EDB Postgres™ Advanced Server Installation Guide for Windows

EDB Postgres™ Advanced Server 12

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EDB Postgres™ Advanced Server Installation Guide for Windows
by EnterpriseDB® Corporation

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1 Introduction

The EDB Postgres Advanced Server Installation Guide is a comprehensive guide to installing EDB Postgres Advanced Server (Advanced Server). In this guide you will find detailed information about:

- Software prerequisites for Advanced Server 12 installation on Windows.
- Graphical installation options available through the interactive setup wizard on Windows.
- Managing an Advanced Server installation.
- Configuring an Advanced Server package installation.
- Uninstalling Advanced Server and its components.

Limitations

The following limitations apply to EDB Postgres Advanced Server:

- The `data` directory of a production database should not be stored on an NFS file system.

1.1 Typographical Conventions Used in this Guide

Certain typographical conventions are used in this manual to clarify the meaning and usage of various commands, statements, programs, examples, etc. This section provides a summary of these conventions.

In the following descriptions, a *term* refers to any word or group of words that are language keywords, user-supplied values, literals, etc. A term's exact meaning depends upon the context in which it is used.

- *Italic font* introduces a new term, typically in the sentence that defines it for the first time.
- `Fixed-width (mono-spaced) font` is used for terms that must be given literally such as SQL commands, specific table and column names used in the examples, programming language keywords, etc. For example, `SELECT * FROM emp;`
- *`Italic fixed-width font`* is used for terms for which the user must substitute values in actual usage. For example, `DELETE FROM` *`table_name`*;
- A vertical pipe | denotes a choice between the terms on either side of the pipe. A vertical pipe is used to separate two or more alternative terms within square brackets (optional choices) or braces (one mandatory choice).
- Square brackets [ ] denote that one or none of the enclosed terms may be substituted. For example, `[ a | b ]` means choose one of "`a`" or "`b`" or neither of the two.
- Braces {} denote that exactly one of the enclosed alternatives must be specified. For example, `{ a | b }` means exactly one of "`a`" or "`b`" must be specified.
- Ellipses ... denote that the preceding term may be repeated. For example, `[ a | b ] ...` means that you may have the sequence, "`b a a b a`".

2 Requirements Overview

The following sections detail the supported platforms and installation requirements for EDB Postgres Advanced Server 12 on Windows.

2.1 Supported Platforms

For information about the platforms and versions supported by Advanced Server 12, visit the EnterpriseDB website at:

https://www.enterprisedb.com/services-support/edb-supported-products-and-platforms#epas

2.2 *Windows Installation Prerequisites*

User Privileges

To perform an Advanced Server installation on a Windows system, you must have administrator privileges. If you are installing Advanced Server into a Windows system that is configured with `User Account Control` enabled, you can assume sufficient privileges to invoke the graphical installer by right clicking on the name of the installer and selecting `Run as administrator` from the context menu.

Windows-specific Software Requirements

You should apply Windows operating system updates before invoking the Advanced Server installer. If (during the installation process) the installer encounters errors, exit the installation, and ensure that your version of Windows is up-to-date before restarting the installer.

Migration Toolkit or EDB*Plus Installation Pre-requisites

Before using a StackBuilder Plus to install Migration Toolkit or EDB*Plus, you must first install Java (version 1.8 or later). If you are using Windows, Java installers and instructions are available online at:

http://www.java.com/en/download/manual.jsp

3 Installing Advanced Server with the Interactive Installer

You can use the Advanced Server interactive installer to install Advanced Server on Windows. The interactive installer is available from the EnterpriseDB website at:

https://www.enterprisedb.com/advanced-downloads

You can invoke the graphical installer in different installation modes to perform an Advanced Server installation:

- For information about using the graphical installer, see Section 3.1.
- For information about performing an unattended installation, see Section 3.2.1.
- For information about performing an installation with limited privileges, see Section 3.2.2.
- For information about the command line options you can include when invoking the installer, see Section 3.2.3.

During the installation, the graphical installer copies a number of temporary files to the location specified by the `TEMP` environment variable. You can optionally specify an alternate location for the temporary files by modifying the `TEMP` environment variable.

If invoking the installer from the command line, you can set the value of the variable on the command line. Use the command:

```
SET TEMP=temp_file_location
```

Where *`temp_file_location`* specifies the alternate location for the temporary files and must match the permissions with the `TEMP` environment variable.

Please Note: If you are invoking the installer to perform a system upgrade, the installer will preserve the configuration options specified during the previous installation.

Setting Cluster Preferences during a Graphical Installation

During an installation, the graphical installer invokes the PostgreSQL `initdb` utility to initialize a cluster. If you are using the graphical installer, you can use the `INITDBOPTS` environment variable to specify your `initdb` preferences. Before invoking the graphical installer, set the value of `INITDBOPTS` at the command line, specifying one or more cluster options. For example:

```
    SET INITDBOPTS= -k -E=UTF-8
```

If you specify values in INITDBOPTS that are also provided by the installer (such as the -D option, which specifies the installation directory), the value specified in the graphical installer will supersede the value if specified in INITDBOPTS.

For more information about using initdb cluster configuration options, see the PostgreSQL Core Documentation available at:

https://www.postgresql.org/docs/12/static/app-initdb.html

In addition to the cluster configuration options documented in the PostgreSQL core documentation, Advanced Server supports the following initdb options:

--no-redwood-compat

> Include the --no-redwood-compat keywords to instruct the server to create the cluster in PostgreSQL mode. When the cluster is created in PostgreSQL mode, the name of the database superuser will be postgres, the name of the default database will be postgres, and Advanced Server's features compatible with Oracle databases will not be available to the cluster.

--redwood-like

> Include the --redwood-like keywords to instruct the server to use an escape character (an empty string ('')) following the LIKE (or PostgreSQL-compatible ILIKE) operator in a SQL statement that is compatible with Oracle syntax.

--icu-short-form

> Include the --icu-short-form keywords to create a cluster that uses a default ICU (International Components for Unicode) collation for all databases in the cluster. For more information about Unicode collations, please refer to the *EDB Postgres Advanced Server Guide* available at:
>
> https://www.enterprisedb.com/edb-docs

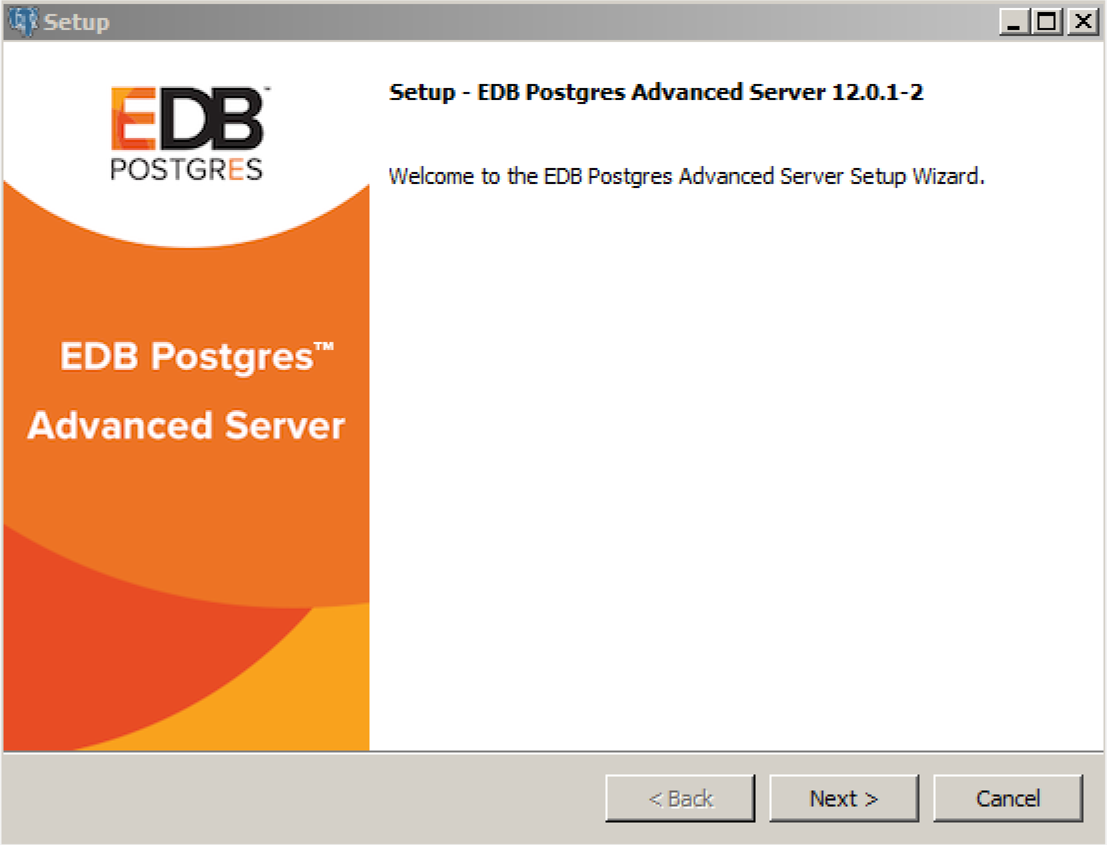
3.1 Performing a Graphical Installation on Windows

A graphical installation is a quick and easy way to install Advanced Server 12 on a Windows system. Use the wizard's dialogs to specify information about your system and system usage; when you have completed the dialogs, the installer performs an installation based on the selections made during the setup process.

To invoke the wizard, you must have administrator privileges. Assume administrator privileges, and double-click the `edb-as12-server-12.x.x-x-windows-x64` executable file.

> *To install Advanced Server on some versions of Windows, you may be required to right click on the file icon and select* `Run as Administrator` *from the context menu to invoke the installer with* `Administrator` *privileges.*

When the `Language Selection` popup opens, select an installation language and click `OK` to continue to the `Setup` window (shown in Figure 3.1).



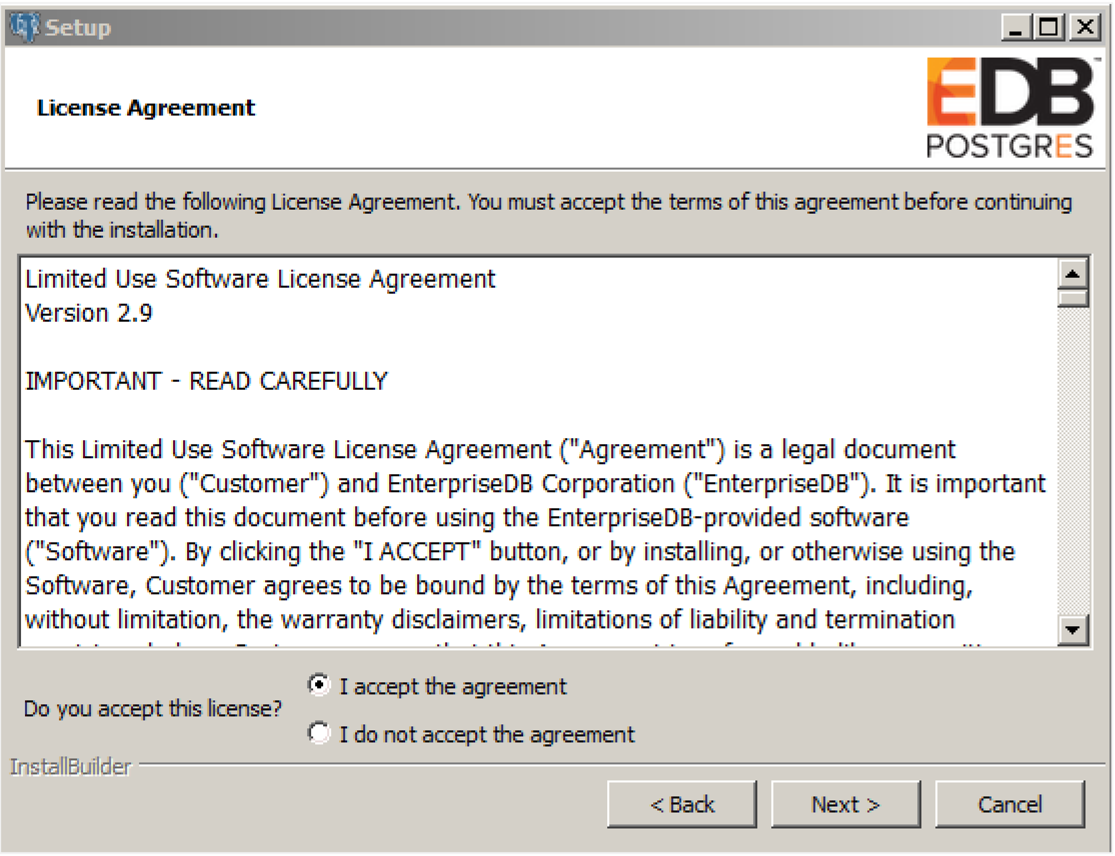
Setup - EDB Postgres Advanced Server 12.0.1-2

Welcome to the EDB Postgres Advanced Server Setup Wizard.

Figure 3.1 -The Advanced Server installer Welcome window

Click `Next` to continue.

The EnterpriseDB `License Agreement` (see Figure 3.2) opens.



