Deployment Plan - Restaurant Management System

1. Introduction

1.1 Purpose

This document has been prepared to showcase the development phases of the online restaurant management system, aiming to provide data management specialists, restaurant managers and staff, and customers with an efficient, secure, and uninterrupted user experience through a simple, clear, and intuitive interface, while outlining the system architecture, database design, API structure, security considerations, and scalability measures.

1.2 Scope

The deployment plan outlines the production, development, and testing phases of the Online Restaurant Management System. It details the necessary steps for system setup, data transfer, and user access management. Additionally, it includes rollback strategies, monitoring procedures, security measures, and methods to ensure continuous availability and usability for web and mobile platforms with multi-language support. Finally, it provides a detailed explanation with images for the SQL and API (pgAgent) setup required for the database.

1.3 Target Audience

- DevOps Engineers
- System Administrators
- Developers
- QA Engineers

2. Deployment Architecture

2.1 Infrastructure Overview

- **Cloud Provider**: AWS
- **Compute Services**: EC2 / Kubernetes / Docker Containers
- **Database**: PostgreSQL
- **Storage**: S3 for static assets, EFS for persistent data
- **Caching**: Redis / Memcached
- **Load Balancing**: Elastic Load Balancer (ELB) / Nginx / Cloudflare

- **Monitoring & Logging**: Prometheus, Grafana, ELK Stack (Elasticsearch, Logstash, Kibana)

2.2 Deployment Environments

Enviroment	Purpose	Hosting Platform
Development	Ongoing development/testing	Local / Cloud Dev Instance
Staging	Pre-production testing	Cloud Staging Instance
Production	Live system for end users	Cloud Production Instance

3. Deployment Process

3.1 Continuous Integration & Deployment (CI/CD)

Tools Used: GitHub Actions / Jenkins / GitLab CI

Steps:

1. Code is pushed to repository (GitHub / GitLab / Bitbucket).
2. Automated tests are executed.
3. Code is built into Docker images.
4. Artifacts are stored in container registry.
5. Deployment to staging environment for final verification.
6. Manual or automated approval for production release.
7. Deployment to production using blue-green or rolling update strategy.

3.2 Deployment Strategies

Strategy	Description
Blue-Green	Two identical environments; traffic is switched to the new version after verification.
Rolling Update	Gradually deploys new versions, ensuring zero downtime.
Canary Release	Deploys to a small percentage of users first before full rollout.

3.3 Rollback Strategy

- **Database Backups**: Automatic backups before deployment.
- **Feature Flags**: Toggle features off if a failure occurs.
- **Versioned Deployments**: Ability to revert to the last stable version.
- **Monitoring Alerts**: Immediate alerts in case of failure.

4. Monitoring & Logging

4.1 Monitoring Tools

- **Application Performance**: New Relic / Datadog
- **Infrastructure Monitoring**: Prometheus / Grafana
- **Error Tracking**: Sentry / ELK Stack

4.2 Logging Framework

- **Centralized Logging**: Logstash & Kibana for log aggregation.
- **Retention Policy**: Logs retained for 90 days.

5. Security Considerations

5.1 Authentication & Authorization

- JWT-based authentication.
- Role-based access control (RBAC).

5.2 Data Protection

- Encrypted data at rest and in transit (AES-256, TLS 1.2+).
- Regular security audits and vulnerability scanning.

5.3 DDoS Protection

- AWS Shield for mitigation.
- Rate limiting on API endpoints.

6. Backup & Disaster Recovery Plan

6.1 Backup Strategy

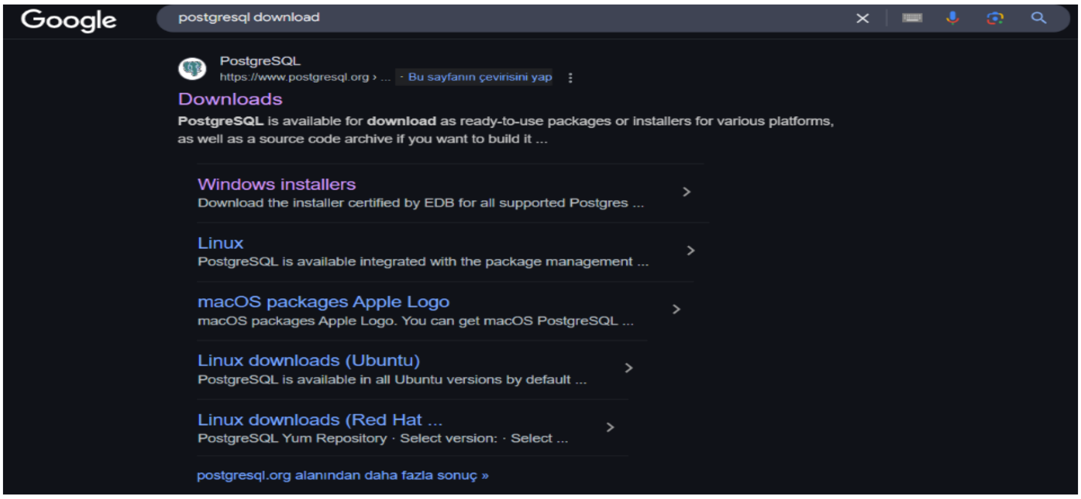
- Database Backups: Daily full backups, hourly incremental backups.

- File Storage Backups: Version-controlled backups of static assets.

6.2 Disaster Recovery Plan

- Failover Strategy: Multi-region deployment for high availability.
- Recovery Time Objective (RTO): Less than 15 minutes.
- Recovery Point Objective (RPO): Less than 5 minutes.

SETUP



PostgreSQL
https://www.postgresql.org › ... · Bu sayfanın çevirisini yap

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 ...

Windows installers
Download the installer certified by EDB for all supported Postgres ...

Linux
PostgreSQL is available integrated with the package management ...

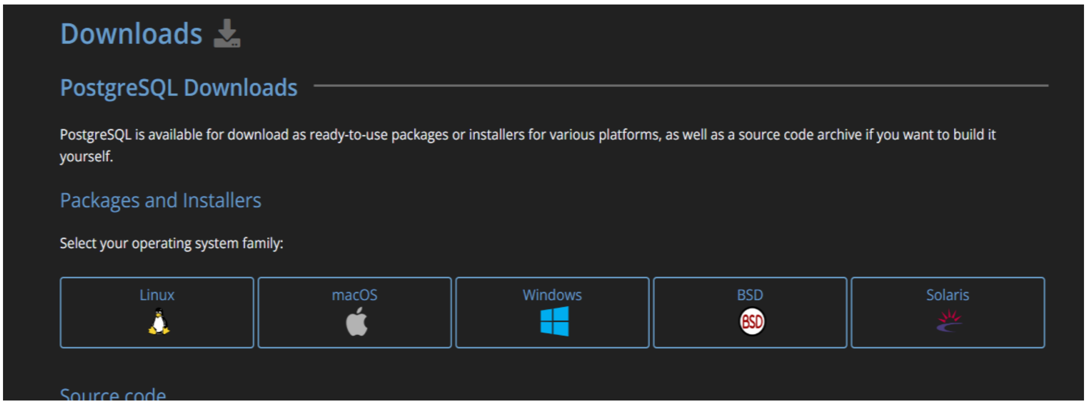
macOS packages Apple Logo
macOS packages Apple Logo. You can get macOS PostgreSQL ...

Linux downloads (Ubuntu)
PostgreSQL is available in all Ubuntu versions by default ...

Linux downloads (Red Hat ...
PostgreSQL Yum Repository · Select version: · Select ...

postgresql.org alanından daha fazla sonuç »

- First, we open our browser and search for "download PostgreSQL".



