

Geospatial Data Management for Energy Access

Hands-on week 1 – Part B

This exercise is a walk-through on how to install the following software you will be interacting with from lectures 1 - 5

Learning outcomes

By the end of this exercise, you will learn how to:

- 1) Install PostgreSQL
- 2) Install PostGIS
- 3 Install pgAdmin4

Install PostgreSQL & PostGIS (on Windows)

Navigate to the PostgreSQL [download page](#).



Quick Links

- Downloads
- Packages
- Source
- Software Catalogue
- File Browser

Downloads

PostgreSQL Downloads

PostgreSQL is available for download as ready-to-use packages or installers for various platforms, as well as a source code archive if you want to build it yourself.

Packages and Installers

Select your operating system family:



Source code

The source code can be found in the main [file browser](#) or you can access the source control repository directly at git.postgresql.org. Instructions for building from source can be found in the [documentation](#).

Beta/RC Releases and development snapshots (unstable)

There are source code and binary [packages](#) of beta and release candidates, and of the current development code available for testing and evaluation of new features. Note that these builds should be used **for testing purposes only**, and not for production systems.

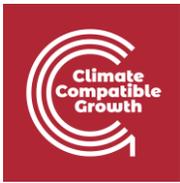
Download PostgreSQL Installer for Windows

First, you need to go to the download page of [PostgreSQL installers on the EnterpriseDB](#).

PostgreSQL Version	Linux x86-64	Linux x86-32	Mac OS X	Windows x86-64	Windows x86-32
15.3	postgresql.org 	postgresql.org 			Not supported
14.8	postgresql.org 	postgresql.org 			Not supported
13.11	postgresql.org 	postgresql.org 			Not supported
12.15	postgresql.org 	postgresql.org 			Not supported
11.20	postgresql.org 	postgresql.org 			Not supported
10.23*					
9.6.24*					
9.5.25*					

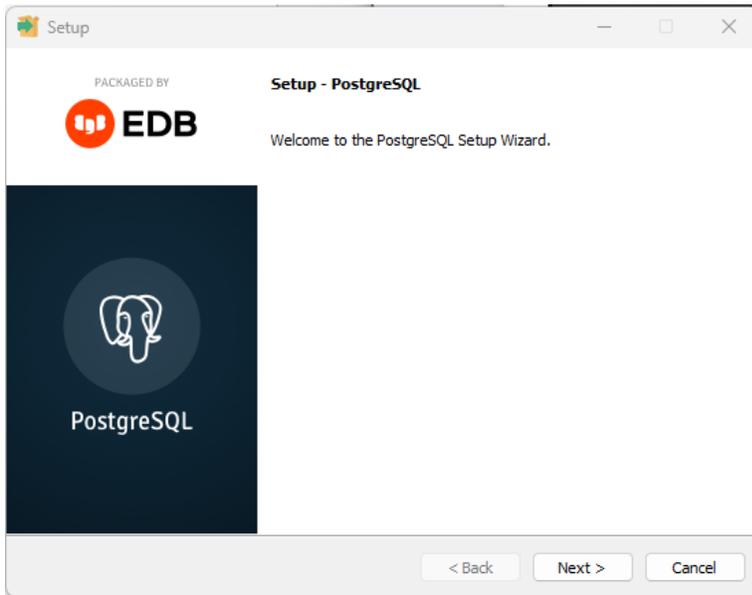
Install PostgreSQL on Windows

To install PostgreSQL on Windows, you need to have administrator privileges.

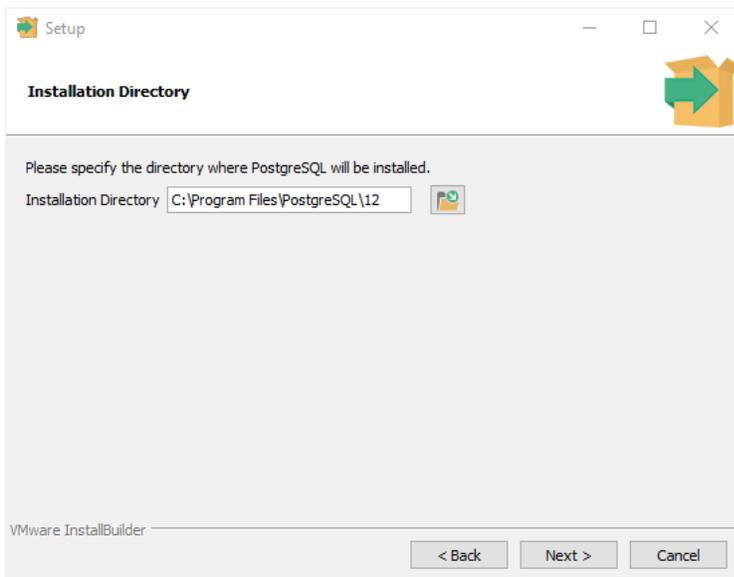


Step 1: Double click on the installer file, an installation wizard will appear and guide you through multiple steps where you can choose different options that you would like to have in PostgreSQL.