Please read the following License Agreement. You must accept the terms of this agreement before continuing with the installation.

Limited Use Software License Agreement
Version 2.9

IMPORTANT - READ CAREFULLY

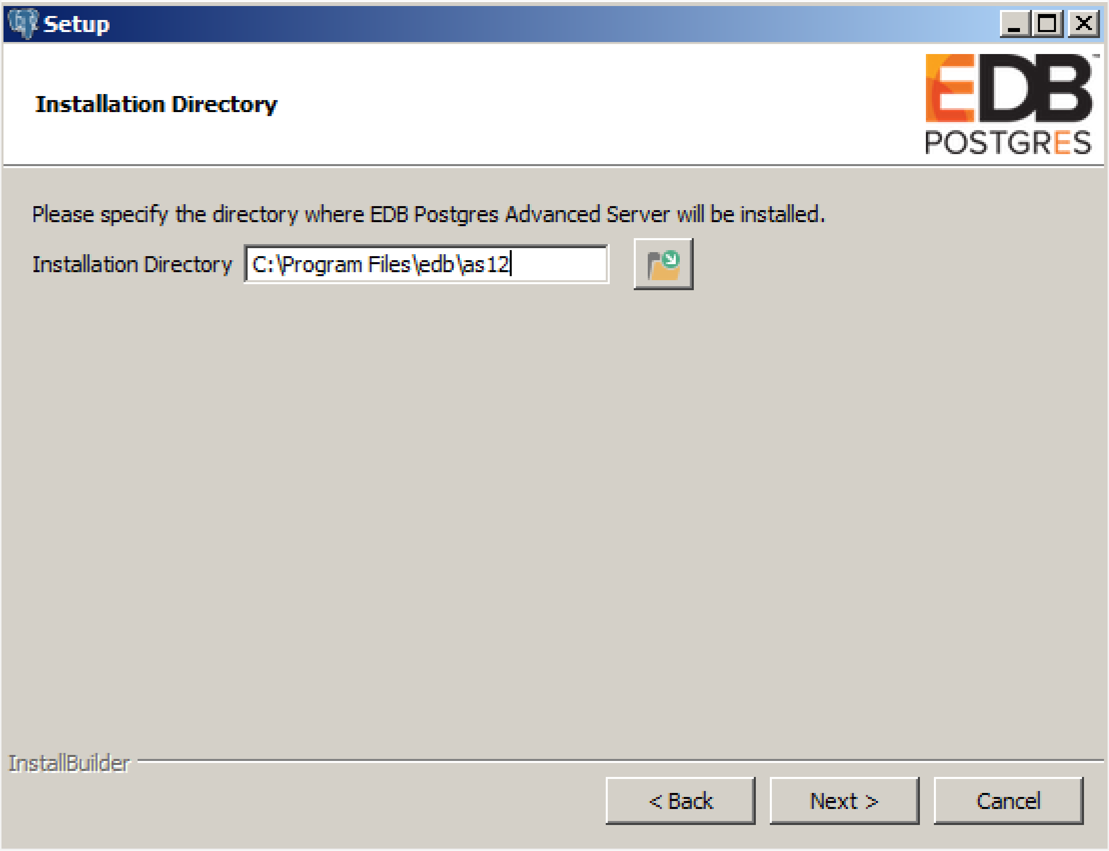
This Limited Use Software License Agreement ("Agreement") is a legal document between you ("Customer") and EnterpriseDB Corporation ("EnterpriseDB"). It is important that you read this document before using the EnterpriseDB-provided software ("Software"). By clicking the "I ACCEPT" button, or by installing, or otherwise using the Software, Customer agrees to be bound by the terms of this Agreement, including, without limitation, the warranty disclaimers, limitations of liability and termination

Do you accept this license?
● I accept the agreement
○ I do not accept the agreement

Figure 3.2 -The EnterpriseDB License Agreement

Carefully review the license agreement before highlighting the appropriate radio button; click `Next` to continue.

The Installation Directory window opens, as shown in Figure 3.3.



Please specify the directory where EDB Postgres Advanced Server will be installed.

Installation Directory C:\Program Files\edb\as12

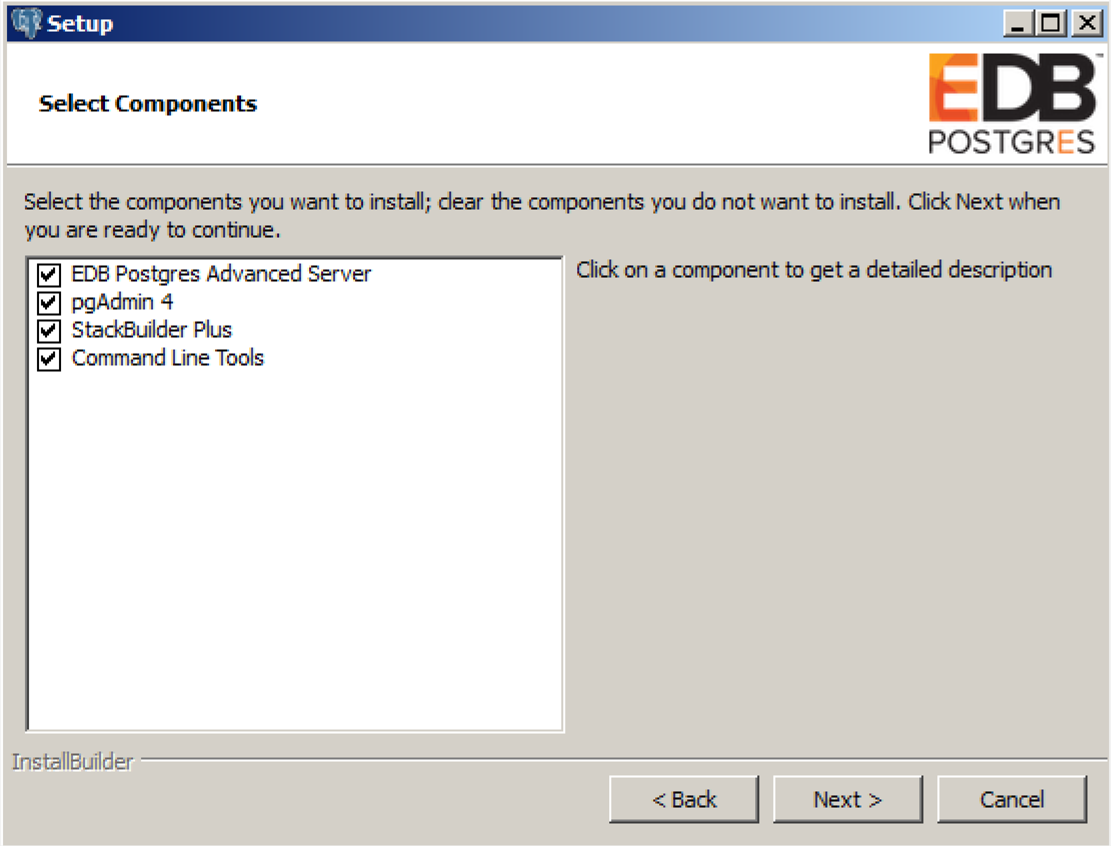
Figure 3.3 -The Installation Directory window.

By default, the Advanced Server installation directory is:

```
C:\Program Files\edb\as12
```

You can accept the default installation location, and click Next to continue, or optionally click the File Browser icon to open the Browse For Folder dialog to choose an alternate installation directory.

Please Note: The data directory of a production database should not be stored on an NFS file system.



Setup

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.

☑ EDB Postgres Advanced Server
☑ pgAdmin 4
☑ StackBuilder Plus
☑ Command Line Tools

Click on a component to get a detailed description

Figure 3.4 -The Select Components window

The Select Components window (shown in Figure 3.4) contains a list of optional components that you can install with the Advanced Server Setup wizard. You can omit a module from the Advanced Server installation by deselecting the box next to the components name.

The Setup wizard can install the following components while installing Advanced Server 12:

EDB Postgres Advanced Server

> Select the EDB Postgres Advanced Server option to install Advanced Server 12.

pgAdmin 4

> Select the pgAdmin 4 option to install the pgAdmin 4 client. pgAdmin 4 provides a powerful graphical interface for database management and monitoring.

StackBuilder Plus

The StackBuilder Plus utility is a graphical tool that can update installed products, or download and add supporting modules (and the resulting dependencies) after your Advanced Server setup and installation completes. See Section 3.3 for more information about StackBuilder Plus.

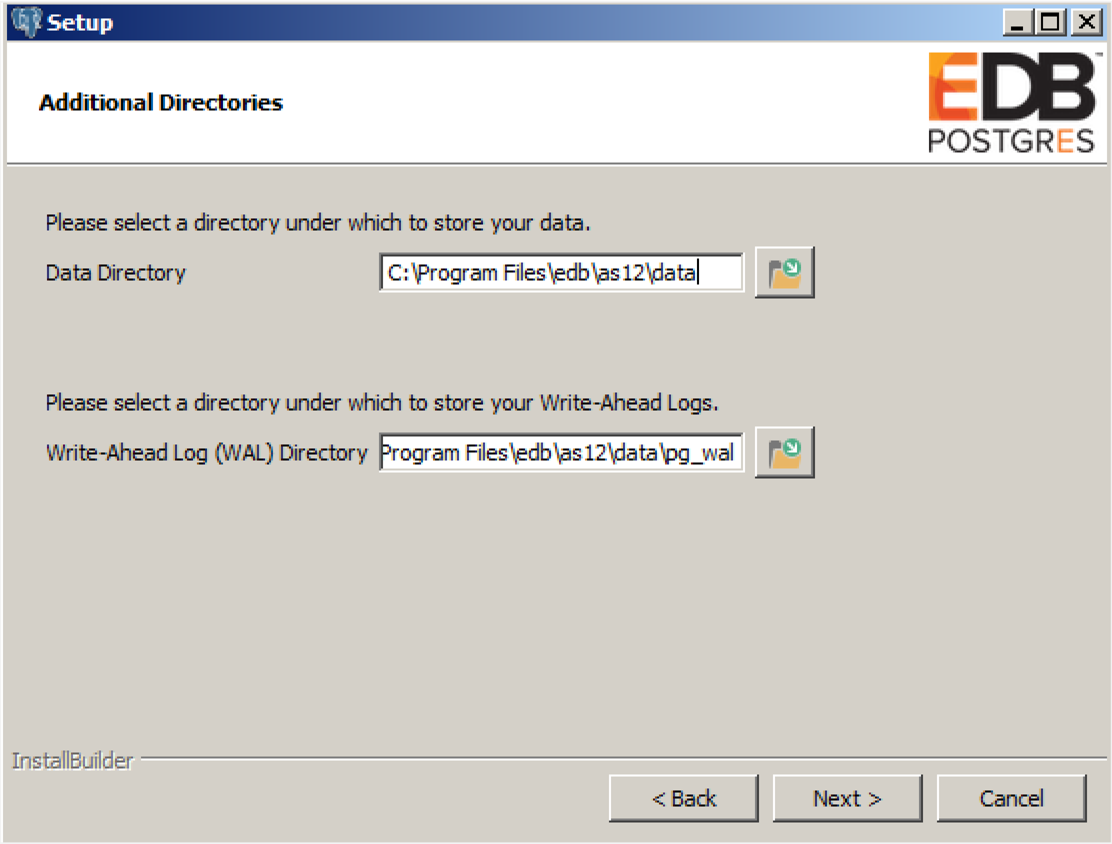
Command Line Tools

The Command Line Tools option installs command line tools and supporting client libraries including:

- libpq
- psql
- EDB*Loader
- ecpgPlus
- pg_basebackup, pg_dump, and pg_restore
- pg_bench
- and more.

Please note: The Command Line Tools are required if you are installing Advanced Server or pgAdmin 4.

After selecting the components you wish to install, click `Next` to open the `Additional Directories` window (shown in Figure 3.5).



Additional Directories

Please select a directory under which to store your data.

Data Directory: C:\Program Files\edb\as12\data

Please select a directory under which to store your Write-Ahead Logs.

Write-Ahead Log (WAL) Directory: Program Files\edb\as12\data\pg_wal

Figure 3.5 -The Additional Directories window.