Downloads

PostgreSQL Downloads

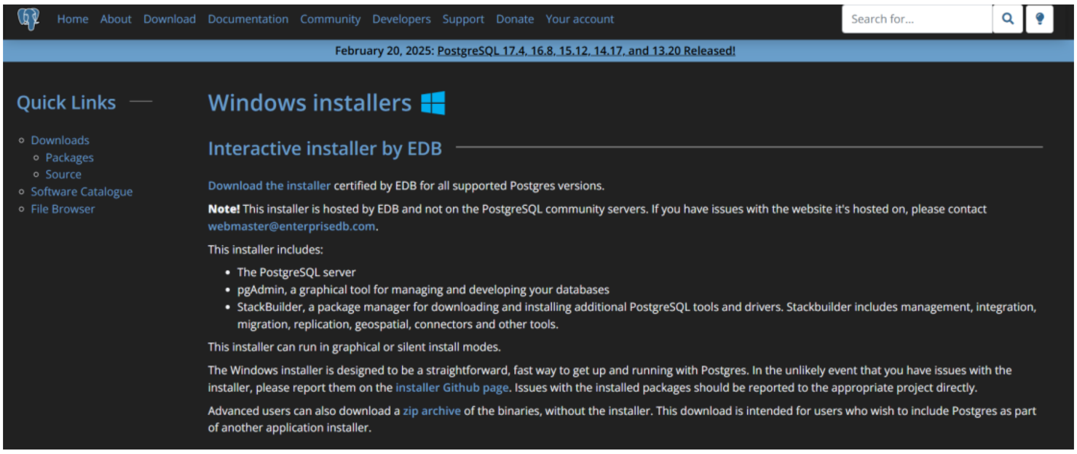
PostgreSQL is available for download as ready-to-use packages or installers for various platforms, as well as a source code archive if you want to build it yourself.

Packages and Installers

Select your operating system family:

Source code

- Once on the website, we choose the download option that matches our operating system.



Home About Download Documentation Community Developers Support Donate Your account
Search for...

February 20, 2025: PostgreSQL 17.4, 16.8, 15.12, 14.17, and 13.20 Released!

Quick Links

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

Windows installers

Interactive installer by EDB

Download the installer certified by EDB for all supported Postgres versions.

Note! This installer is hosted by EDB and not on the PostgreSQL community servers. If you have issues with the website it's hosted on, please contact webmaster@enterprisedb.com.

This installer includes:

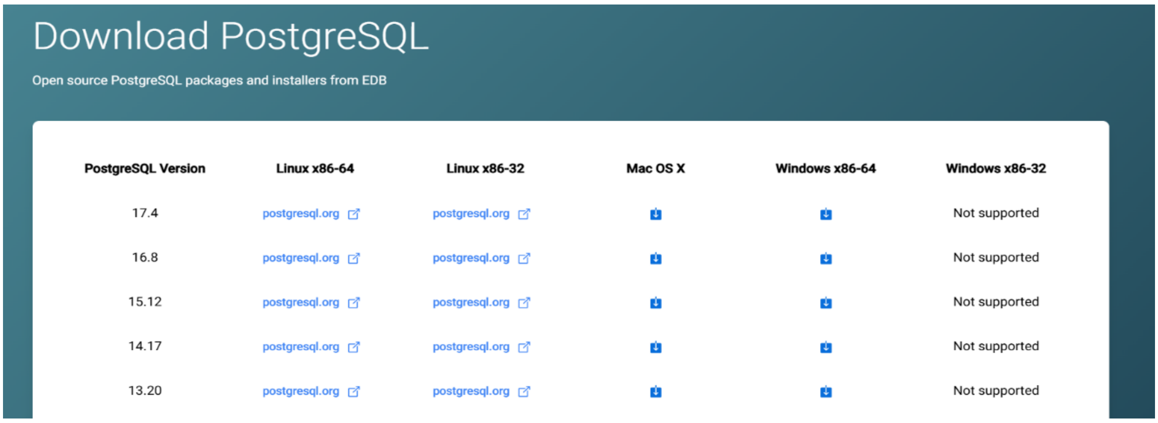
- The PostgreSQL server
- pgAdmin, a graphical tool for managing and developing your databases
- StackBuilder, a package manager for downloading and installing additional PostgreSQL tools and drivers. Stackbuilder includes management, integration, migration, replication, geospatial, connectors and other tools.

This installer can run in graphical or silent install modes.

The Windows installer is designed to be a straightforward, fast way to get up and running with Postgres. In the unlikely event that you have issues with the installer, please report them on the installer Github page. Issues with the installed packages should be reported to the appropriate project directly.

Advanced users can also download a zip archive of the binaries, without the installer. This download is intended for users who wish to include Postgres as part of another application installer.

- I choose the **Windows** version, click on the **Windows installer download** link, and begin the download process.

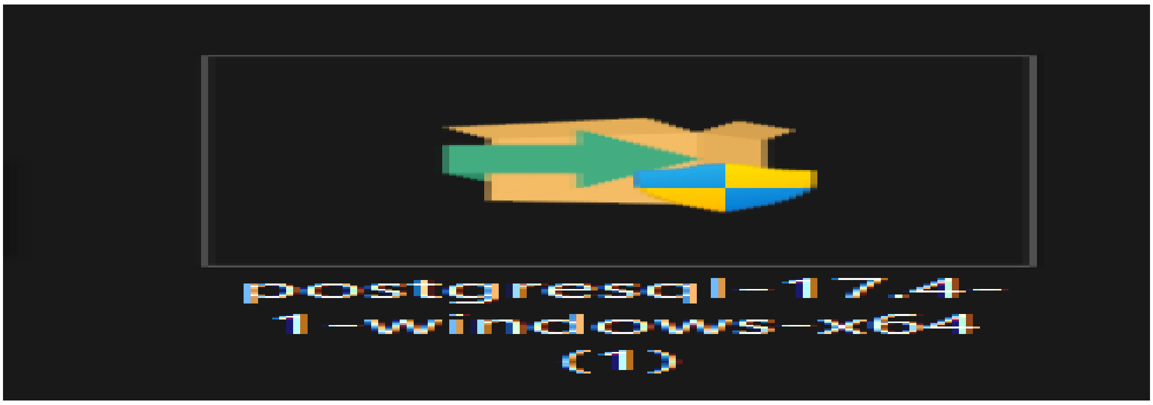


Download PostgreSQL

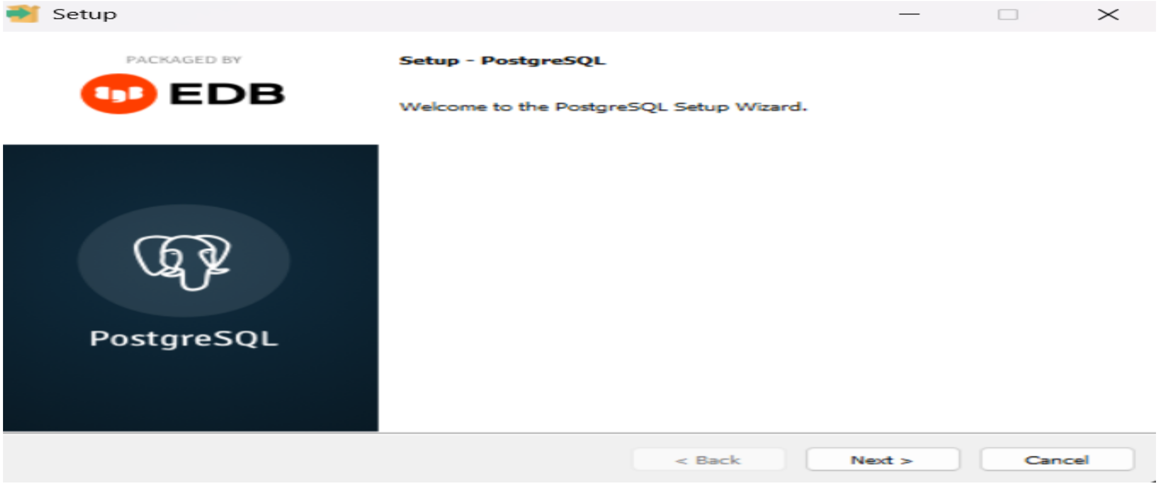
Open source PostgreSQL packages and installers from EDB

PostgreSQL Version	Linux x86-64	Linux x86-32	Mac OS X	Windows x86-64	Windows x86-32
17.4	postgresql.org	postgresql.org	⬇	⬇	Not supported
16.8	postgresql.org	postgresql.org	⬇	⬇	Not supported
15.12	postgresql.org	postgresql.org	⬇	⬇	Not supported
14.17	postgresql.org	postgresql.org	⬇	⬇	Not supported
13.20	postgresql.org	postgresql.org	⬇	⬇	Not supported

- I choose the **Windows** version, click on the **Windows installer download** link, and begin the download process.