Step 2: Click the Next button



Step 3: Specify installation folder, choose your own or keep the default folder suggested by PostgreSQL installer and click the Next button

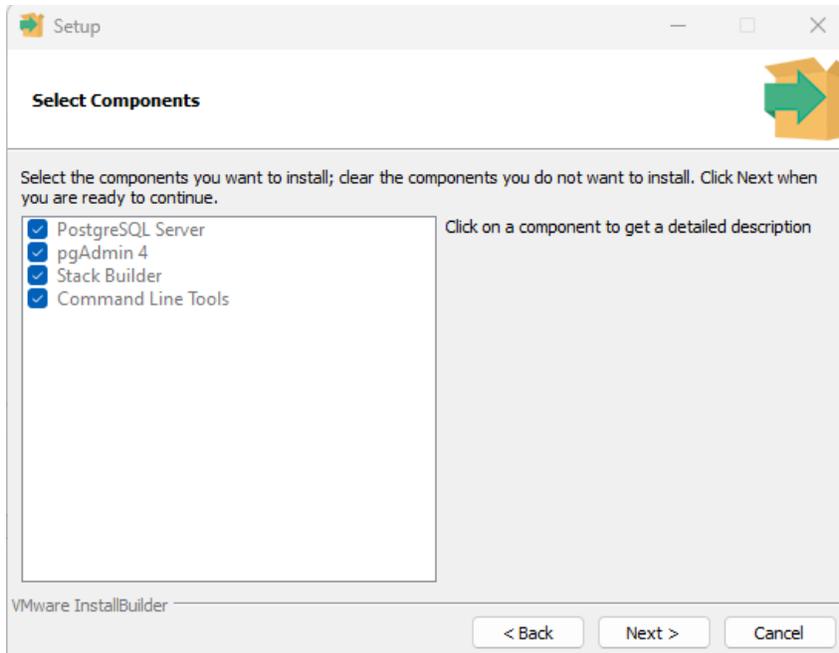


Step 4: Select software components to install:

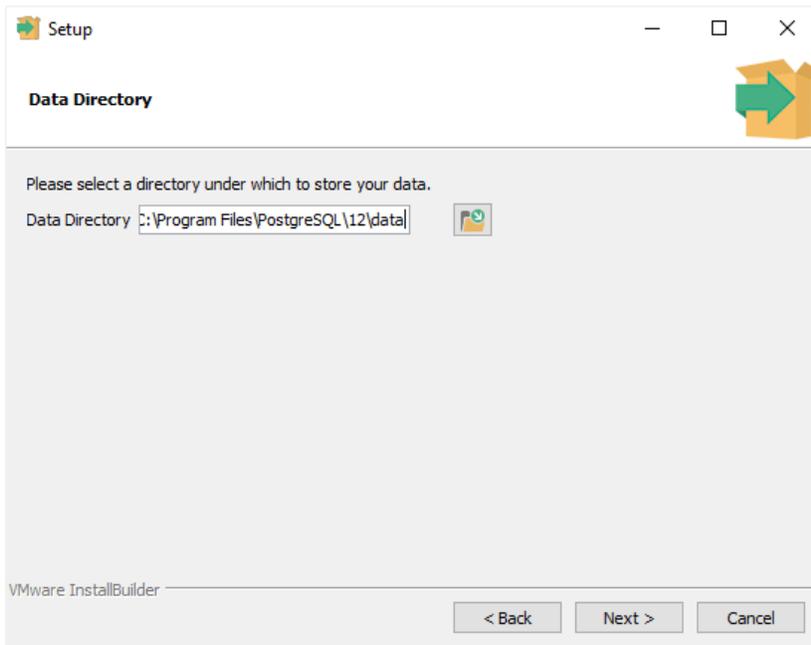
- The PostgreSQL Server to install the PostgreSQL database server



- pgAdmin 4 to install the PostgreSQL database GUI management tool.
- Command Line Tools to install command-line tools such as psql, pg_restore, etc. These tools allow you to interact with the PostgreSQL database server using the command-line interface.
- Stack Builder provides a GUI that allows you to download and install drivers that work with PostgreSQL.



Step 5: Select the database directory to store the data or accept the default folder. Click the Next button to go to the next step:



Step 6: Enter the password for the database superuser (`postgres`)

PostgreSQL runs as a service in the background under a service account named `postgres`. If you already created a service account with the name `postgres`, you need to provide the password of that account in the following window.

After entering the password, you need to retype it to confirm and click the Next button:

A screenshot of a Windows-style window titled "Setup" from VMware InstallBuilder. The window is titled "Password" and contains the following text: "Please provide a password for the database superuser (postgres).". Below this text are two input fields: "Password" and "Retype password", both containing seven asterisks. At the bottom of the window, there are three buttons: "< Back", "Next >", and "Cancel". The VMware InstallBuilder logo is visible in the bottom left corner of the window.

Setup

Password

Please provide a password for the database superuser (postgres).