By default, the Advanced Server `data` files are saved to:

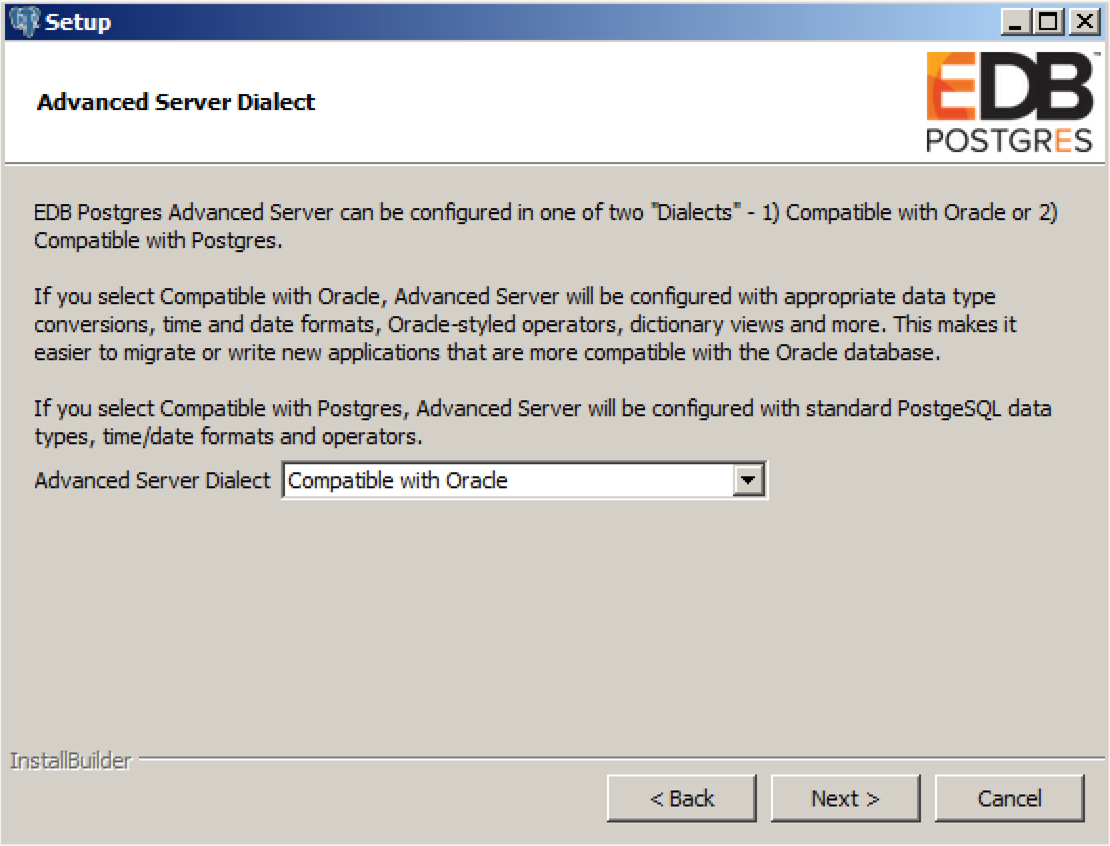
```
C:\Program Files\edb\as12\data
```

The default location of the Advanced Server `Write-Ahead Log (WAL) Directory` is:

```
C:\Program Files\edb\as12\data\pg_wal
```

Advanced Server uses write-ahead logs to promote transaction safety and speed transaction processing; when you make a change to a table, the change is stored in shared memory and a record of the change is written to the write-ahead log. When you perform a `COMMIT`, Advance Server writes contents of the write-ahead log to disk.

Accept the default file locations, or use the `File Browser` icon to select an alternate location; click `Next` to continue to the `Advanced Server Dialect` window.



Setup

Advanced Server Dialect

EDB Postgres Advanced Server can be configured in one of two "Dialects" - 1) Compatible with Oracle or 2) Compatible with Postgres.

If you select Compatible with Oracle, Advanced Server will be configured with appropriate data type conversions, time and date formats, Oracle-styled operators, dictionary views and more. This makes it easier to migrate or write new applications that are more compatible with the Oracle database.

If you select Compatible with Postgres, Advanced Server will be configured with standard PostgeSQL data types, time/date formats and operators.

Advanced Server Dialect: Compatible with Oracle

Figure 3.6 -The Advanced Server Dialect window.

Use the drop-down listbox on the `Advanced Server Dialect` window (see Figure 3.6) to choose a server dialect. The server dialect specifies the compatibility features supported by Advanced Server.

By default, Advance Server installs in `Compatible with Oracle` mode; you can choose between `Compatible with Oracle` and `Compatible with PostgreSQL` installation modes.

Compatible with Oracle

If you select `Compatible with Oracle`, the installation will include the following features:

- Data dictionary views that is compatible with Oracle databases.
- Oracle data type conversions.
- Date values displayed in a format compatible with Oracle syntax.
- Support for Oracle-styled concatenation rules (if you concatenate a string value with a `NULL` value, the returned value is the value of the string).

- Schemas (dbo and sys) compatible with Oracle databases added to the SEARCH_PATH.
- Support for the following Oracle built-in packages:

Package	Functionality compatible with Oracle Databases
dbms_alert	Provides the capability to register for, send, and receive alerts.
dbms_job	Provides the capability for the creation, scheduling, and managing of jobs.
dbms_lob	Provides the capability to manage on large objects.
dbms_output	Provides the capability to send messages to a message buffer, or get messages from the message buffer.
dbms_pipe	Provides the capability to send messages through a pipe within or between sessions connected to the same database cluster.
dbms_rls	Enables the implementation of Virtual Private Database on certain Advanced Server database objects.
dbms_sql	Provides an application interface to the EnterpriseDB dynamic SQL functionality.
dbms_utility	Provides various utility programs.
dbms_aqadm	Provides supporting procedures for Advanced Queueing functionality.
dbms_aq	Provides message queueing and processing for Advanced Server.
dbms_profiler	Collects and stores performance information about the PL/pgSQL and SPL statements that are executed during a performance profiling session.
dbms_random	Provides a number of methods to generate random values.
dbms_redact	Enables the redacting or masking of data that is returned by a query.
dbms_lock	Provides support for the DBMS_LOCK.SLEEP procedure.
dbms_scheduler	Provides a way to create and manage jobs, programs, and job schedules.
dbms_crypto	Provides functions and procedures to encrypt or decrypt RAW, BLOB or CLOB data. You can also use DBMS_CRYPTO functions to generate cryptographically strong random values.
dbms_mview	Provides a way to manage and refresh materialized views and their dependencies.
dbms_session	Provides support for the DBMS_SESSION.SET_ROLE procedure.
utl_encode	Provides a way to encode and decode data.
utl_http	Provides a way to use the HTTP or HTTPS protocol to retrieve information found at an URL.
utl_file	Provides the capability to read from, and write to files on the operating system's file system.
utl_smtp	Provides the capability to send e-mails over the Simple Mail Transfer Protocol (SMTP).
utl_mail	Provides the capability to manage e-mail.
utl_url	Provides a way to escape illegal and reserved characters within an URL.
utl_raw	Provides a way to manipulate or retrieve the length of raw data types.

This is not a comprehensive list of the compatibility features for Oracle included when Advanced Server is installed in Compatible with Oracle mode; for more information, see the *Database Compatibility for Oracle Developer's Guide* available from the EnterpriseDB website at:

https://www.enterprisedb.com/edb-docs

If you choose to install in `Compatible with Oracle` mode, the Advanced Server superuser name is `enterprisedb`.

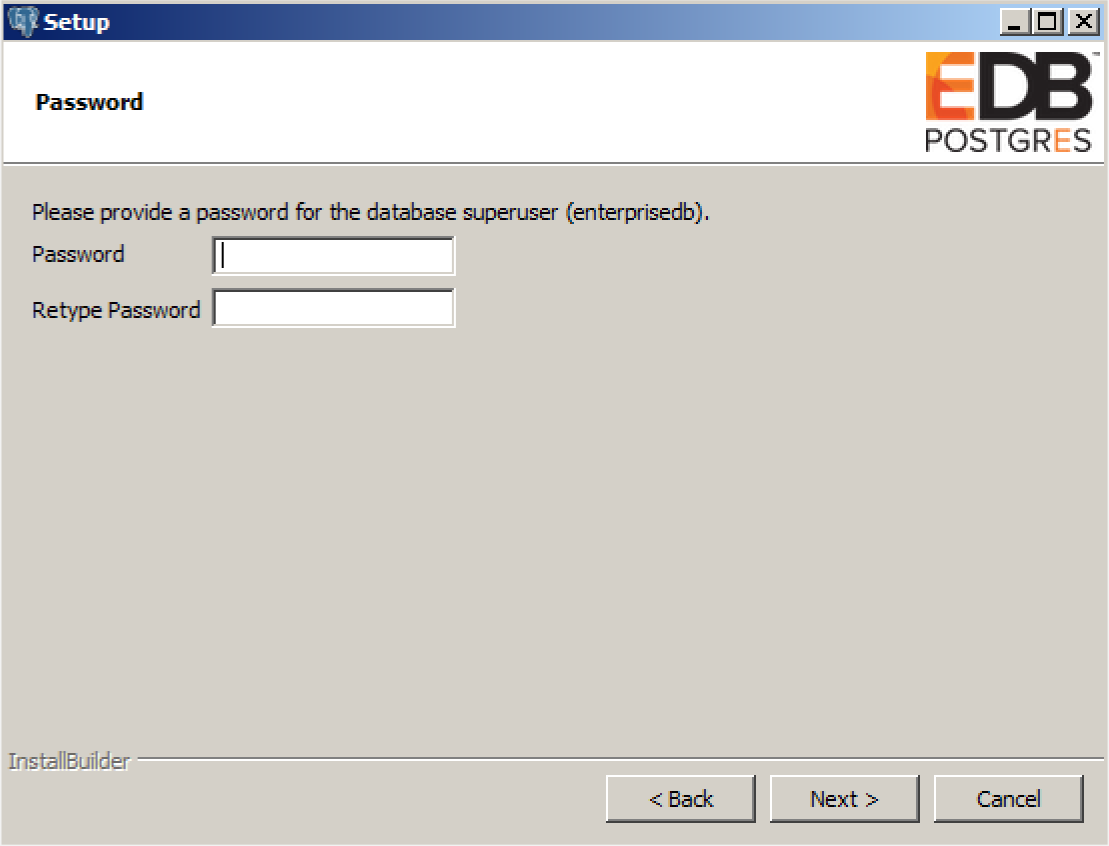
Compatible with PostgreSQL

If you select `Compatible with PostgreSQL`, Advanced Server will exhibit compatibility with PostgreSQL version 12. If you choose to install in `Compatible with PostgreSQL` mode, the default Advanced Server superuser name is `postgres`.

For detailed information about PostgreSQL functionality, visit the official PostgreSQL website at:

http://www.postgresql.org

After specifying a configuration mode, click `Next` to continue to the `Password` window (shown in Figure 3.7).



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

Password

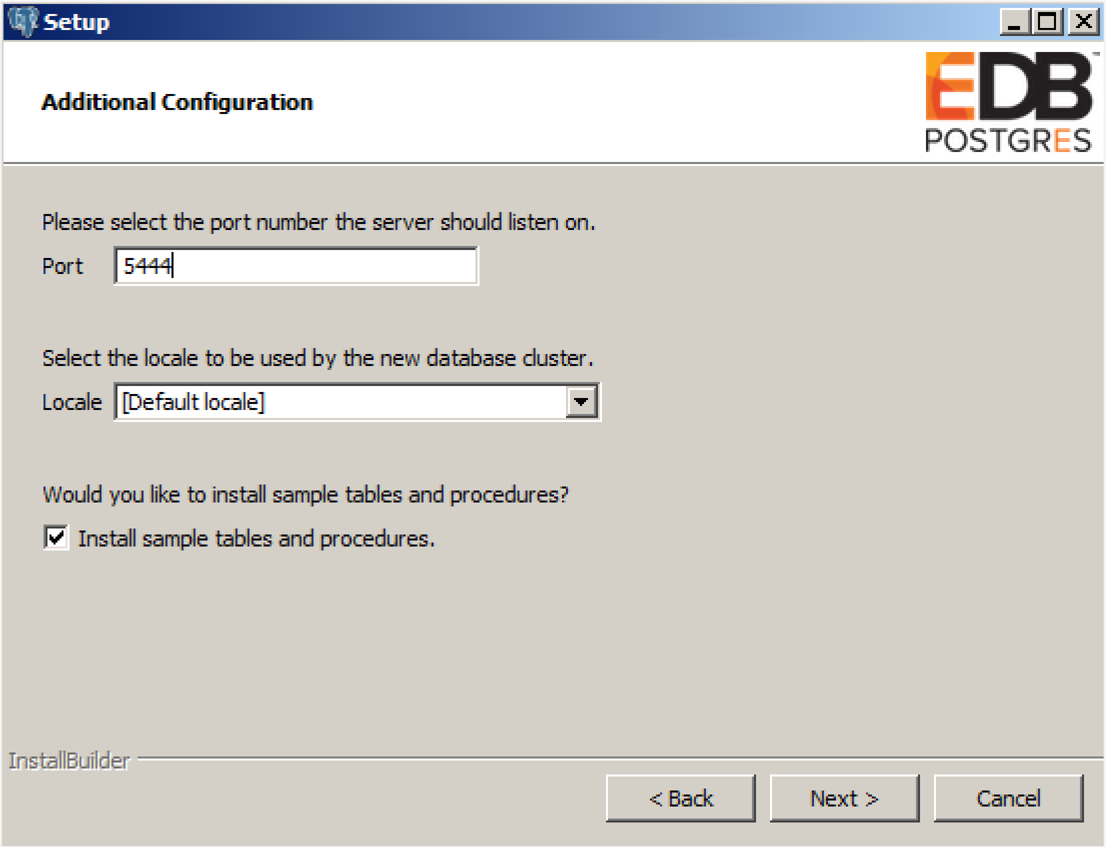
Retype Password

Figure 3.7 -The Password window.

Advanced Server uses the password specified on the Password window for the database superuser. The specified password must conform to any security policies existing on the Advanced Server host.

After you enter a password in the Password field, confirm the password in the Retype Password field, and click Next to continue.