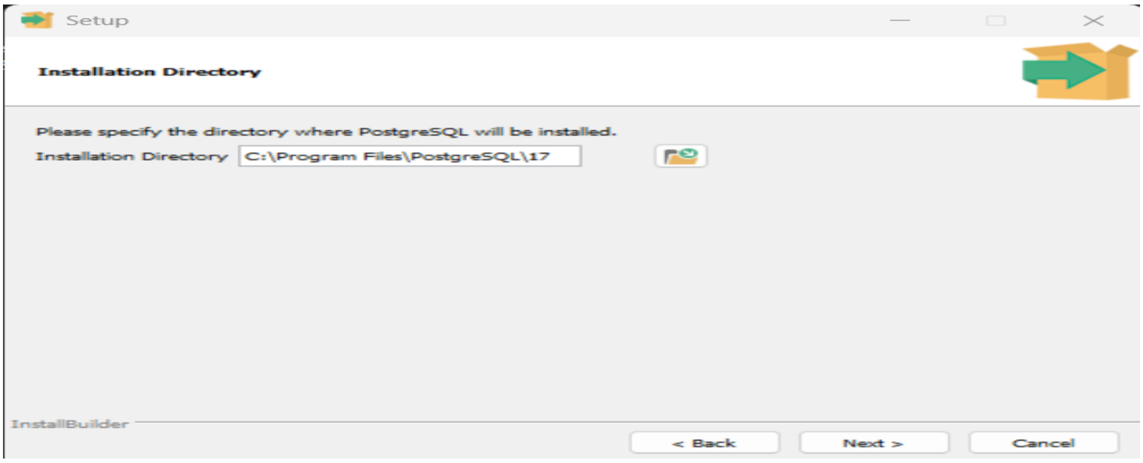
- We locate the file in the **Downloads** folder and click on it.



Setup - PostgreSQL

Welcome to the PostgreSQL Setup Wizard.

- After entering the installation wizard, click on the **Next** option.

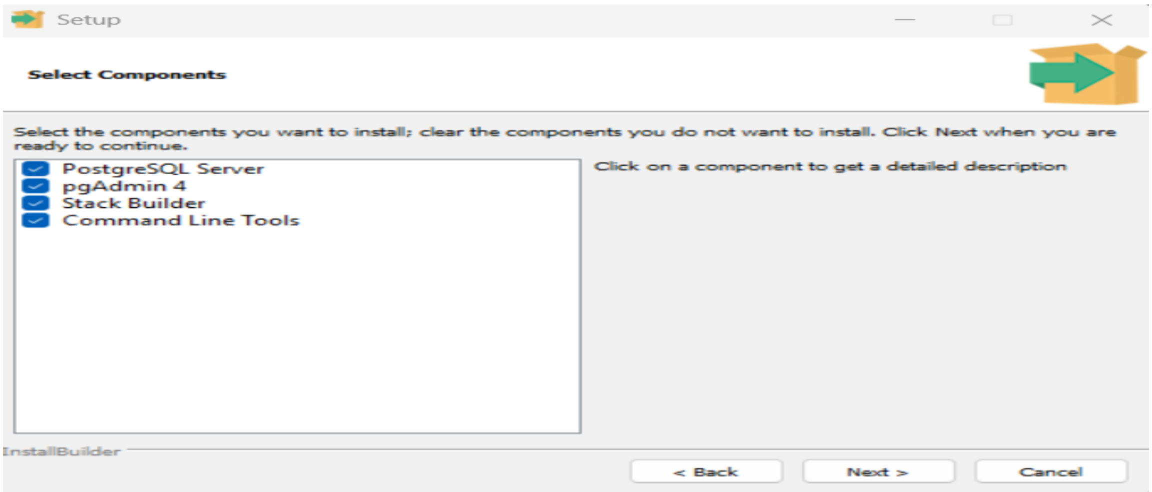


Installation Directory

Please specify the directory where PostgreSQL will be installed.

Installation Directory C:\Program Files\PostgreSQL\17

- We select the location where the application will be stored (installed).



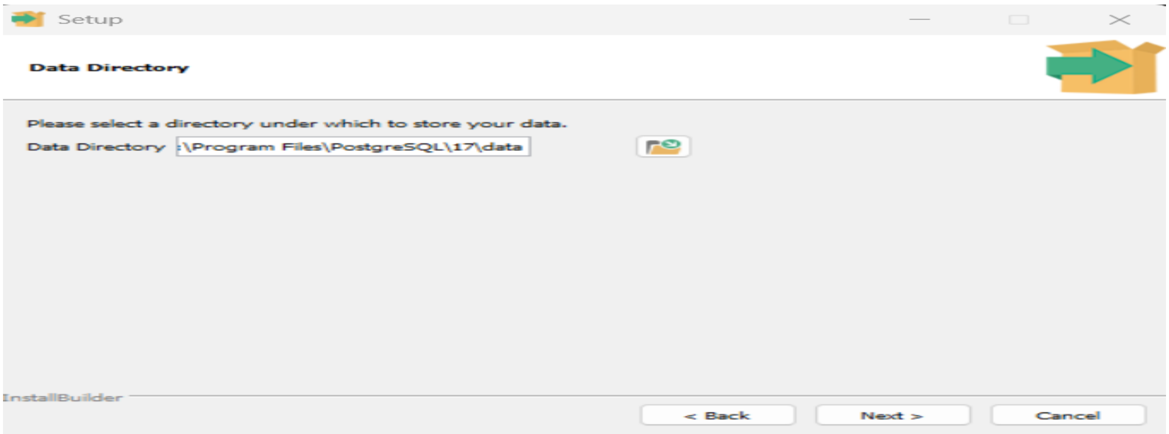
Select Components

Select the components you want to install; clear the components you do not want to install. Click Next when you are ready to continue.

