgresql.service - PostgreSQL database server
   Loaded: loaded (/usr/lib/systemd/system/postgresql.service; enabled; preset: disabled)
   Active: active (running) since Fri 2024-11-01 07:07:18 UTC; 14s ago
     Main PID: 23911 (postgres)
        Tasks: 7 (limit: 1112)
      Memory: 17.0M
        CPU: 36ms
       CGroup: /system.slice/postgresql.service
               ├─23911 /usr/bin/postgres -D /var/lib/pgsql/data
               ├─23933 "postgres: logger"
               ├─23954 "postgres: checkpointer"
               ├─23955 "postgres: background writer"
               ├─23961 "postgres: walwriter"
               ├─23962 "postgres: autovacuum launcher"
               └─23963 "postgres: logical replication launcher"

Nov 01 07:07:17 ip-172-31-1-19.ap-south-1.compute.internal systemd[1]: Starting postgresql.service - PostgreSQL database se
Nov 01 07:07:18 ip-172-31-1-19.ap-south-1.compute.internal postgres[23911]: 2024-11-01 07:07:18.033 UTC [23911] LOG: redir
Nov 01 07:07:18 ip-172-31-1-19.ap-south-1.compute.internal postgres[23911]: 2024-11-01 07:07:18.033 UTC [23911] HINT: Futu
Nov 01 07:07:18 ip-172-31-1-19.ap-south-1.compute.internal systemd[1]: Started postgresql.service - PostgreSQL database ser
lines 1-20/20 (END)
```

Switch to the PostgreSQL User

- Switch to the `postgres` system user to configure and manage the PostgreSQL database.

```
su - postgres
sudo passwd postgres
```

```
[ec2-user@ip-172-31-1-19 ~]$ su - postgres
Password:
su: Authentication failure
[ec2-user@ip-172-31-1-19 ~]$ sudo passwd postgres
Changing password for user postgres.
New password:
BAD PASSWORD: The password contains the user name in some form
Retype new password:
passwd: all authentication tokens updated successfully.
[ec2-user@ip-172-31-1-19 ~]$ su - postgres
Password:
Last failed login: Fri Nov  1 07:08:17 UTC 2024 on pts/0
There was 1 failed login attempt since the last successful login.
[postgres@ip-172-31-1-19 ~]$ psql
psql (15.8)
Type "help" for help.

postgres=# \l+
```

Verify Database Installation

- Use the \l+ command in `psql` to list available databases and verify the installation.

```
sql
\l+
postgres=# \l+
                                         List of databases
   Name  | Owner   | Encoding | Collate | Ctype | ICU Locale | Locale Provider | Access privileges | Size | Tablespace |          Description
-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+-----+
 postgres | postgres | UTF8    | C.UTF-8 | C.UTF-8 |           | libc            |                   | 7669 kB | pg_default | default administrative connection database
 template0 | postgres | UTF8    | C.UTF-8 | C.UTF-8 |           | libc            | =c/postgres      +| 7513 kB | pg_default | unmodifiable empty database
 template1 | postgres | UTF8    | C.UTF-8 | C.UTF-8 |           | libc            | =c/postgres      +| 7609 kB | pg_default | default template for new databases
(3 rows)
postgres=#

```