The Additional Configuration window opens (shown in Figure 3.8).



Please select the port number the server should listen on.

Port 5444

Select the locale to be used by the new database cluster.

Locale [Default locale]

Would you like to install sample tables and procedures?

☑ Install sample tables and procedures.

Figure 3.8 -The Additional Configuration window.

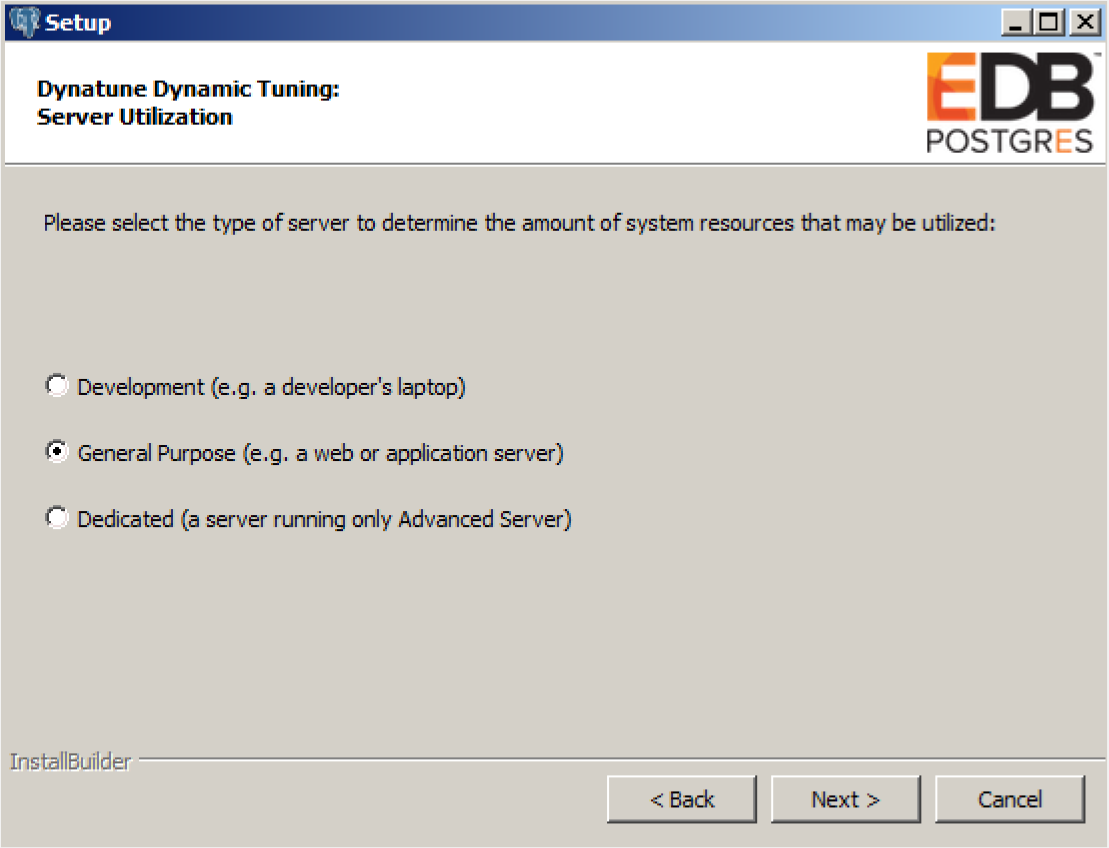
Use the fields on the Additional Configuration window to specify installation details:

- Use the Port field to specify the port number that Advanced Server should listen to for connection requests from client applications. The default is 5444.
- If the Locale field is set to [Default locale], Advanced Server uses the system locale as the working locale. Use the drop-down listbox next to Locale to specify an alternate locale for Advanced Server.
- By default, the Setup wizard installs corresponding sample data for the server dialect specified by the compatibility mode (Oracle or PostgreSQL). Clear the

check box next to `Install sample tables and procedures` if you do not wish to have sample data installed.

After verifying the information on the `Additional Configuration` window, click `Next` to open the `Dynatune Dynamic Tuning: Server Utilization` window (shown in Figure 3.9).

The graphical `Setup` wizard facilitates performance tuning via the Dynatune Dynamic Tuning feature. Dynatune functionality allows Advanced Server to make optimal usage of the system resources available on the host machine on which it is installed.



Dynatune Dynamic Tuning:
Server Utilization

Please select the type of server to determine the amount of system resources that may be utilized:

○ Development (e.g. a developer's laptop)

● General Purpose (e.g. a web or application server)

○ Dedicated (a server running only Advanced Server)

Figure 3.9 -The Dynatune Dynamic Tuning: Server Utilization window.

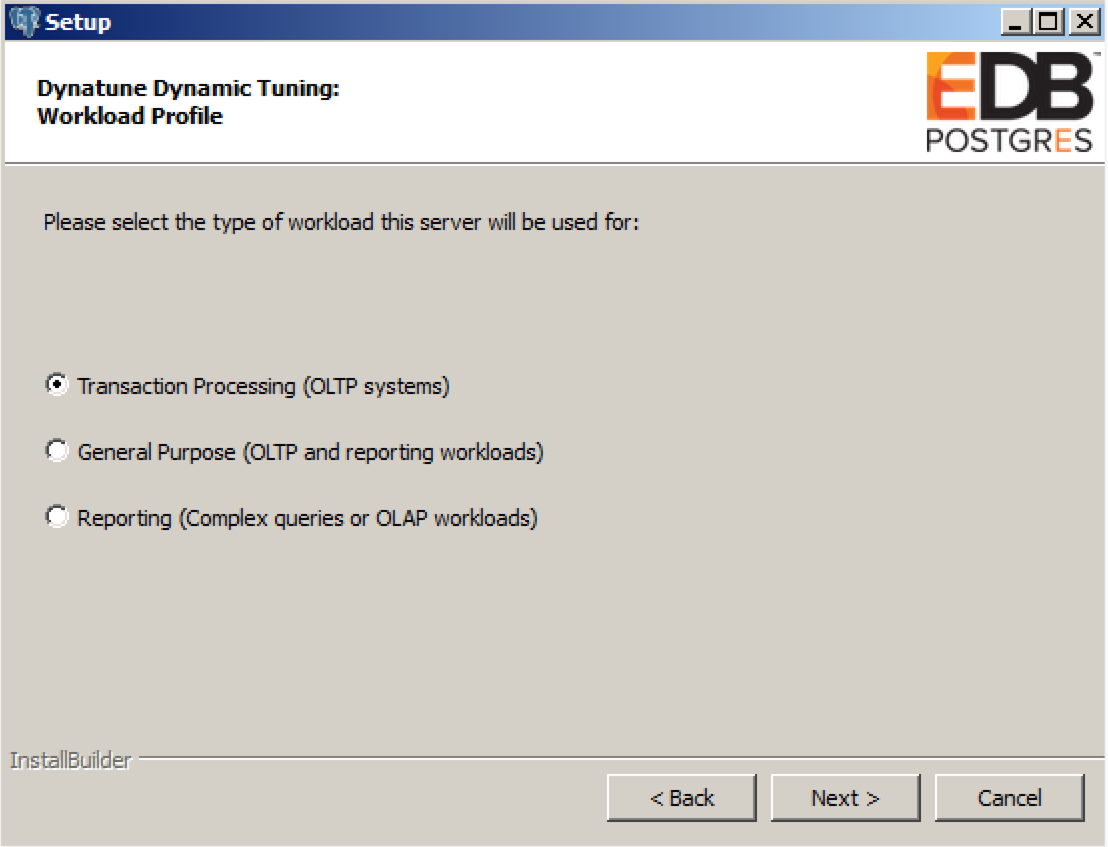
The `edb_dynatune` configuration parameter determines how Advanced Server allocates system resources. Use the radio buttons on the `Server Utilization` window to set the initial value of the `edb_dynatune` configuration parameter:

- Select `Development` to set the value of `edb_dynatune` to `33`. A low value dedicates the least amount of the host machine's resources to the database server. This is a good choice for a development machine.

- Select `General Purpose` to set the value of `edb_dynatune` to `66`. A mid-range value dedicates a moderate amount of system resources to the database server. This would be a good setting for an application server with a fixed number of applications running on the same host as Advanced Server.
- Select `Dedicated` to set the value of `edb_dynatune` to `100`. A high value dedicates most of the system resources to the database server. This is a good choice for a dedicated server host.

After the installation is complete, you can adjust the value of `edb_dynatune` by editing the `postgresql.conf` file, located in the `data` directory of your Advanced Server installation. After editing the `postgresql.conf` file, you must restart the server for your changes to take effect.

Select the appropriate setting for your system, and click `Next` to continue to the `Dynatune Dynamic Tuning: Workload Profile` window (shown in Figure 3.10).



Dynatune Dynamic Tuning:
Workload Profile

Please select the type of workload this server will be used for:

● Transaction Processing (OLTP systems)

○ General Purpose (OLTP and reporting workloads)

○ Reporting (Complex queries or OLAP workloads)

Figure 3.10 -The Dynatune Dynamic Tuning: Workload Profile window.

Use the radio buttons on the `Workload Profile` window to specify the initial value of the `edb_dynatune_profile` configuration parameter. The `edb_dynatune_profile` parameter controls performance-tuning aspects based on the type of work that the server performs.

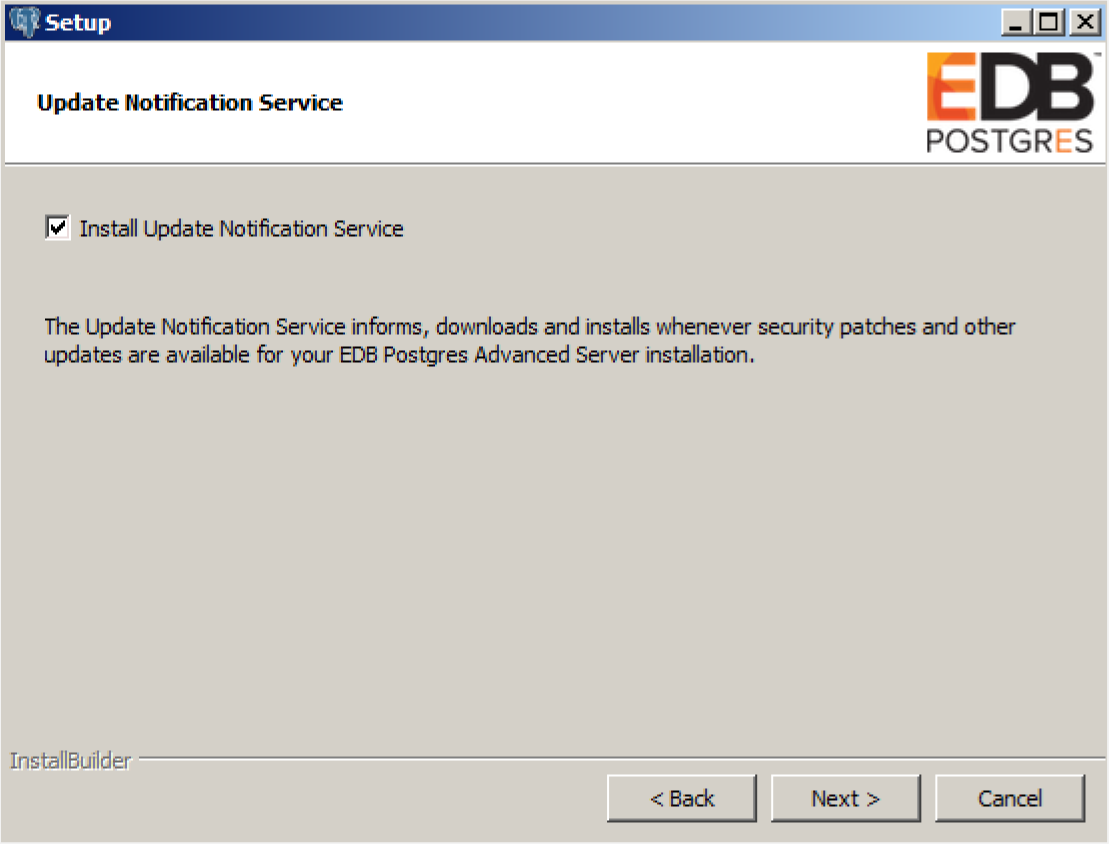
- Select Transaction Processing (OLTP systems) to specify an edb_dynatune_profile value of oltp. Recommended when Advanced Server is supporting heavy online transaction processing.
- Select General Purpose (OLTP and reporting workloads) to specify an edb_dynatune_profile value of mixed. Recommended for servers that provide a mix of transaction processing and data reporting.
- Select Reporting (Complex queries or OLAP workloads) to specify an edb_dynatune_profile value of reporting. Recommended for database servers used for heavy data reporting.

After the installation is complete, you can adjust the value of edb_dynatune_profile by editing the postgresql.conf file, located in the data directory of your Advanced Server installation. After editing the postgresql.conf file, you must restart the server for your changes to take effect.

For more information about edb_dynatune and other performance-related topics, see the *EDB Postgres Advanced Server Guide* available from the EnterpriseDB website at:

https://www.enterprisedb.com/edb-docs

Click Next to continue. The Update Notification Service window (shown in Figure 3.11) opens.