☑ PostgreSQL Server
☑ pgAdmin 4
☑ Stack Builder
☑ Command Line Tools

Click on a component to get a detailed description

- We pick the desired components from the installation options

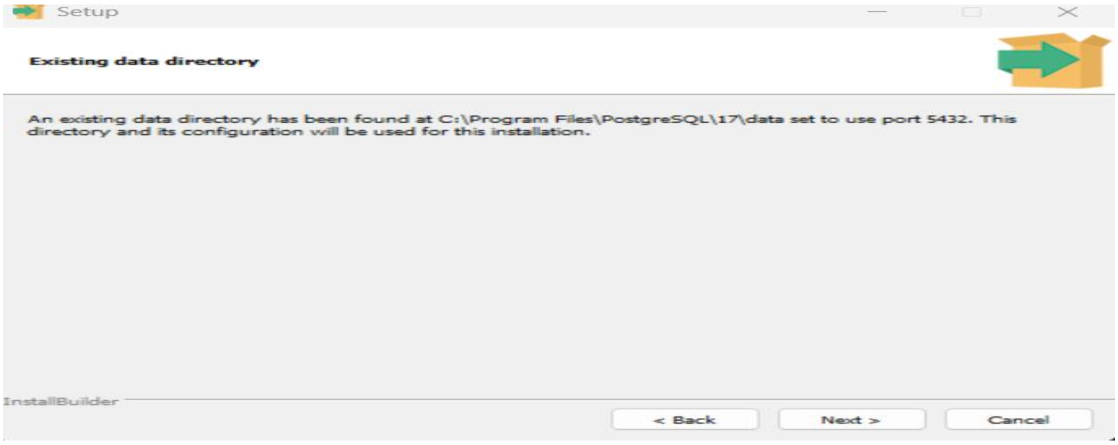


Data Directory

Please select a directory under which to store your data.

Data Directory :\Program Files\PostgreSQL\17\data

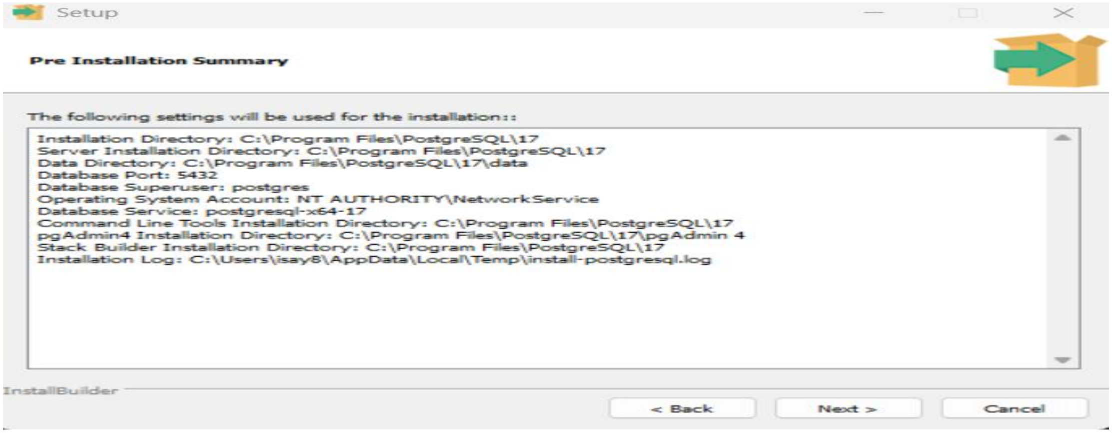
- We select the location where our data will be stored.



Existing data directory

An existing data directory has been found at C:\Program Files\PostgreSQL\17\data set to use port 5432. This directory and its configuration will be used for this installation.

- We click **Next** on the **"Existing Data Directory"** section

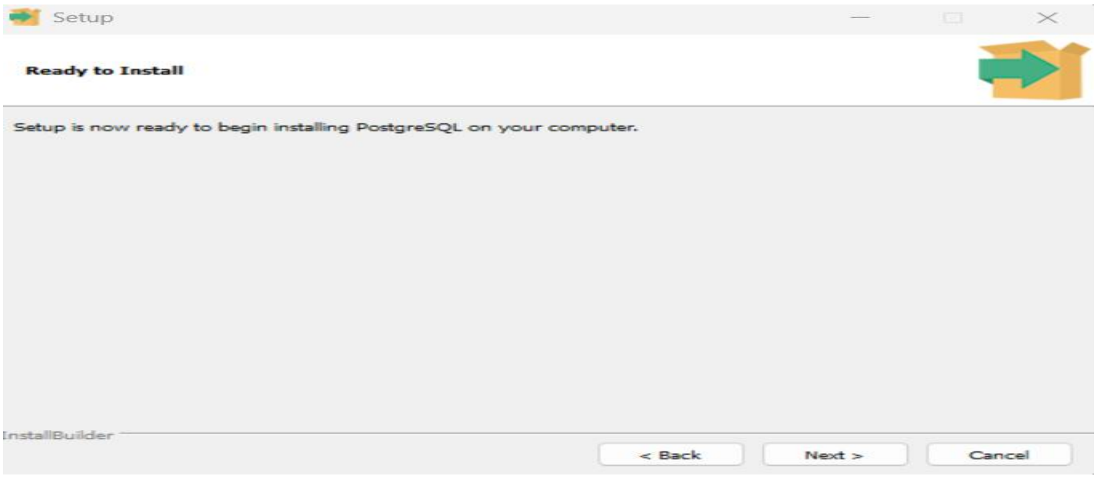


Pre Installation Summary

The following settings will be used for the installation::

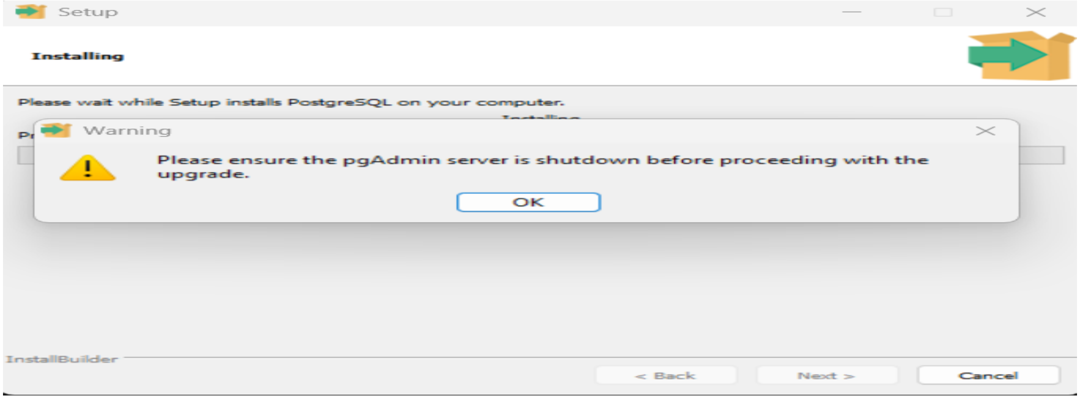
```
Installation Directory: C:\Program Files\PostgreSQL\17
Server Installation Directory: C:\Program Files\PostgreSQL\17
Data Directory: C:\Program Files\PostgreSQL\17\data
Database Port: 5432
Database Superuser: postgres
Operating System Account: NT AUTHORITY\NetworkService
Database Service: postgresql-x64-17
Command Line Tools Installation Directory: C:\Program Files\PostgreSQL\17
pgAdmin4 Installation Directory: C:\Program Files\PostgreSQL\17\pgAdmin 4
Stack Builder Installation Directory: C:\Program Files\PostgreSQL\17
Installation Log: C:\Users\isay8\AppData\Local\Temp\install-postgresql.log
```

- We click **Next** on the **Pre-Installation Summary** screen to proceed with the setup.


Ready to Install

Setup is now ready to begin installing PostgreSQL on your computer.

- We click **Next** when ready to begin the installation.