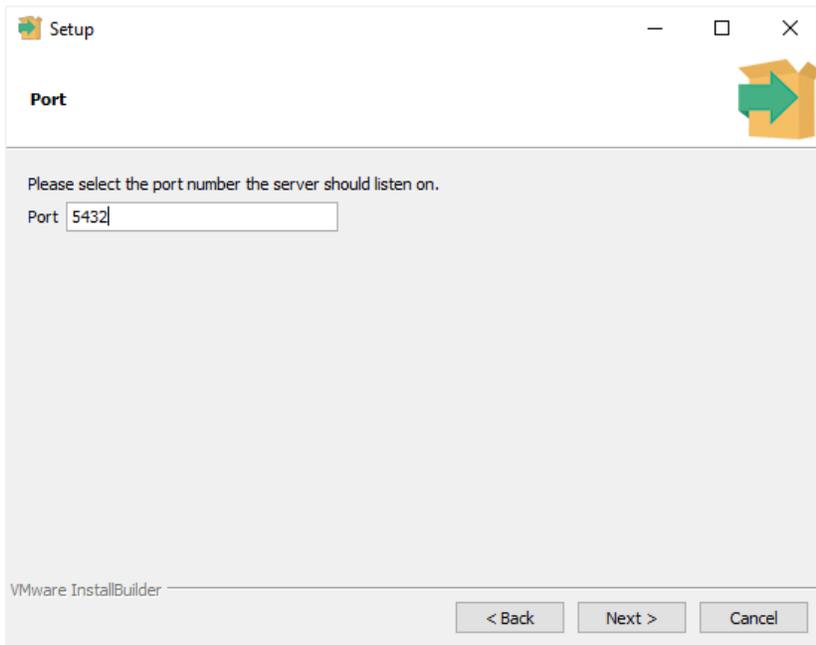
Password

Retype password

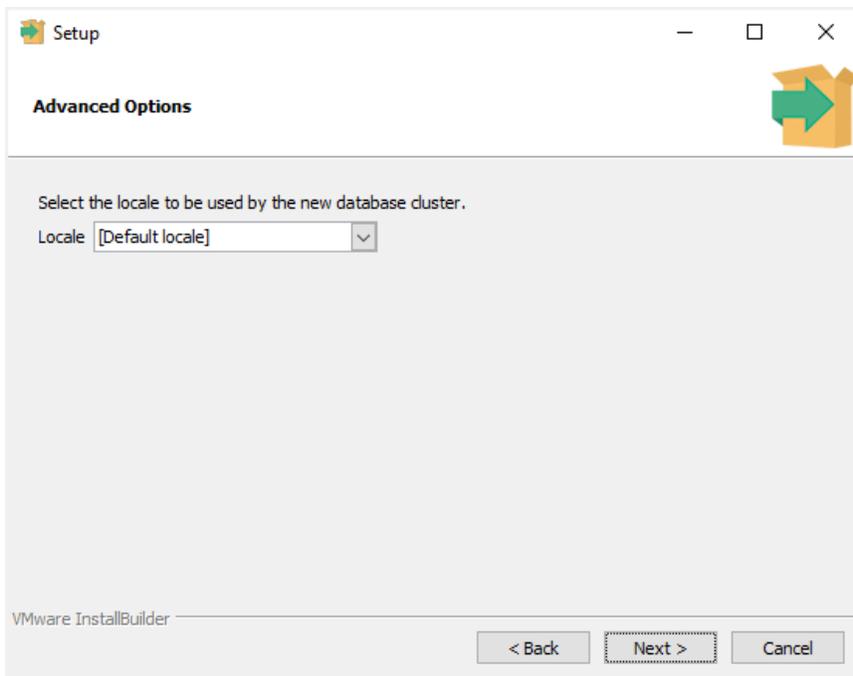
VMware InstallBuilder

< Back Next > Cancel

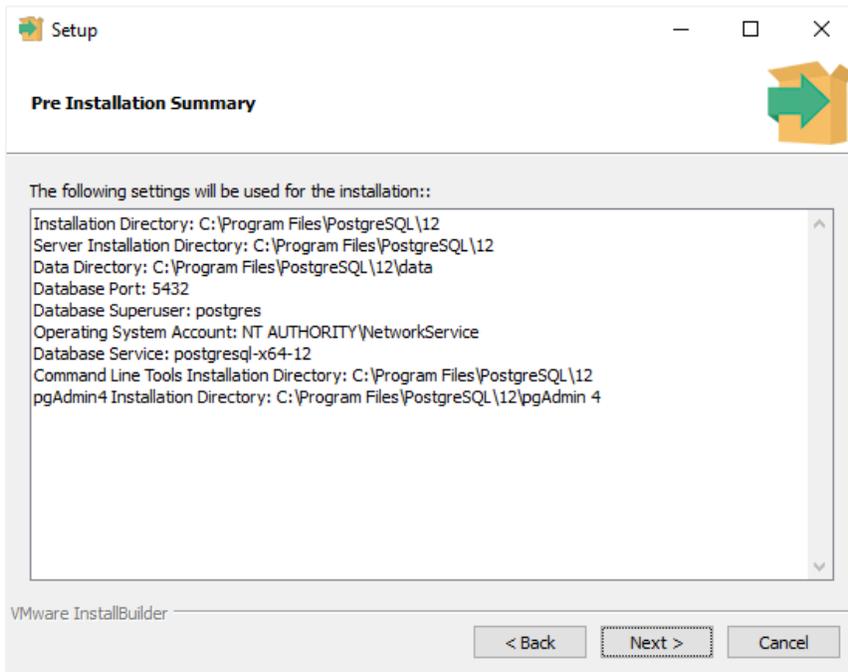
Step 7: Enter a port number on which the PostgreSQL database server will listen. The default port of PostgreSQL is **5432**. You need to make sure that no other applications are using this port.



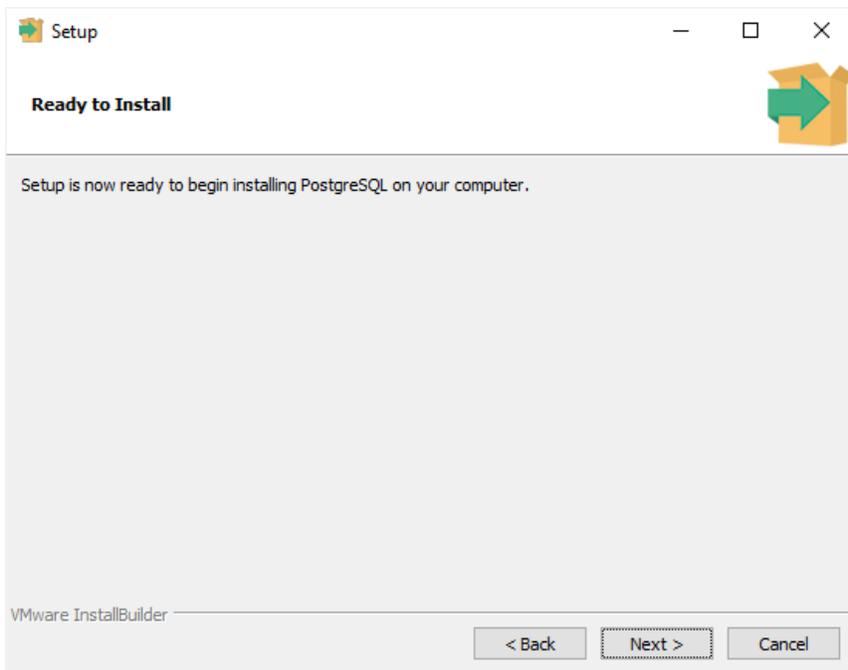
Step 8: Choose the default locale used by the PostgreSQL database. If you leave it as default locale, PostgreSQL will use the operating system locale. After that click the Next button.