Update Notification Service

☑ Install Update Notification Service

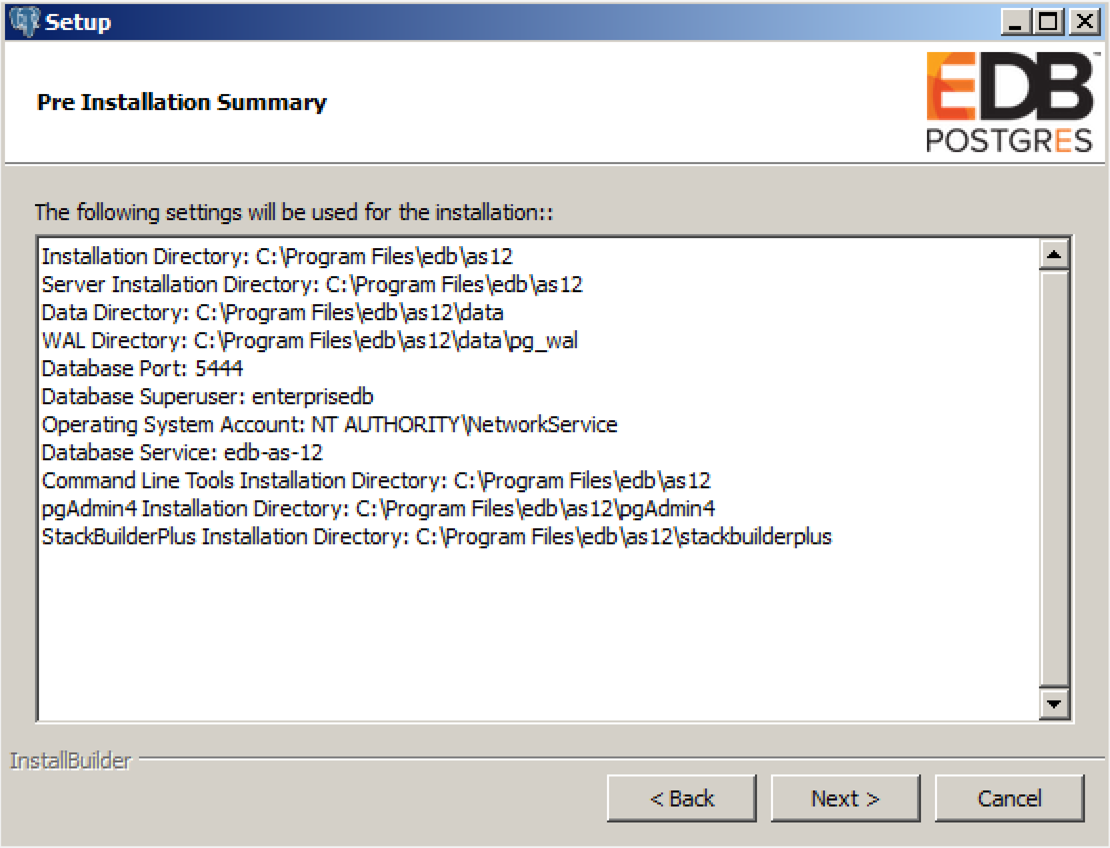
The Update Notification Service informs, downloads and installs whenever security patches and other updates are available for your EDB Postgres Advanced Server installation.

Figure 3.11 -The Update Notification Service window.

When enabled, the update notification service notifies you of any new updates and security patches available for your installation of Advanced Server.

By default, Advanced Server is configured to start the service when the system boots; clear the `Install Update Notification Service` check box, or accept the default, and click `Next` to continue.

The `Pre Installation Summary` opens as shown in Figure 3.12.



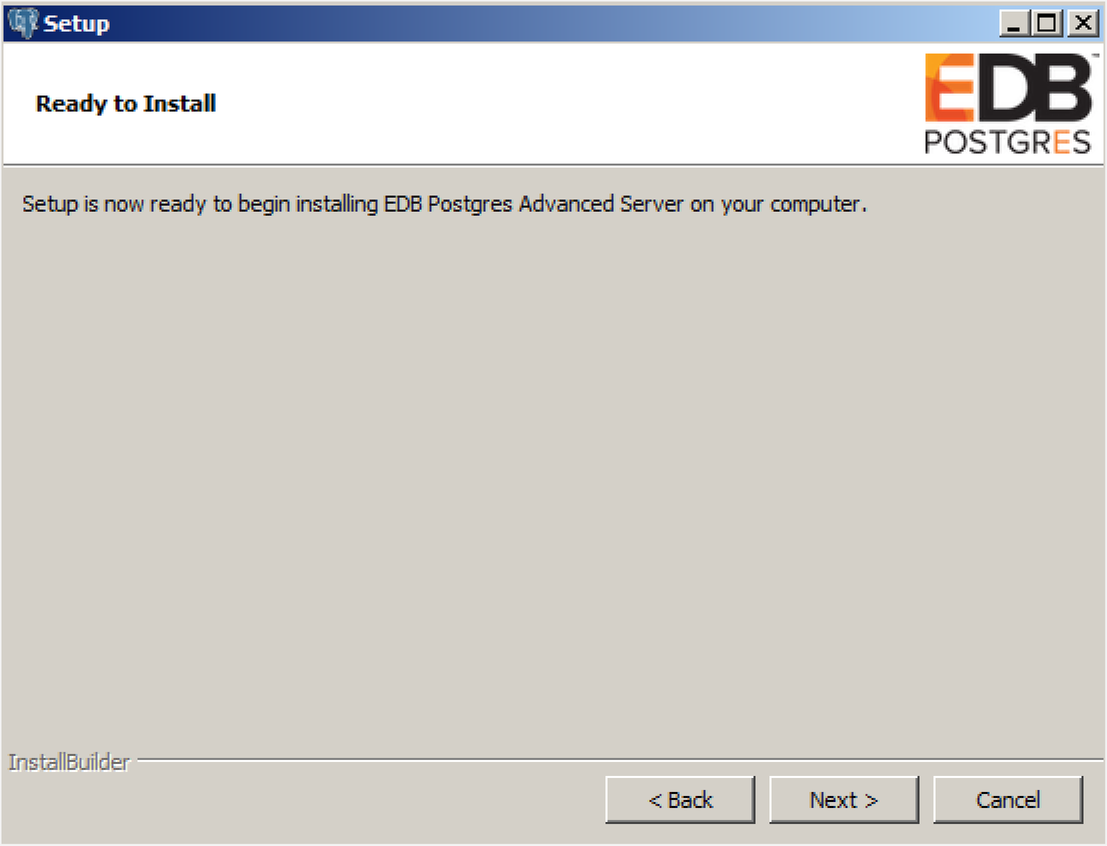
The following settings will be used for the installation::

```
Installation Directory: C:\Program Files\edb\as12
Server Installation Directory: C:\Program Files\edb\as12
Data Directory: C:\Program Files\edb\as12\data
WAL Directory: C:\Program Files\edb\as12\data\pg_wal
Database Port: 5444
Database Superuser: enterprisedb
Operating System Account: NT AUTHORITY\NetworkService
Database Service: edb-as-12
Command Line Tools Installation Directory: C:\Program Files\edb\as12
pgAdmin4 Installation Directory: C:\Program Files\edb\as12\pgAdmin4
StackBuilderPlus Installation Directory: C:\Program Files\edb\as12\stackbuilderplus
```

Figure 3.12 -The Pre Installation Summary.

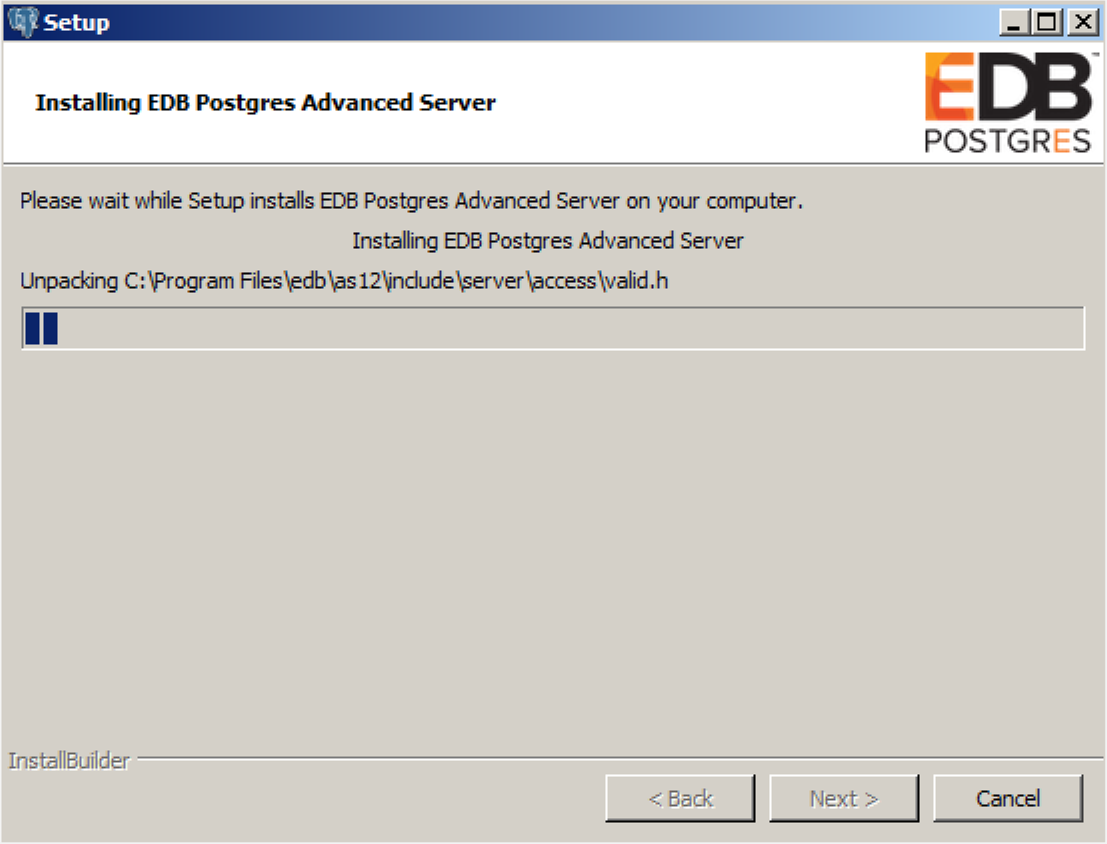
The `Pre Installation Summary` provides an overview of the options specified during the `Setup` process. Review the options before clicking `Next`; click `Back` to navigate back through the dialogs and update any options.

The Ready to Install window (see Figure 3.13) confirms that the installer has the information it needs about your configuration preferences to install Advanced Server. Click Next to continue.



Setup is now ready to begin installing EDB Postgres Advanced Server on your computer.

Figure 3.13 -The Ready to Install window.



Please wait while Setup installs EDB Postgres Advanced Server on your computer.

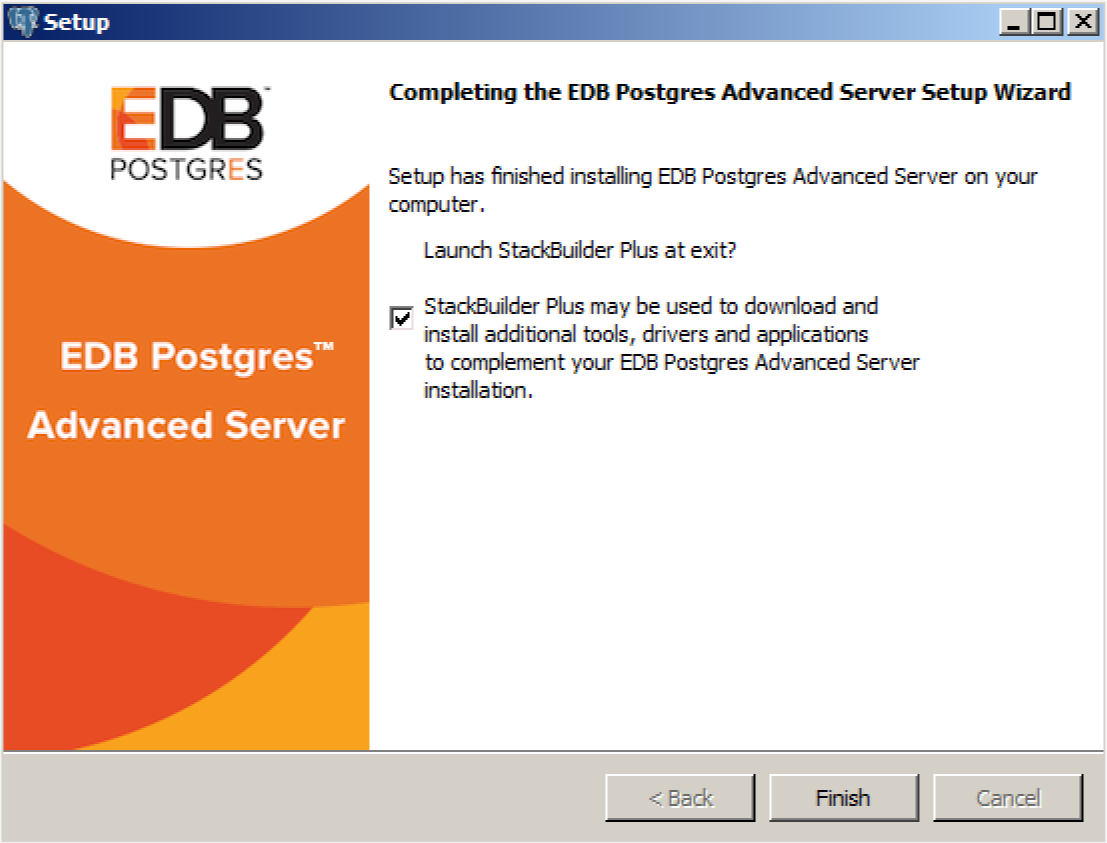
Installing EDB Postgres Advanced Server

Unpacking C:\Program Files\edb\as12\include\server\access\valid.h

Figure 3.14 -Installing Advanced Server.