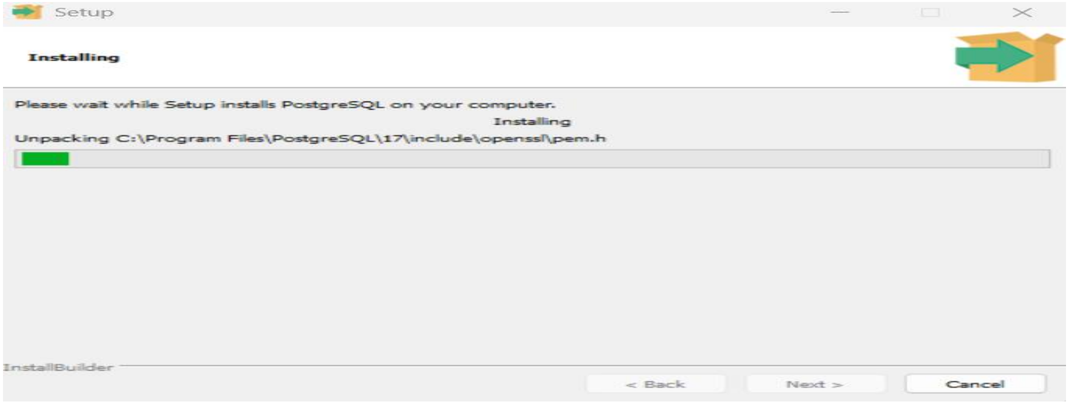

Installing

Please wait while Setup installs PostgreSQL on your computer.

Warning

Please ensure the pgAdmin server is shutdown before proceeding with the upgrade.

- After verifying the warning message, we click **OK** to proceed

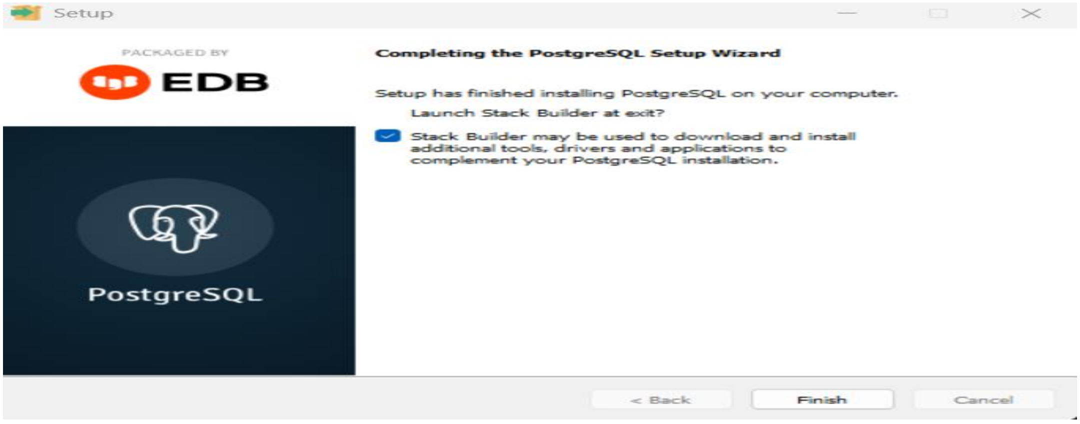

Installing

Please wait while Setup installs PostgreSQL on your computer.

Installing

Unpacking C:\Program Files\PostgreSQL\17\include\openssl\pem.h

- We wait for the installation to complete.



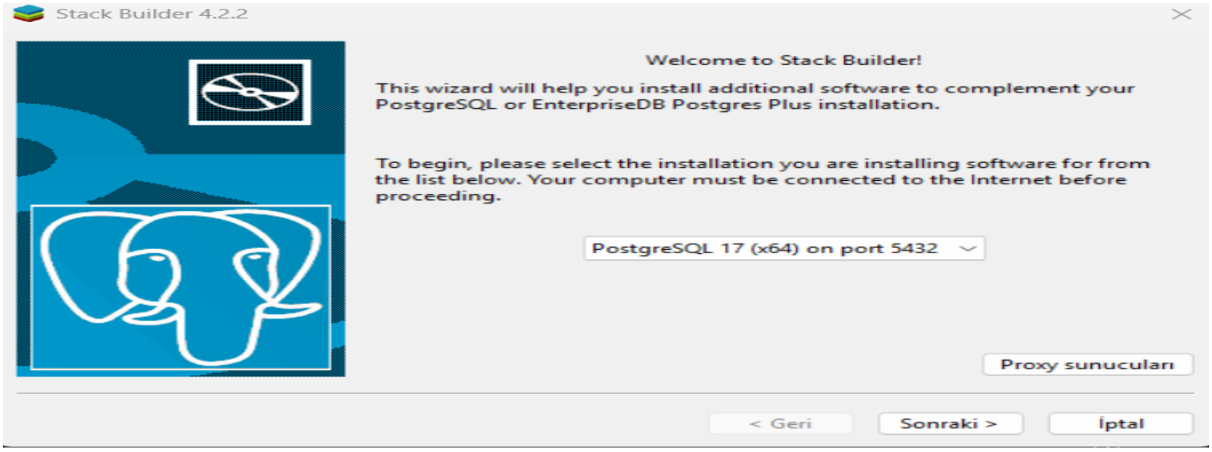
Completing the PostgreSQL Setup Wizard

Setup has finished installing PostgreSQL on your computer.

Launch Stack Builder at exit?

☑ Stack Builder may be used to download and install additional tools, drivers and applications to complement your PostgreSQL installation.

- We click **Finish** to complete the installation process.



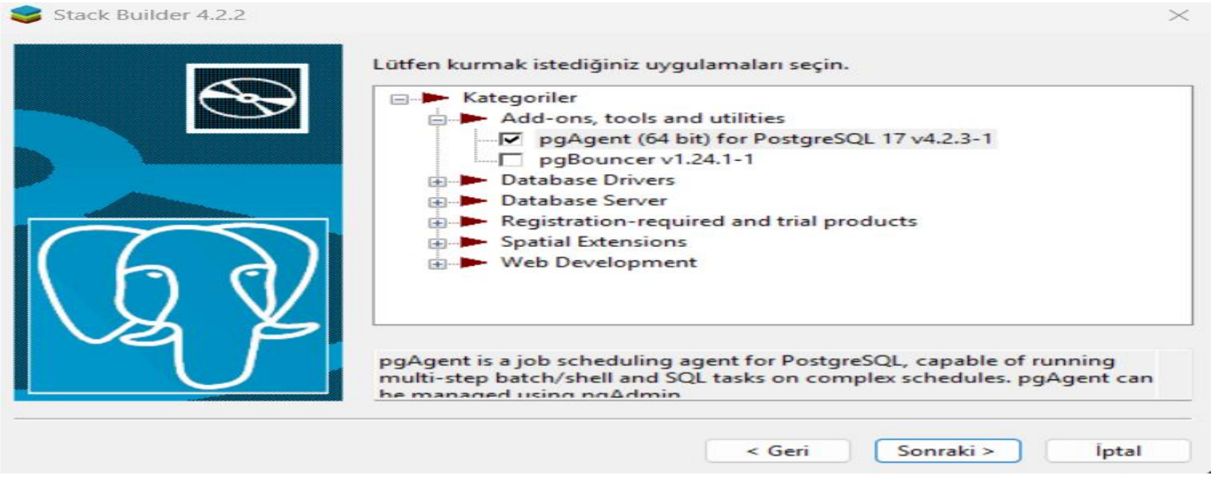
Welcome to Stack Builder!

This wizard will help you install additional software to complement your PostgreSQL or EnterpriseDB Postgres Plus installation.

To begin, please select the installation you are installing software for from the list below. Your computer must be connected to the Internet before proceeding.

PostgreSQL 17 (x64) on port 5432

- After the download completes, the installer directs us to the **Stack Builder** window. Here, we first select the installed **PostgreSQL version**, then click **Next** to proceed.