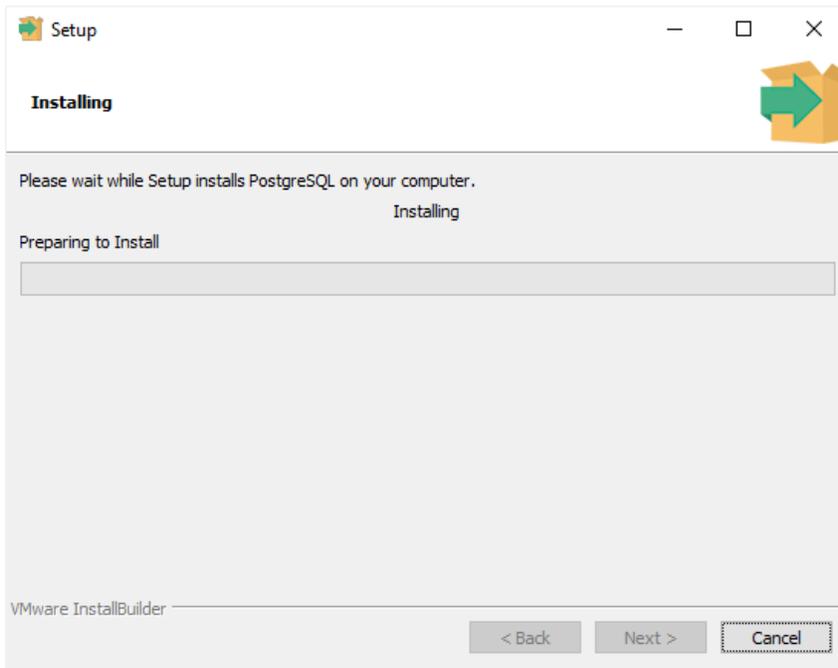
Step 9: The setup wizard will show the summary information of PostgreSQL. You need to review it and click the Next button if everything is correct. Otherwise, you need to click the Back button to change the configuration accordingly.



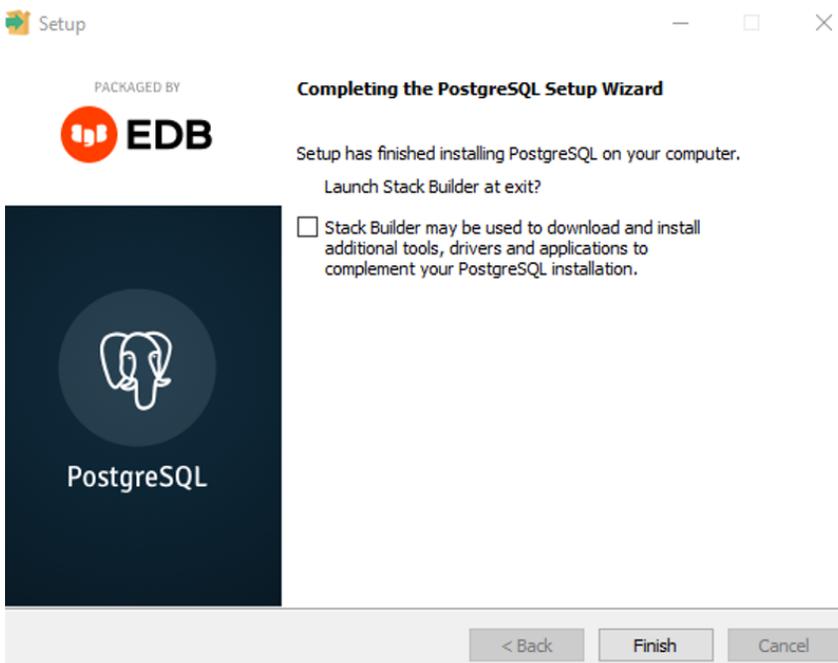
Now, you're ready to install PostgreSQL on your computer. Click the **Next** button to begin installing PostgreSQL.



The installation may take a few minutes to complete.