As each supporting module is unpacked and installed, the module's installation is confirmed with a progress bar (see Figure 3.14).

Before the `Setup` wizard completes the Advanced Server installation, it offers to `Launch StackBuilder Plus at exit?` (see Figure 3.15).



Completing the EDB Postgres Advanced Server Setup Wizard

Setup has finished installing EDB Postgres Advanced Server on your computer.

Launch StackBuilder Plus at exit?

☑ StackBuilder Plus may be used to download and install additional tools, drivers and applications to complement your EDB Postgres Advanced Server installation.

Figure 3.15 -The Setup wizard offers to Launch StackBuilder Plus at exit.

You can clear the `StackBuilder Plus` check box and click `Finish` to complete the Advanced Server installation, or accept the default and proceed to StackBuilder Plus.

EDB Postgres StackBuilder Plus is included with the installation of Advanced Server and its core supporting components. StackBuilder Plus is a graphical tool that can update installed products, or download and add supporting modules (and the resulting dependencies) after your Advanced Server setup and installation completes. See Section 3.3 for more information about StackBuilder Plus.

3.2 Invoking the Graphical Installer from the Command Line

The command line options of the Advanced Server installer offer functionality for Windows systems that reside in situations where a graphical installation may not work because of limited resources or privileges. You can:

- Include the `--mode unattended` option when invoking the installer to perform an installation without user input.
- Invoke the installer with the `--extract-only` option to perform a minimal installation when you don't hold the privileges required to perform a complete installation.

Not all command line options are suitable for all situations. For a complete reference guide to the command line options, see Section 3.2.3, *Reference - Command Line Options*.

Please note: If you are invoking the installer from the command line to perform a system upgrade, the installer will ignore command line options, and preserve the configuration of the previous installation.

3.2.1 Performing an Unattended Installation

To specify that the installer should run without user interaction, include the `--mode unattended` command line option. In unattended mode, the installer uses one of the following sources for configuration parameters:

- command line options (specified when invoking the installer)
- parameters specified in an option file
- Advanced Server installation defaults

You can embed the non-interactive Advanced Server installer within another application installer; during the installation process, a progress bar allows the user to view the progression of the installation.

You must have administrative privileges to install Advanced Server using the `--mode unattended` option. If you are using the `--mode unattended` option to install Advanced Server with a client, the calling client must be invoked with superuser or administrative privileges.

To start the installer in unattended mode, navigate to the directory that contains the executable file, and enter:

```
edb-as12-server-12.x.x-x-windows-x64.exe --mode unattended
--superpassword database_superuser_password --
servicepassword system_password
```

When invoking the installer, include the `--servicepassword` option to specify an operating system password for the user installing Advanced Server.

Use the --`superpassword` option to specify a password that conforms to the password security policies defined on the host; enforced password policies on your system may not accept the default password (`enterprisedb`).

3.2.2 Performing an Installation with Limited Privileges

To perform an abbreviated installation of Advanced Server without access to administrative privileges, invoke the installer from the command line and include the `--extract-only` option. The `--extract-only` option extracts the binary files in an unaltered form, allowing you to experiment with a minimal installation of Advanced Server.

If you invoke the installer with the `--extract-only` options, you can either manually create a cluster and start the service, or run the installation script. To manually create the cluster, you must:

- Use `initdb` to initialize the cluster
- Configure the cluster
- Use `pg_ctl` to start the service

For more information about the `initdb` and `pg_ctl` commands, please see the PostgreSQL Core Documentation at:

https://www.postgresql.org/docs/12/static/app-initdb.html

https://www.postgresql.org/docs/12/static/app-pg-ctl.html

If you include the `--extract-only` option, the installer steps through a shortened form of the `Setup` wizard. During the brief installation process, the installer generates an installation script that can be later used to complete a more complete installation. You must have administrative privileges to invoke the installation script.

The installation script:

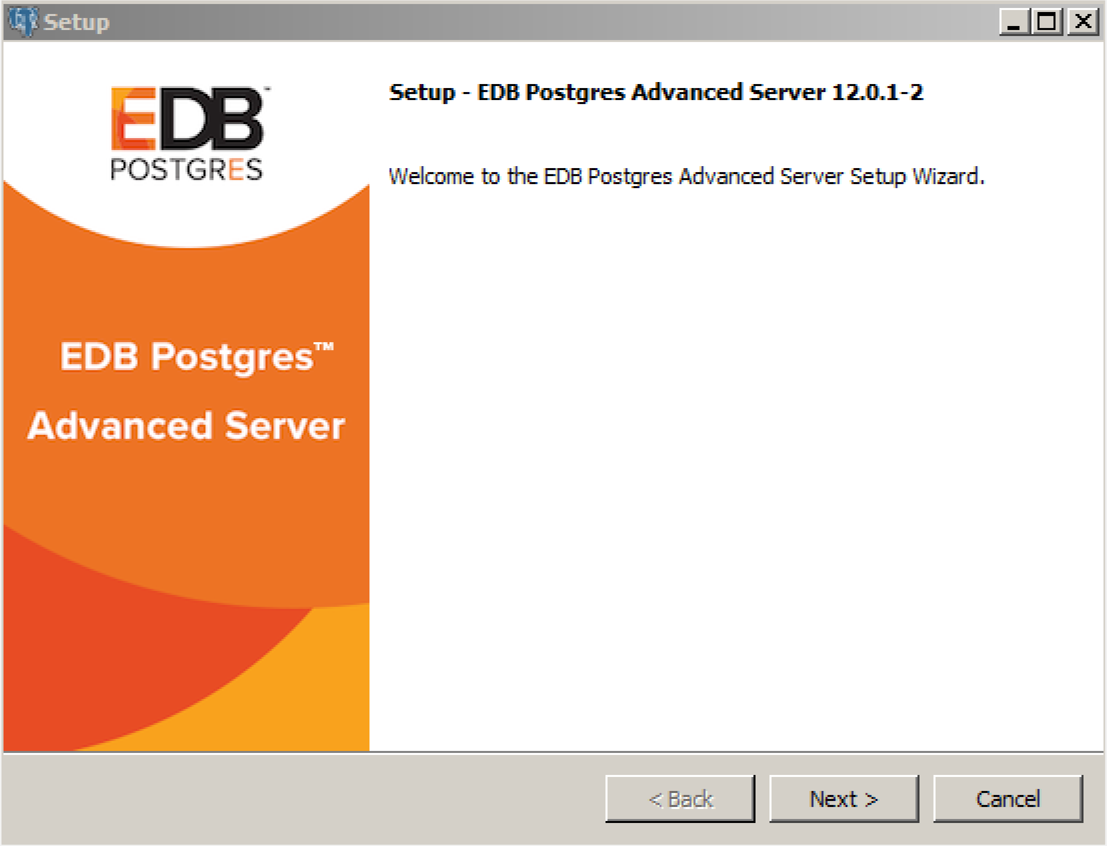
- Initializes the database cluster if the cluster is empty.
- Configures the server to start at boot-time.
- Establishes initial values for Dynatune (dynamic tuning) variables.

The scripted Advanced Server installation does not create menu shortcuts or provide access to EDB Postgres StackBuilder Plus, and no modifications are made to registry files.

To perform a limited installation and generate an installation script, download and unpack the Advanced Server installer. Navigate into the directory that contains the installer, and invoke the installer with the command:

```
edb-as12-server-12.x.x-x-windows.exe --extract-only yes
```

A dialog opens, prompting you to choose an installation language. Select a language for the installation from the drop-down listbox, and click `OK` to continue. The `Setup Wizard` opens (shown in Figure 3.16).

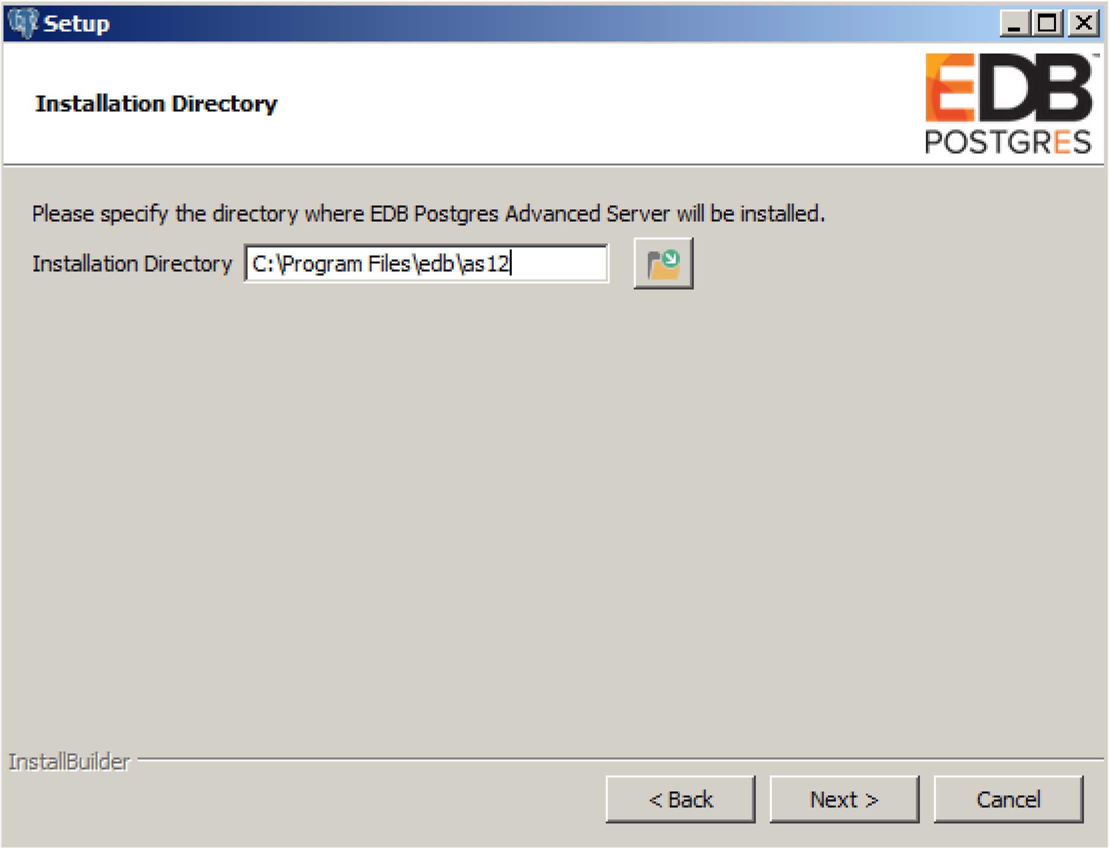


Setup - EDB Postgres Advanced Server 12.0.1-2

Welcome to the EDB Postgres Advanced Server Setup Wizard.

Figure 3.16 -The Welcome window.

Click `Next` to continue.



Please specify the directory where EDB Postgres Advanced Server will be installed.