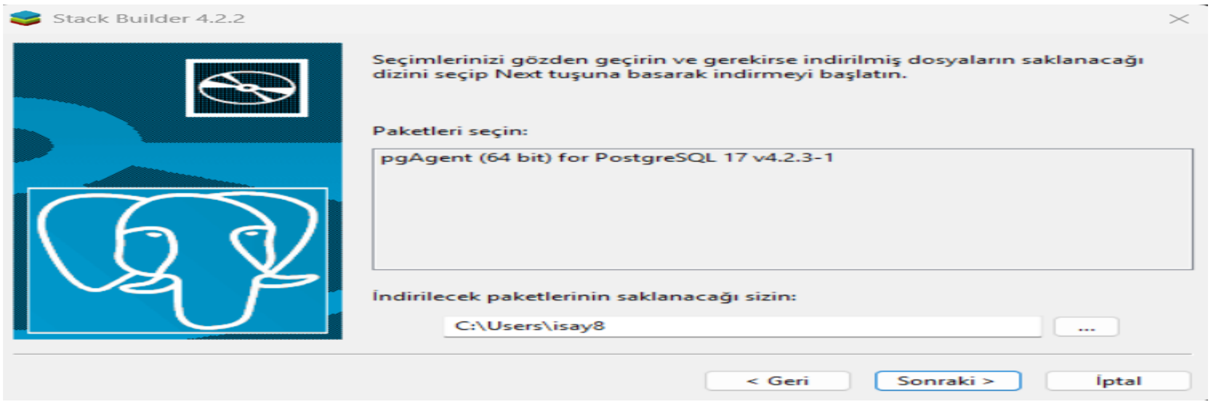


Lütfen kurmak istediğiniz uygulamaları seçin.

Kategoriler
- Add-ons, tools and utilities
  - ☑ pgAgent (64 bit) for PostgreSQL 17 v4.2.3-1
  - □ pgBouncer v1.24.1-1
- Database Drivers
- Database Server
- Registration-required and trial products
- Spatial Extensions
- Web Development

pgAgent is a job scheduling agent for PostgreSQL, capable of running multi-step batch/shell and SQL tasks on complex schedules. pgAgent can be managed using pgAdmin

- On this screen, **Stack Builder** prompts us to select the applications we want to install. Here, I'm choosing to install **pgAgent** (PostgreSQL's job scheduling agent) as well.



Stack Builder 4.2.2

Seçimlerinizi gözden geçirin ve gerekirse indirilmiş dosyaların saklanacağı dizini seçip Next tuşuna basarak indirmeyi başlatın.

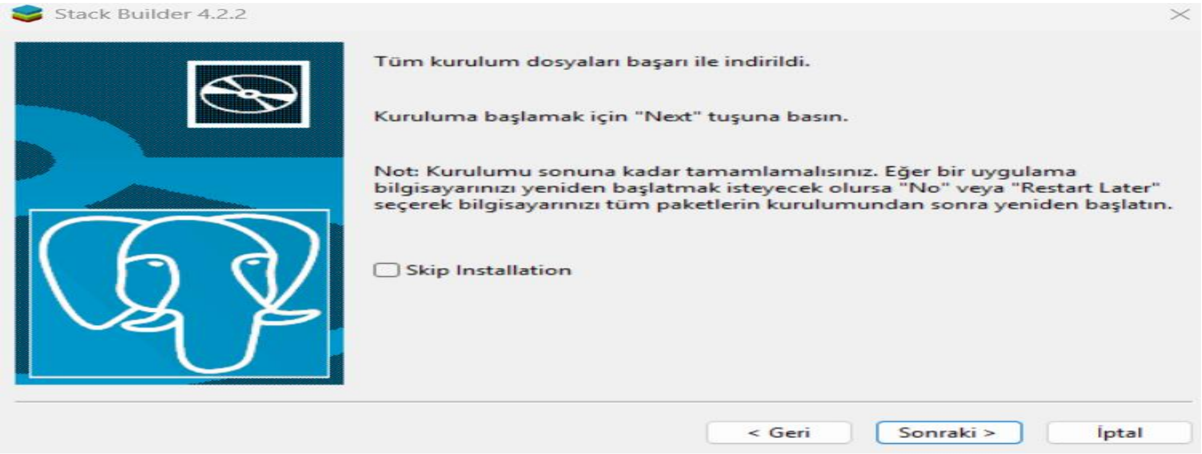
Paketleri seçin:

pgAgent (64 bit) for PostgreSQL 17 v4.2.3-1

İndirilecek paketlerinin saklanacağı sizin:

C:\Users\isay8

- We select the **destination folder** where the package (e.g., pgAgent or other Stack Builder components) will be installed.



Stack Builder 4.2.2

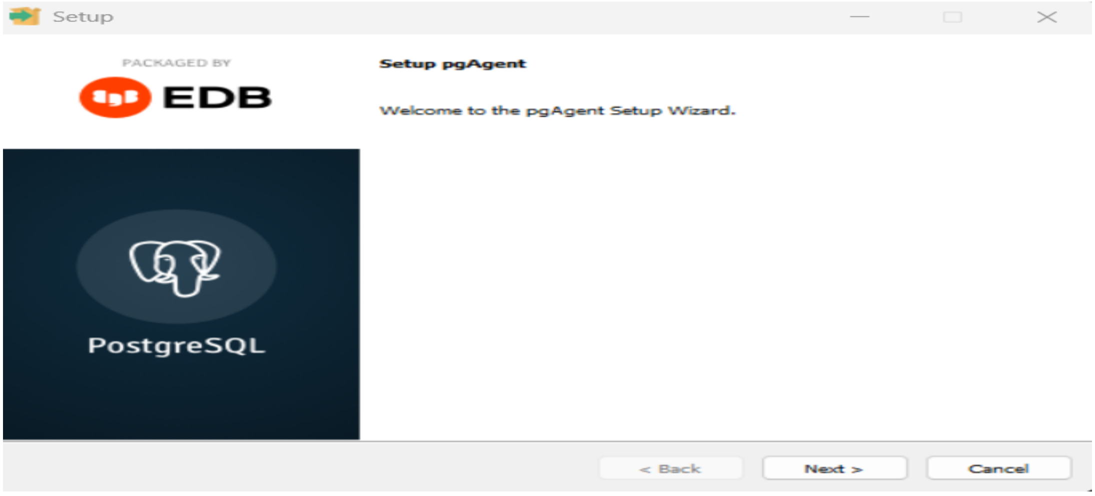
Tüm kurulum dosyaları başarı ile indirildi.

Kuruluma başlamak için "Next" tuşuna basın.

Not: Kurulumu sonuna kadar tamamlamalısınız. Eğer bir uygulama bilgisayarınızı yeniden başlatmak isteyecek olursa "No" veya "Restart Later" seçerek bilgisayarınızı tüm paketlerin kurulumundan sonra yeniden başlatın.

□ Skip Installation

- After the installation files are downloaded, we click **Next** to begin the actual installation process.

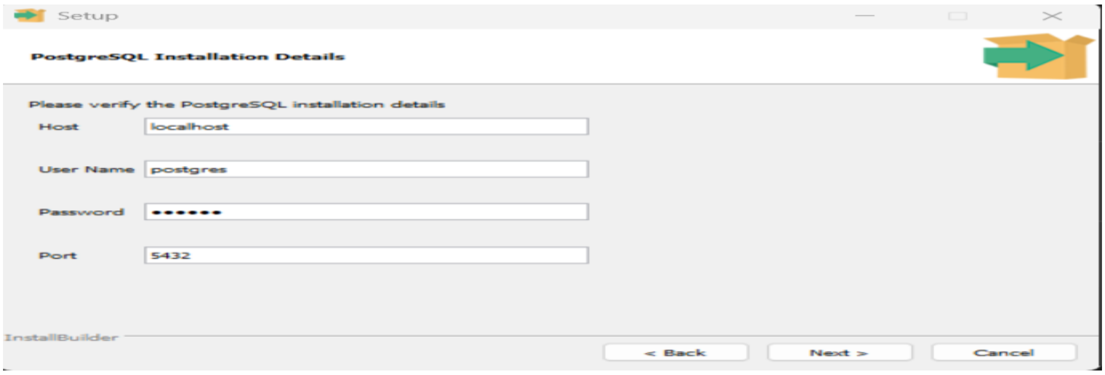


Setup

Setup pgAgent

Welcome to the pgAgent Setup Wizard.