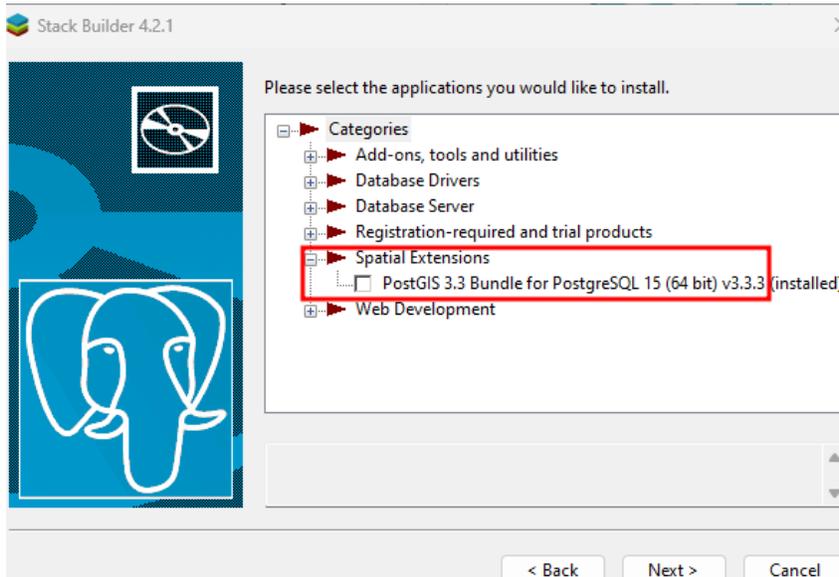


Step 10: Once the PostgreSQL setup wizard is completed, check the Stack Builder box, to launch the Stack Builder.

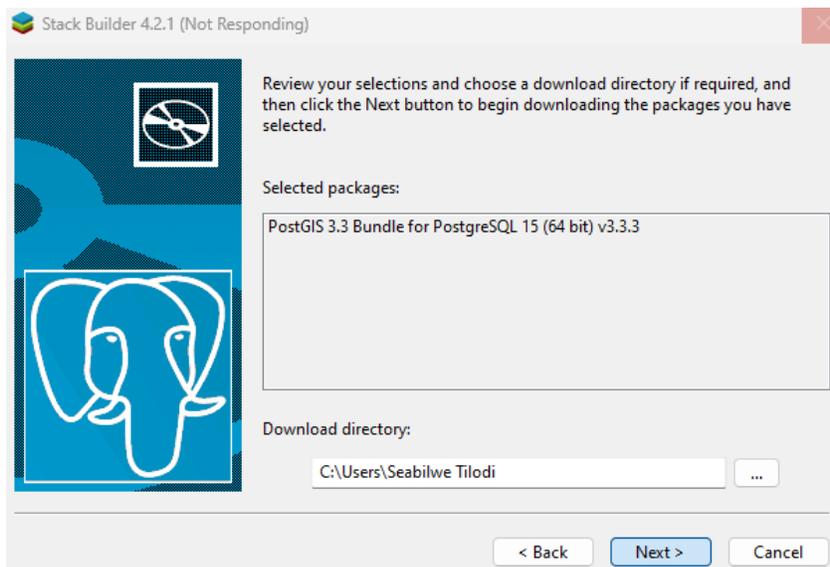




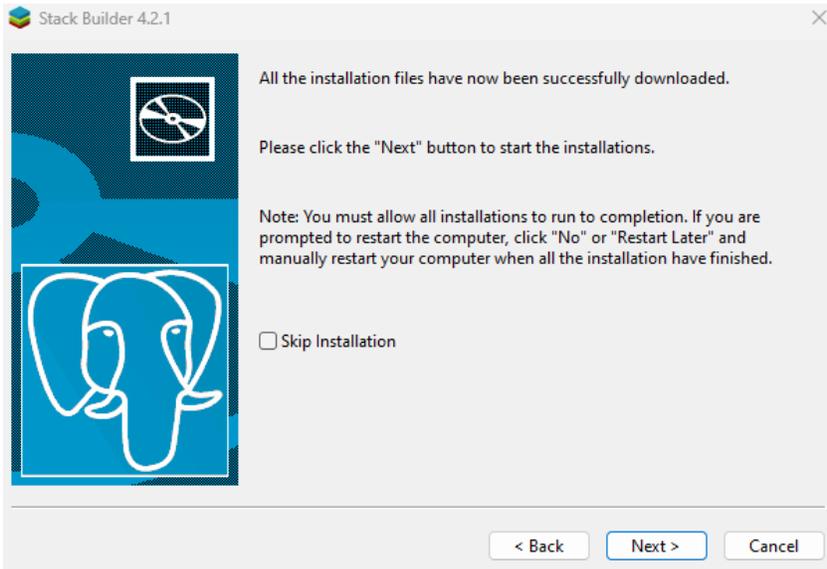
Step 11: Select the additional package you want to install. In this instance we will install PostGIS 3.3 Bundle for PostgreSQL 15 (64bit) v3.3.3. You can find the PostGIS extension in the Spatial Extension category.