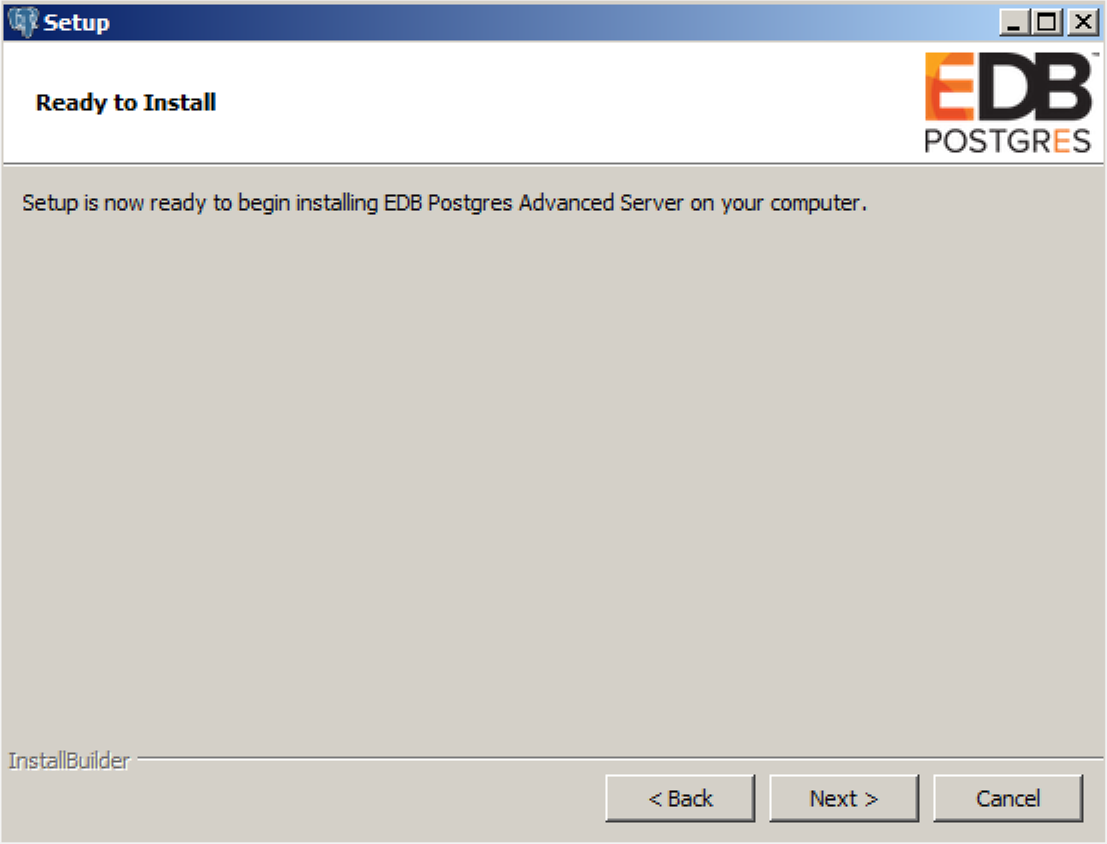
Installation Directory: C:\Program Files\edb\as12

Figure 3.17 -Specify an installation directory.

On Windows, the default Advanced Server installation directory is:

```
C:\Program Files\edb\as12
```

You can accept the default installation location (see Figure 3.17), and click `Next` to continue to the `Ready to Install` window (shown in Figure 3.18), or optionally click the `File Browser` icon to choose an alternate installation directory.

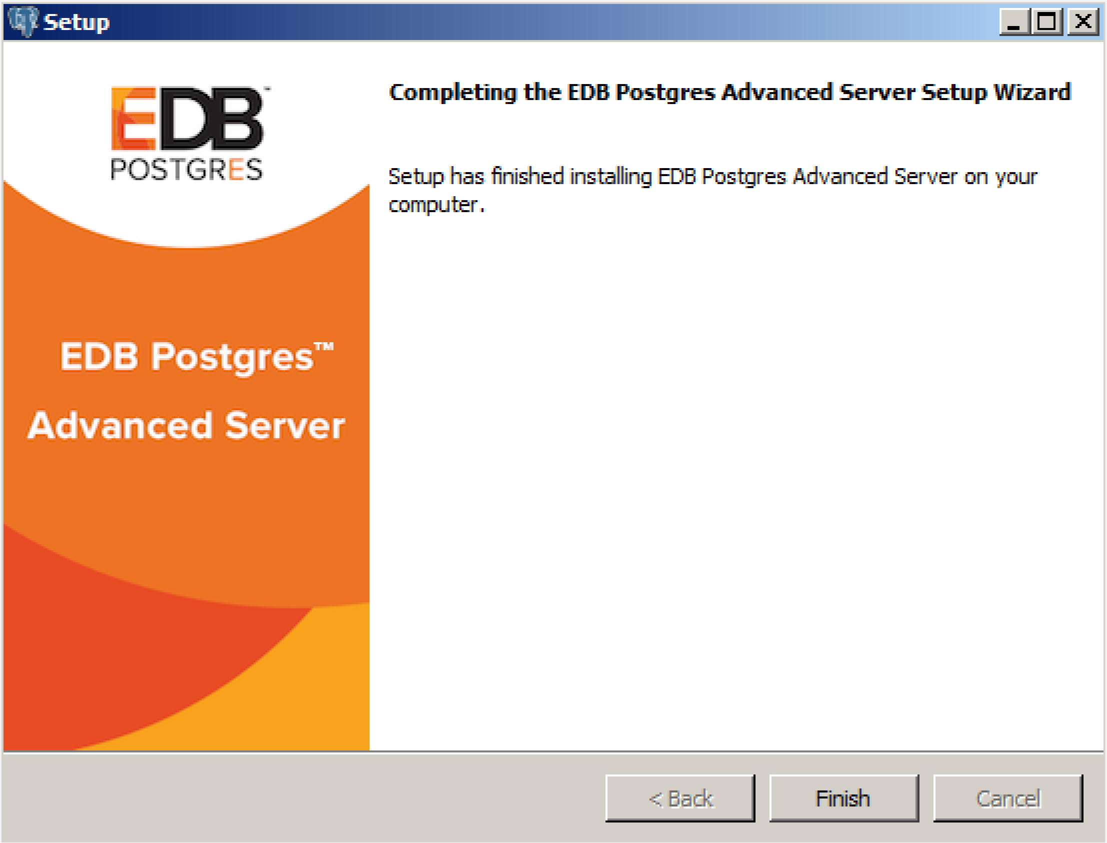


Ready to Install

Setup is now ready to begin installing EDB Postgres Advanced Server on your computer.

Figure 3.18 -The Setup wizard is ready to install Advanced Server.

Click `Next` to proceed with the Advanced Server installation. During the installation, progress bars and popups mark the installation progress. The installer notifies you when the installation is complete (see Figure 3.19).



Completing the EDB Postgres Advanced Server Setup Wizard

Setup has finished installing EDB Postgres Advanced Server on your computer.

Figure 3.19 -The Advanced Server installation is complete.

After completing the minimal installation, you can execute a script to initialize a cluster and start the service. The script is (by default) located in:

```
C:\Program Files\edb
```

To execute the installation script, open a command line and assume administrative privileges. Navigate to the directory that contains the script, and execute the command:

```
cscript runAsAdmin.vbs
```

The installation script executes at the command line, prompting you for installation configuration information. The default configuration value is displayed in square braces immediately before each prompt; update the default value or press `Enter` to accept the default value and continue.

Example

The following dialog is an example of a scripted installation. The actual installation dialog may vary, and will reflect the options specified during the installation.

Specify the installation directory is the directory where Advanced Server is installed:

```
Please enter the installation directory [ C:\Program
Files\edb\as12 ] :
```

Specify the directory in which Advanced Server data will be stored:

```
Please enter the data directory path: [C:\Program
Files\edb\as12\data ] :
```

Specify the WAL directory (where the write-ahead log will be written):

```
Please enter the Write-Ahead Log (WAL) directory path:
     [C:\Program Files\edb\as12\data\pg_wal ] :
```

The database mode specifies the database dialect with which the Advanced Server installation is compatible. The optional values are `oracle` or `postgresql`.

```
Please enter database mode: [ oracle ] :
```

Compatible with Oracle Mode

Specify `oracle` mode to include the following functionality:

- Data dictionary views and data type conversions compatible with Oracle databases.
- Date values displayed in a format compatible with Oracle syntax.
- Oracle-styled concatenation rules (if you concatenate a string value with a `NULL` value, the returned value is the value of the string).
- Schemas (`dbo` and `sys`) compatible with Oracle databases added to the `SEARCH_PATH`.
- Support for the Oracle built-in packages.

If you choose to install in `Compatible with Oracle` mode, the Advanced Server superuser name is `enterprisedb`.

Compatible with PostgreSQL Mode

Specify `postgresql` to install Advanced Server with complete compatibility with Postgres version 12.

For more information about PostgreSQL functionality, see the PostgreSQL Core Documentation available at:

https://www.enterprisedb.com/edb-docs

If you choose to install in `Compatible with PostgreSQL` mode, the Advanced Server superuser name is `postgres`.

Specify a port number for the Advanced Server listener to listen on:

```
NOTE: We will not be able to examine, if port is currently used
by other application.
Please enter port: [ 5444 ] :
```

Specify a locale for the Advanced Server installation. If you accept the `DEFAULT` value, the locale defaults to the locale of the host system.

```
Please enter the locale: [ DEFAULT ] :
```

You can optionally install sample tables and procedures. Press `Return`, or enter `Y` to accept the default and install the sample tables and procedures; enter an `n` and press `Return` to skip this step.

```
Install sample tables and procedures? (Y/n): [ Y ] :
```

Specify a password for the database superuser. By default, the database superuser is named `enterprisedb`.

```
Please enter the password for the SuperUser(enterprisedb): [ ] :
```

Specify a password for the service account user.

```
Please enter the password for the ServiceAccount(enterprisedb): [ ] :
```

The server utilization value is used as an initial value for the `edb_dynatune` configuration parameter. `edb_dynatune` determines how Advanced Server allocates system resources.

- A low value dedicates the least amount of the host machine's resources to the database server; a low value is a good choice for a development machine.
- A mid-range value dedicates a moderate amount of system resources to the database server. A mid-range value is a good setting for an application server with a fixed number of applications running on the same host as Advanced Server.

- A high value dedicates most of the system resources to the database server. This is a good choice for a dedicated server host.

Specify a value between `1` and `100`:

```
Please enter the Server Utilization: [ 66 ] :
```

After the installation is complete, you can adjust the value of `edb_dynatune` by editing the `postgresql.conf` file, located in the `data` directory of your Advanced Server installation. After editing the `postgresql.conf` file, you must restart the server for the changes to take effect.

The workload profile value is used as an initial value for the `edb_dynatune_profile` configuration parameter. `edb_dynatune_profile` controls performance-tuning based on the type of work that the server performs.

- Specify `oltp` if the server will be supporting heavy online transaction workloads.
- Specify `mixed` if the server will provide a mix of transaction processing and data reporting.
- Specify `reporting` if the database server will be used for heavy data reporting.

Specify a value between `1` and `100`:

```
Please enter the Workload Profile: [ oltp ] :
```

After the installation is complete, you can adjust the value of `edb_dynatune_profile` by editing the `postgresql.conf` file, located in the `data` directory of your Advanced Server installation, and restarting the server.

After processing, the Advanced Server installation is complete.

3.2.3 Reference - Command Line Options

You can optionally include the following parameters for an Advanced Server installation on the command line, or in a configuration file when invoking the Advanced Server installer.

`--create_samples { yes | no }`

> Use the `--create_samples` option to specify whether the installer should create the sample tables and procedures for the database dialect specified with the `--databasemode` parameter. The default is `yes`.

`--databasemode { oracle | postgresql }`

> Use the `--databasemode` parameter to specify a database dialect. The default is `oracle`.

`--datadir` *`data_directory`*

> Use the `--datadir` parameter to specify a location for the cluster's data directory. *`data_directory`* is the name of the directory; include the complete path to the desired directory.

`--debuglevel { 0 | 1 | 2 | 3 | 4 }`

> Use the `--debuglevel` parameter to set the level of detail written to the *`debug_log`* file (see `--debugtrace`). Higher values produce more detail in a longer trace file. The default is `2`.

`--debugtrace` *`debug_log`*

> Use the `--debugtrace` parameter to troubleshoot installation problems. *`debug_log`* is the name of the file that contains troubleshooting details.

`--disable-components component_list`

> Use the `--disable-components` parameter to specify a list of Advanced Server components to exclude from the installation. By default, *`component_list`* contains `''` (the empty string). *`component_list`* is a comma-separated list containing one or more of the following components:
>
> `dbserver`
>
> > EDB Postgres Advanced Server 12.

`pgadmin4`

The EDB Postgres pgAdmin 4 provides a powerful graphical interface for database management and monitoring.

`--enable_acledit { 1 | 0 }`

The `--enable_acledit 1` option instructs the installer to grant permission to the user specified by the `--serviceaccount` option to access the Advanced Server binaries and `data` directory. By default, this option is disabled if `--enable_acledit 0` is specified or if the `--enable_acledit` option is completely omitted.

Note: Specification of this option is valid only when installing on Windows. The `--enable_acledit 1` option should be specified when a *`discretionary access control list`* (DACL) needs to be set for allowing access to objects on which Advanced Server is to be installed. See the following for information on a DACL:

https://msdn.microsoft.com/en-us/library/windows/desktop/aa446597(v=vs.85).aspx

In order to perform future operations such as upgrading Advanced Server, access to the `data` directory must exist for the service account user specified by the `--serviceaccount` option. By specifying the `--enable_acledit 1` option, access to the `data` directory by the service account user is provided.

`--enable-components` *`component_list`*

Although this option is listed when you run the installer with the `--help` option, the `--enable-components` parameter has absolutely no effect on which components are installed. All components will be installed regardless of what is specified in *`component_list`*. In order to install only specific selected components, you must use the `--disable-components` parameter previously described in this section to list the components you do not want to install.

`--extract-only { yes | no }`

Include the `--extract-only` parameter to indicate that the installer should extract the Advanced Server binaries without performing a complete installation. Superuser privileges are not required for the `--extract-only` option. The default value is `no`.

`--help`

Include the `--help` parameter to view a list of the optional parameters.

`--installer-language { en | ja | zh_CN | zh_TW | ko }`

Use the `--installer-language` parameter to specify an installation language for Advanced Server. The default is `en`.

`en` specifies English.

`ja` specifies Japanese

`zh_CN` specifies Chinese Simplified.