- We are directed to the **IDE's installation wizard**, where we click **Next** to proceed with the setup.



PostgreSQL Installation Details

Please verify the PostgreSQL installation details

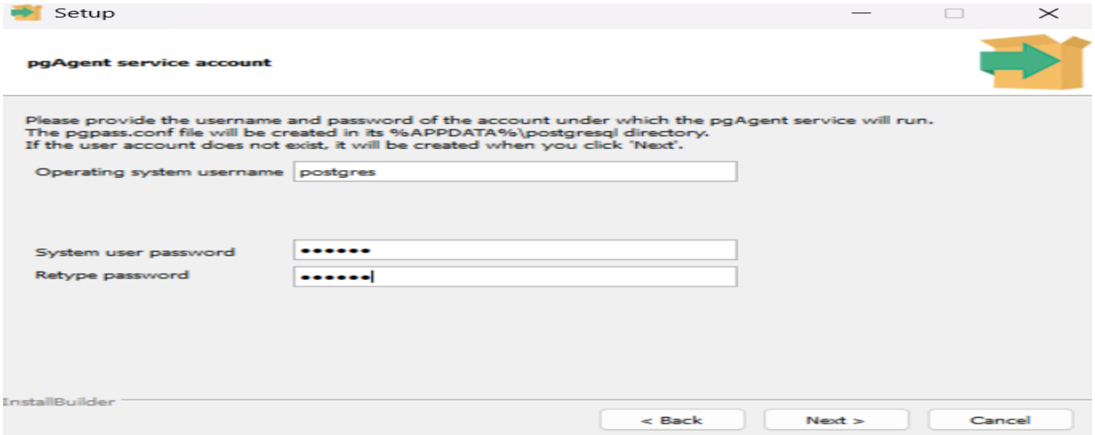
Host: localhost

User Name: postgres

Password: ••••••

Port: 5432

- On this screen, **we set a password** (for the PostgreSQL superuser/postgres) and then click **Next** to proceed.



pgAgent service account

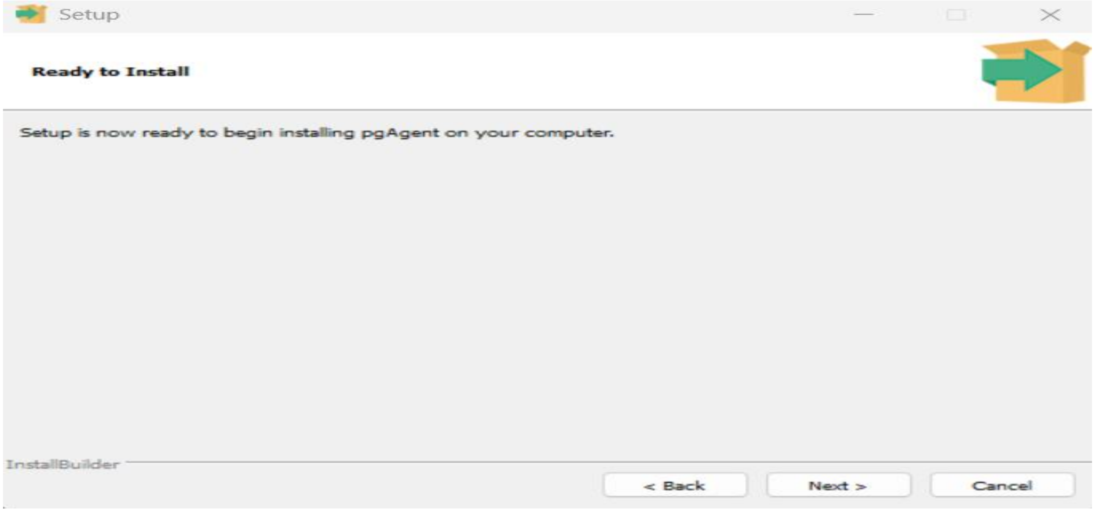
Please provide the username and password of the account under which the pgAgent service will run.
The pgpass.conf file will be created in its %APPDATA%\postgresql directory.
If the user account does not exist, it will be created when you click 'Next'.

Operating system username: postgres

System user password: ••••••

Retype password: ••••••

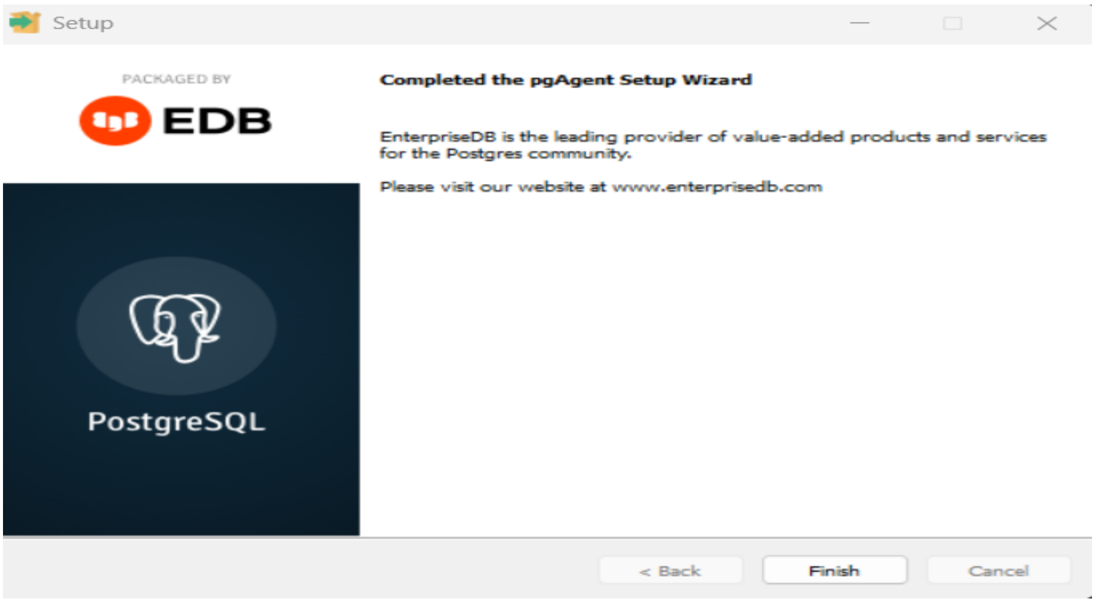
- On this screen, **we set a password for the pgAgent service account** and click **Next** to proceed with the installation.



Ready to Install

Setup is now ready to begin installing pgAgent on your computer.

- We click **Next** when ready to proceed with the installation.