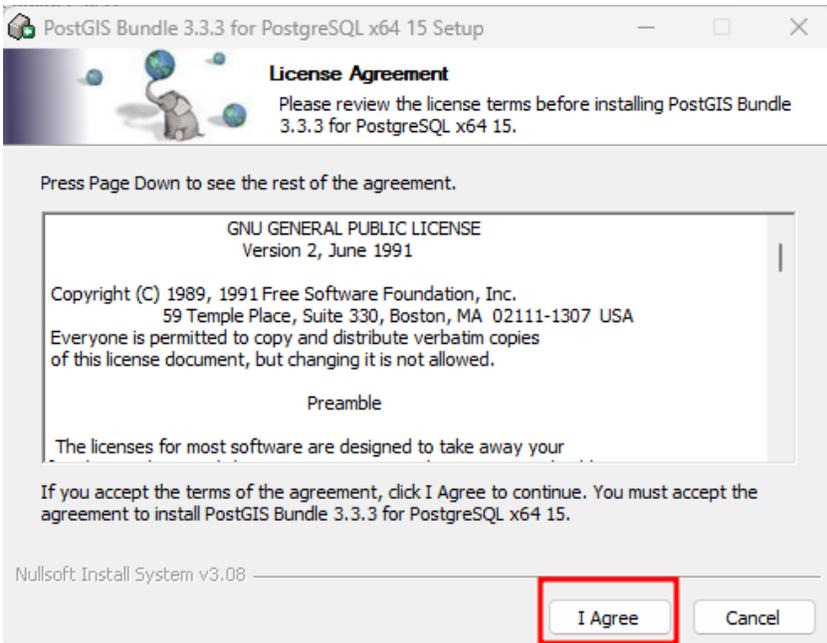
Step 12: Click Next



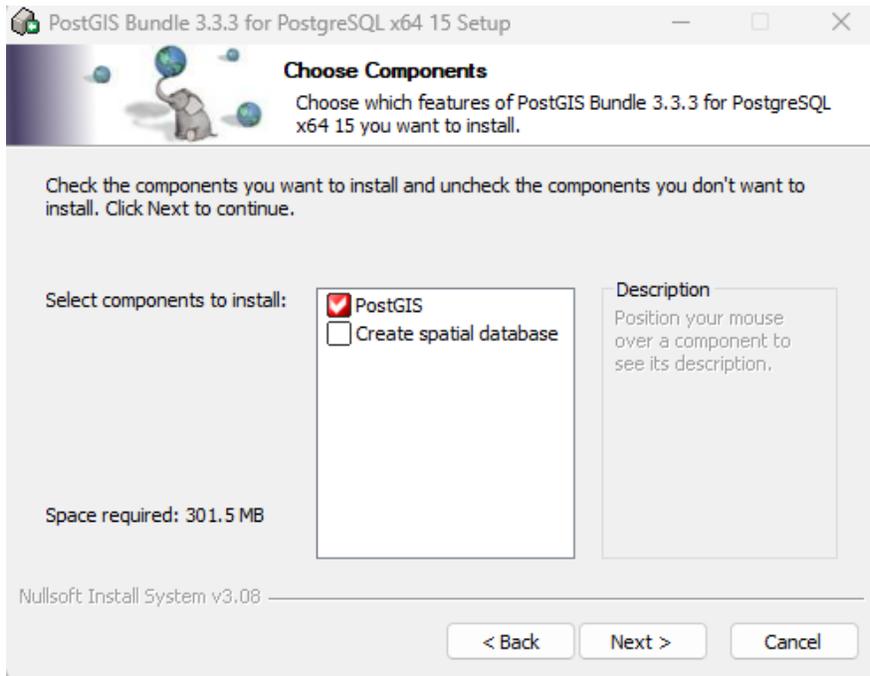
Step 13: Click Next



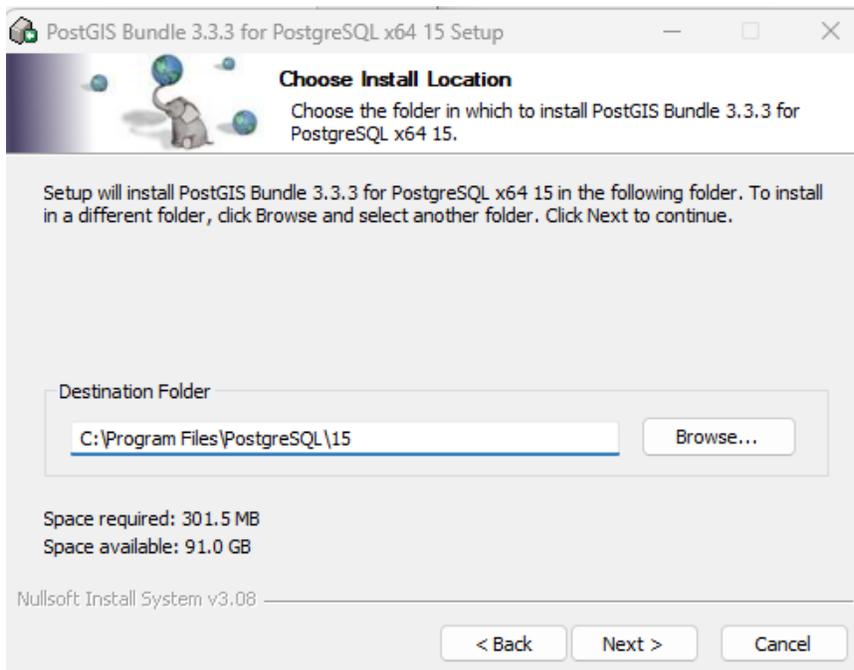
Step 14: The PostGIS dialog will appear, click the 'I Agree' button.



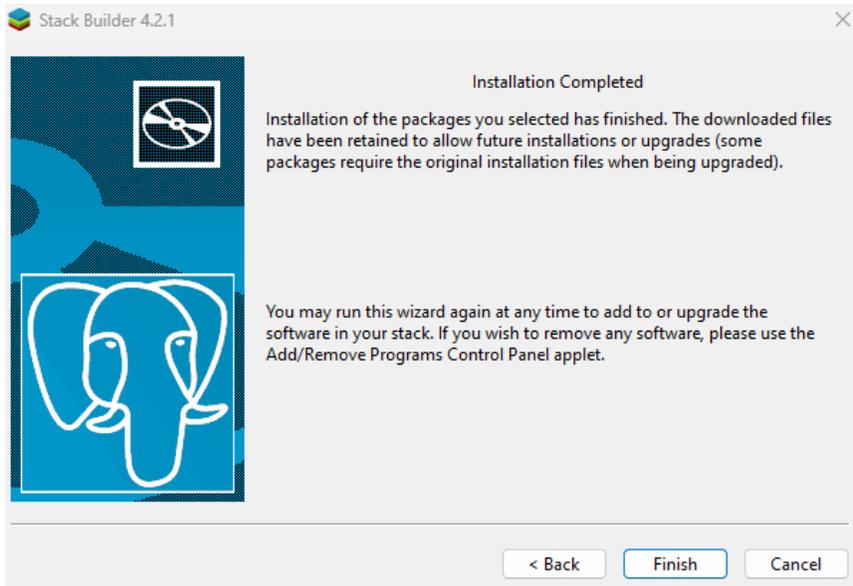
Step 15: Choose PostGIS as a component you want to install.



Continue to click Next



Step 16: Once the installation is complete, click Finish.



Step 17: To complete the whole installation, click Finish.



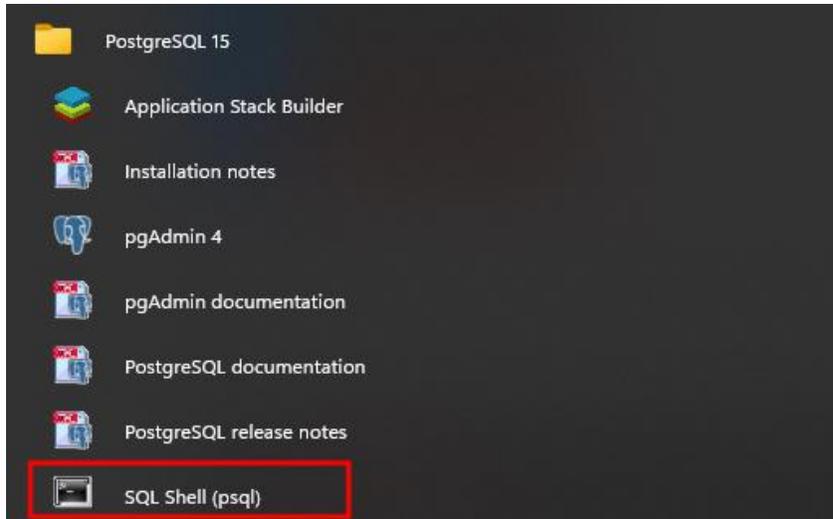
Verify the Installation

There are several ways to verify the PostgreSQL installation. You can try to connect to the PostgreSQL database server from any client application e.g., psql and pgAdmin.



The quick way to verify the installation is through the psql program.

First, click the `psql` application to launch it. The psql command-line program will display.



Second, enter all the necessary information such as the server, database, port, username, and password. To accept the default, you can press **Enter**. Note that you should provide the password that you entered during installing the PostgreSQL.

```
Server [localhost]:
Database [postgres]:
Port [5432]:
Username [postgres]:
Password for user postgres:
psql (12.3)
WARNING: Console code page (437) differs from Windows code page (1252)
         8-bit characters might not work correctly. See psql reference
         page "Notes for Windows users" for details.
Type "help" for help.

postgres=#
```

Third, issue the command `SELECT version();` you will see the following output:



```
SQL Shell (psql)
Server [localhost]:
Database [postgres]:
Port [5432]:
Username [postgres]:
Password for user postgres:
psql (12.3)
WARNING: Console code page (437) differs from Windows code page (1252)
         8-bit characters might not work correctly. See psql reference
         page "Notes for Windows users" for details.
Type "help" for help.

postgres=# select version();
              version
-----
 PostgreSQL 12.3, compiled by Visual C++ build 1914, 64-bit
(1 row)

postgres=#
```

If you are using an operating system other than windows, follow these instructions to install QGIS in your machine:

Linux: <https://www.postgresqltutorial.com/postgresql-getting-started/install-postgresql-linux/>

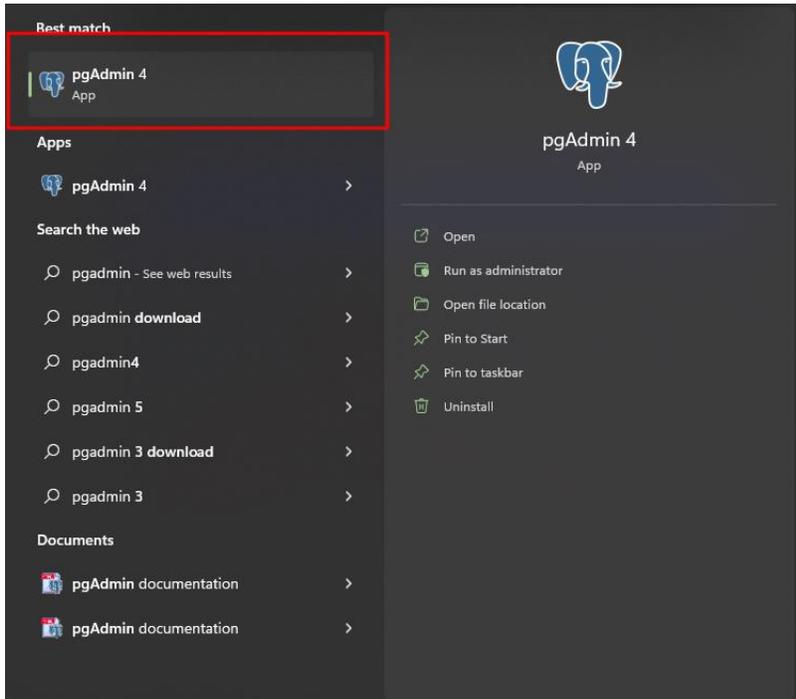
macOS: <https://www.postgresqltutorial.com/postgresql-getting-started/install-postgresql-macos/>

Accessing pgAdmin

When installing PostgreSQL, pgAdmin 4 is also installed.