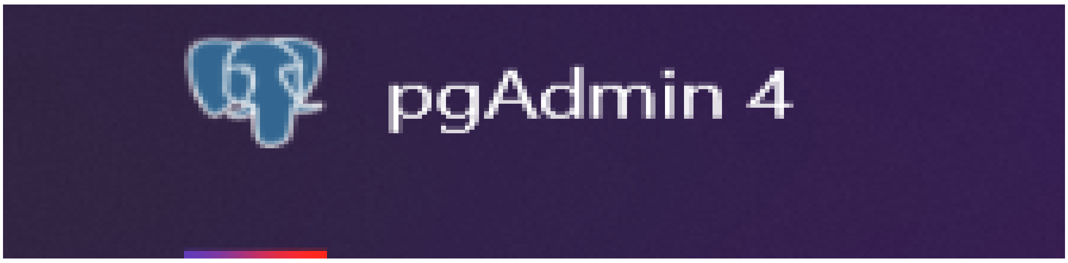


Completed the pgAgent Setup Wizard

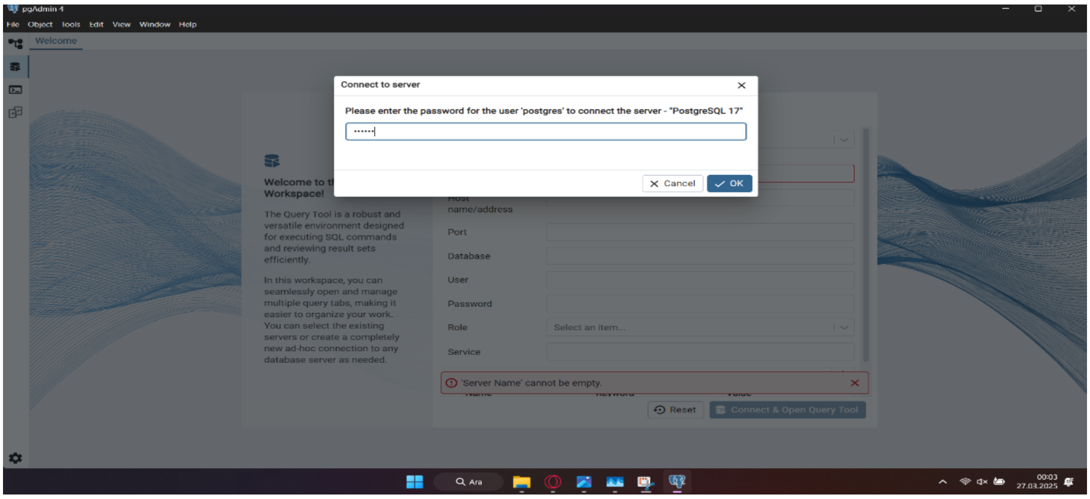
EnterpriseDB is the leading provider of value-added products and services for the Postgres community.

Please visit our website at www.enterprisedb.com

- We click **Finish** to complete the installation process after it finishes successfully.



- We type **"pgAdmin4"** in the **Start menu/search bar** and click on the application that appears to launch it.



Connect to server

Please enter the password for the user 'postgres' to connect the server - "PostgreSQL 17"

••••••

Welcome to t
Workspace!

The Query Tool is a robust and versatile environment designed for executing SQL commands and reviewing result sets efficiently.

In this workspace, you can seamlessly open and manage multiple query tabs, making it easier to organize your work. You can select the existing servers or create a completely new ad-hoc connection to any database server as needed.

Host name/address

Port

Database

User

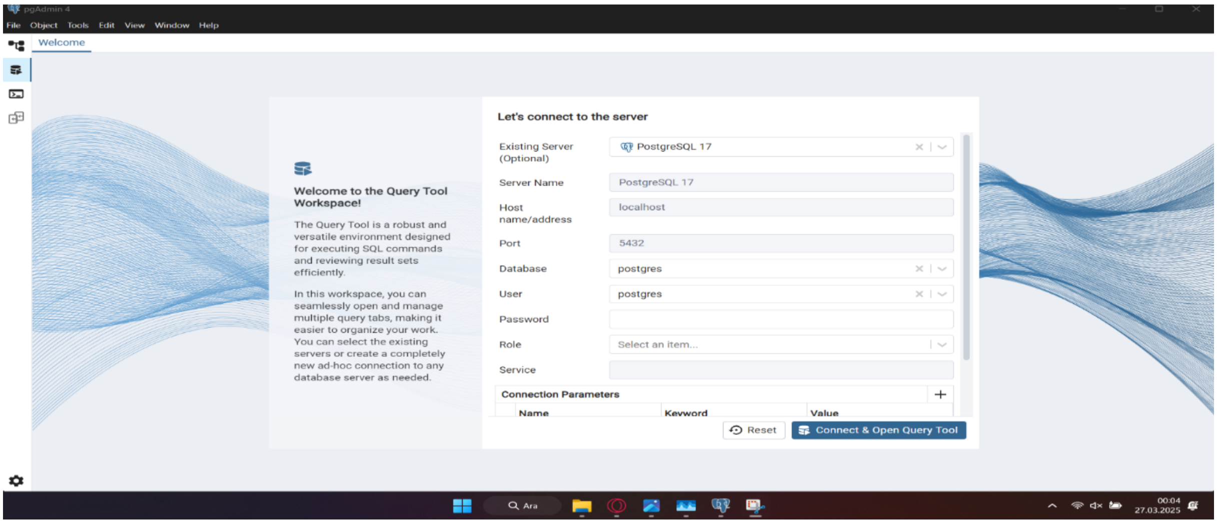
Password

Role: Select an item...

Service

'Server Name' cannot be empty.

- We enter the password to connect to the PostgreSQL server.


pgAdmin 4
File Object Tools Edit View Window Help
Welcome
Reset
Connect & Open Query Tool
Ara
00:04
27.03.2025

Welcome to the Query Tool Workspace!

The Query Tool is a robust and versatile environment designed for executing SQL commands and reviewing result sets efficiently.

In this workspace, you can seamlessly open and manage multiple query tabs, making it easier to organize your work. You can select the existing servers or create a completely new ad-hoc connection to any database server as needed.

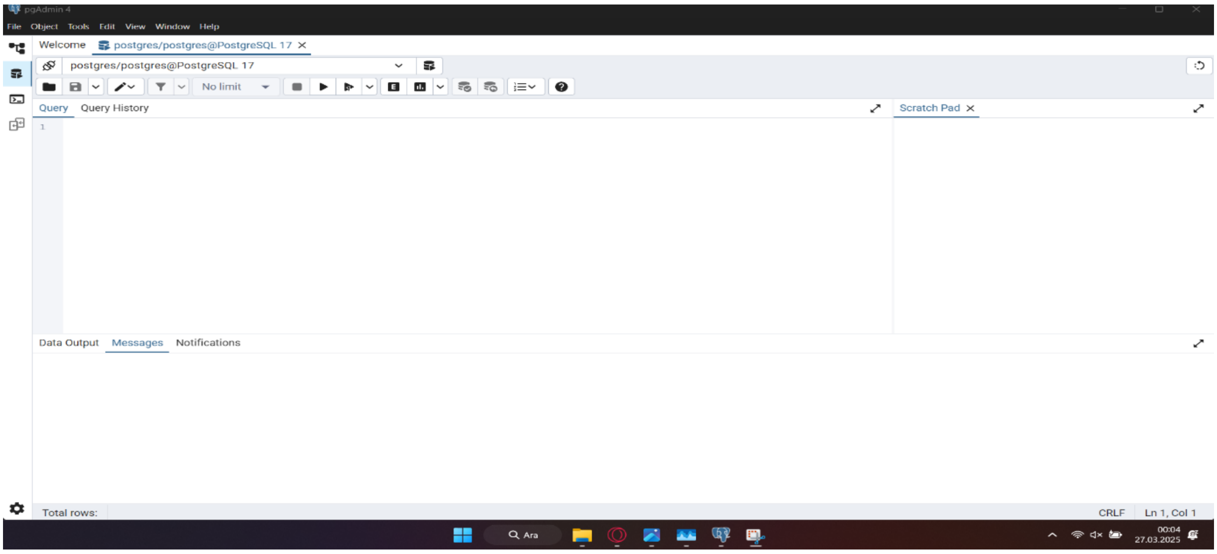
Let's connect to the server

Existing Server (Optional): PostgreSQL 17
Server Name: PostgreSQL 17
Host name/address: localhost
Port: 5432
Database: postgres
User: postgres
Password:
Role: Select an item...
Service:

Connection Parameters

Name	Keyword	Value

- To connect to the server and open a SQL query interface, we click **"Connect and Open Query Tool".**



- Now we can use PostgreSQL!