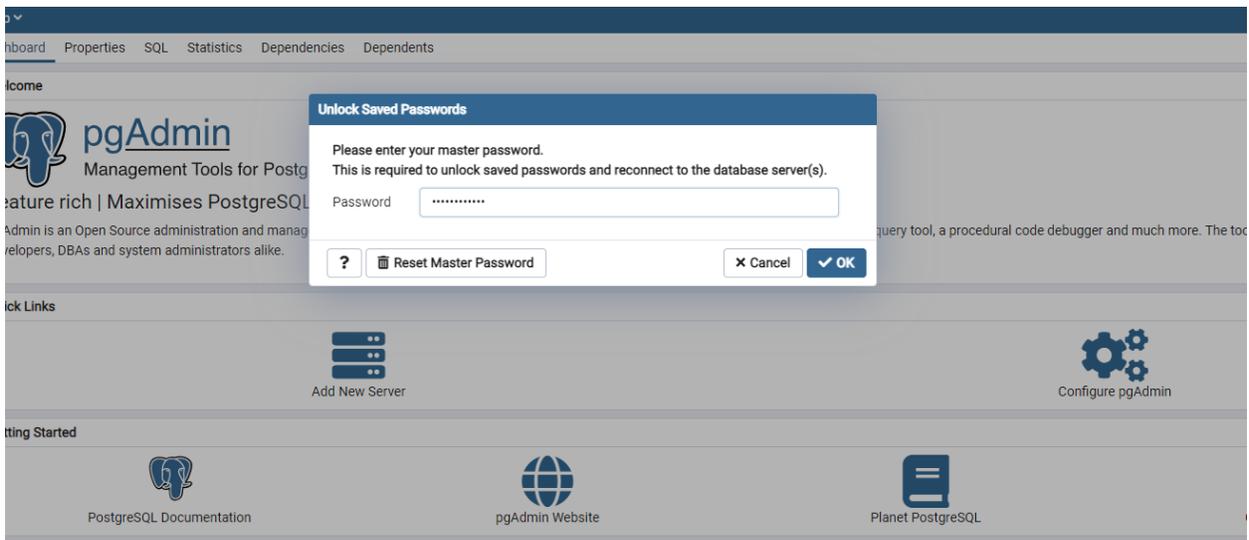
Step 1: Open pgAdmin

Click the windows button and find the "postgresql 15". Once you find it click on it and select the "pgAdmin 4" or you can directly search for the "pgAdmin 4" in the windows search bar.



Step 2: Enter Password

Clicking on the “pgAdmin 4” will ask you to enter the password:

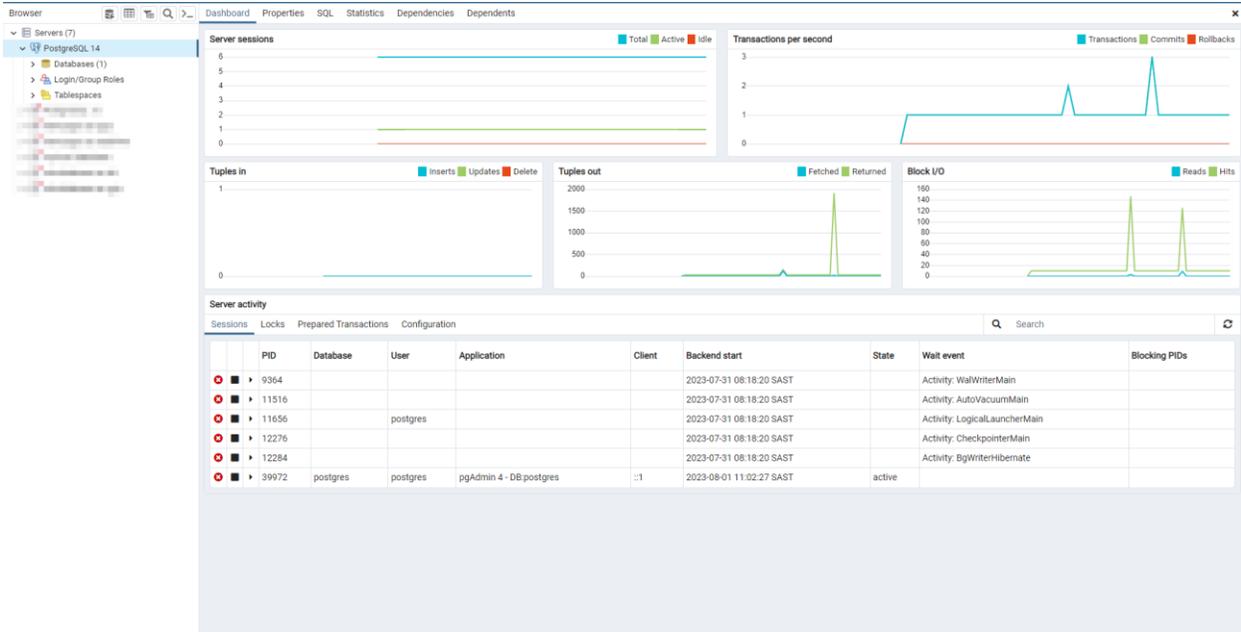


Provide the master password that you have recently set during the installation and click the “Ok” button to proceed.

Step 3: Select PostgreSQL 15



In the left pane, click on the “Servers” and then “PostgreSQL 15”. Consequently, the following dashboard will appear:



If you are using an operating system other than windows, follow these instructions to install QGIS in your machine:

Linux: <https://www.commandprompt.com/education/how-to-install-pgadmin-on-ubuntu/>

macOS: <https://commandprompt.com/education/how-to-install-postgresql-on-macos/>