`zh_TW` specifies Traditional Chinese.

`ko` specifies Korean.

`--install_runtimes { yes | no } (Windows only.)`

Include `--install_runtimes` to specify whether the installer should install the Microsoft Visual C++ runtime libraries. Default is `yes`.

`--locale` *`locale`*

Specifies the locale for the Advanced Server cluster. By default, the installer will use to the locale detected by `initdb`.

`--mode { unattended }`

Use the `--mode unattended` parameter to specify that the installer should perform an installation that requires no user input during the installation process.

`--optionfile` *`config_file`*

Use the `--optionfile` parameter to specify the name of a file that contains the installation configuration parameters. *`config_file`* must specify the complete path to the configuration parameter file.

`--prefix` *`installation_dir`*`/as12.`*`x`*

Use the `--prefix` parameter to specify an installation directory for Advanced Server. The installer will append a version-specific sub-directory (that is, `as12`) to the specified directory. The default installation directory is:

```
C:\Program Files\edb\as12
```

`--serverport` *`port_number`*

Use the `--serverport` parameter to specify a listener port number for Advanced Server.

If you are installing Advanced Server in unattended mode, and do not specify a value using the `--serverport` parameter, the installer will use port `5444`, or the first available port after port `5444` as the default listener port.

`--server_utilization {33 | 66 | 100}`

Use the `--server_utilization` parameter to specify a value for the `edb_dynatune` configuration parameter. The `edb_dynatune` configuration parameter determines how Advanced Server allocates system resources.

- A value of `33` is appropriate for a system used for development. A low value dedicates the least amount of the host machine's resources to the database server.
- A value of `66` is appropriate for an application server with a fixed number of applications. A mid-range value dedicates a moderate amount of system resources to the database server. The default value is 66.
- A value of `100` is appropriate for a host machine that is dedicated to running Advanced Server. A high value dedicates most of the system resources to the database server.

When the installation is complete, you can adjust the value of `edb_dynatune` by editing the `postgresql.conf` file, located in the `data` directory of your Advanced Server installation. After editing the `postgresql.conf` file, you must restart the server for the changes to take effect.

`--serviceaccount` *`user_account_name`*

Use the `--serviceaccount` parameter to specify the name of the user account that owns the server process.

- If `--databasemode` is set to `oracle` (the default), the default value of `--serviceaccount` is `enterprisedb`.

- If `--databasemode` is `postgresql`, the default value of `--serviceaccount` is set to `postgres`.

Please note that for security reasons, the `--serviceaccount` parameter must specify the name of an account that does not hold administrator privileges.

If you specify both the `--serviceaccount` option and the `--enable_acledit 1` option when invoking the installer, the database service and pgAgent will use the same service account, thereby having the required permissions to access the Advanced Server binaries and `data` directory.

Note: If you are installing on a Windows host, see the `--enable_acledit` option in this section for additional information. Specification of the `--enable_acledit` option is permitted only when installing on Windows.

Please note: If you do not include the `--serviceaccount` option when invoking the installer, the `NetworkService` account will own the database service, and the pgAgent service will be owned by either `enterprisedb` or `postgres` (depending on the installation mode).

`--servicename` *`service_name`*

Use the `--servicename` parameter to specify the name of the Advanced Server service. The default is `edb-as-12`.

`--servicepassword` *`user_password`*

Use `--servicepassword` to specify the OS system password. If unspecified, the value of `--servicepassword` defaults to the value of `--superpassword`.

`--superaccount` *`super_user_name`*

Use the `--superaccount` parameter to specify the user name of the database superuser.

- If `--databasemode` is set to `oracle` (the default), the default value of `--superaccount` is enterprisedb.

- If `--databasemode` is set to `postgresql`, the default value of `--superaccount` is set to `postgres`.

`--superpassword` *`superuser_password`*

Use `--superpassword` to specify the database superuser password. If you are installing in non-interactive mode, `--superpassword` defaults to `enterprisedb`.

`--unattendedmodeui { none | minimal | minimalWithDialogs }`

Use the `--unattendedmodeui` parameter to specify installer behavior during an unattended installation.

Include `--unattendedmodeui none` to specify that the installer should not display progress bars during the Advanced Server installation.

Include `--unattendedmodeui minimal` to specify that the installer should display progress bars during the installation process. This is the default behavior.

Include `--unattendedmodeui minimalWithDialogs` to specify that the installer should display progress bars and report any errors encountered during the installation process (in additional dialogs).

`--version`

Include the `--version` parameter to retrieve version information about the installer:

```
EDB Postgres Advanced Server 12 --- Built on 2018-03-15
00:04:00 IB: 15.12.1-201511121057
```

`--workload_profile {oltp | mixed | reporting}`

Use the `--workload_profile` parameter to specify an initial value for the `edb_dynatune_profile` configuration parameter. `edb_dynatune_profile` controls aspects of performance-tuning based on the type of work that the server performs.

- Specify `oltp` if the Advanced Server installation will be used to support heavy online transaction processing workloads.
- The default value is `oltp`.
- Specify `mixed` if Advanced Server will provide a mix of transaction processing and data reporting.
- Specify `reporting` if Advanced Server will be used for heavy data reporting.

After the installation is complete, you can adjust the value of `edb_dynatune_profile` by editing the `postgresql.conf` file, located in the `data` directory of your Advanced Server installation. After editing the `postgresql.conf` file, you must restart the server for the changes to take effect.

For more information about `edb_dynatune` and other performance-related topics, see the *EDB Postgres Advanced Server Guide* available at:

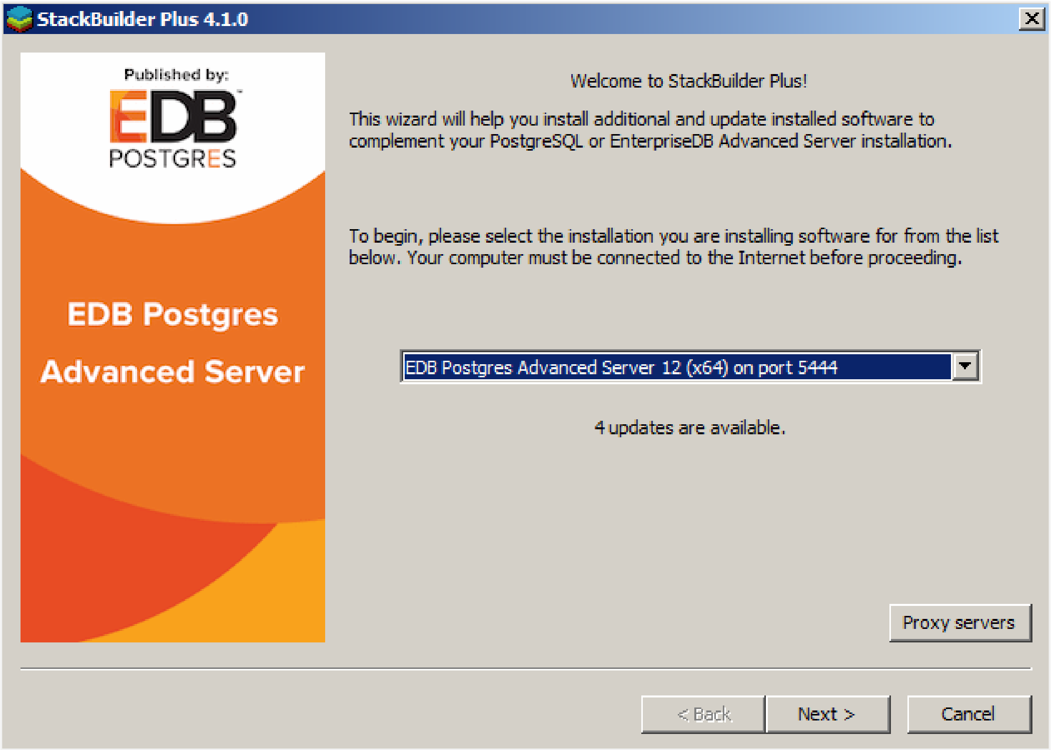
https://www.enterprisedb.com/edb-docs

3.3 Using StackBuilder Plus

Please note: StackBuilder Plus is supported only on Windows systems.

The StackBuilder Plus utility provides a graphical interface that simplifies the process of updating, downloading, and installing modules that complement your Advanced Server installation. When you install a module with StackBuilder Plus, StackBuilder Plus automatically resolves any software dependencies.

You can invoke StackBuilder Plus at any time after the installation has completed by selecting the `StackBuilder Plus` menu option from the `Apps` menu. Enter your system password (if prompted), and the StackBuilder Plus welcome window opens (shown in Figure 3.20).



Welcome to StackBuilder Plus!

This wizard will help you install additional and update installed software to complement your PostgreSQL or EnterpriseDB Advanced Server 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.

EDB Postgres Advanced Server 12 (x64) on port 5444

4 updates are available.

Figure 3.20 -The StackBuilder Plus welcome window.

Use the drop-down listbox on the welcome window to select your Advanced Server installation.

StackBuilder Plus requires Internet access; if your installation of Advanced Server resides behind a firewall (with restricted Internet access), StackBuilder Plus can download program installers through a proxy server. The module provider determines if the module can be accessed through an HTTP proxy or an FTP proxy; currently, all updates are transferred via an HTTP proxy and the FTP proxy information is not used.

If the selected Advanced Server installation has restricted Internet access, use the `Proxy Servers` on the `Welcome` window to open the `Proxy servers` dialog (shown in Figure 3.21).

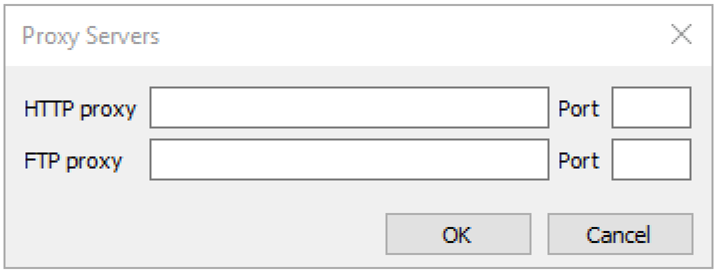
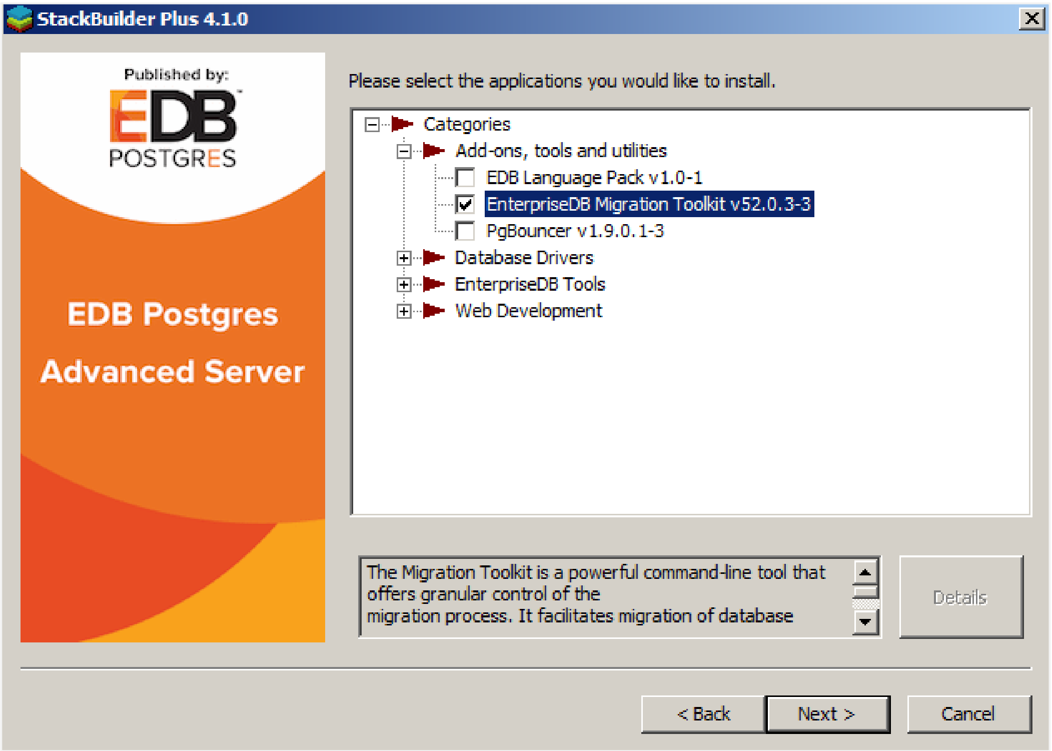


Figure 3.21 –The Proxy servers dialog.

Enter the IP address and port number of the proxy server in the `HTTP proxy` on the `Proxy servers` dialog. Currently, all StackBuilder Plus modules are distributed via HTTP proxy (FTP proxy information is ignored). Click `OK` to continue.



Please select the applications you would like to install.

- Categories
  - Add-ons, tools and utilities
    - ☐ EDB Language Pack v1.0-1
    - ☑ EnterpriseDB Migration Toolkit v52.0.3-3
    - ☐ PgBouncer v1.9.0.1-3
  - Database Drivers
  - EnterpriseDB Tools
  - Web Development

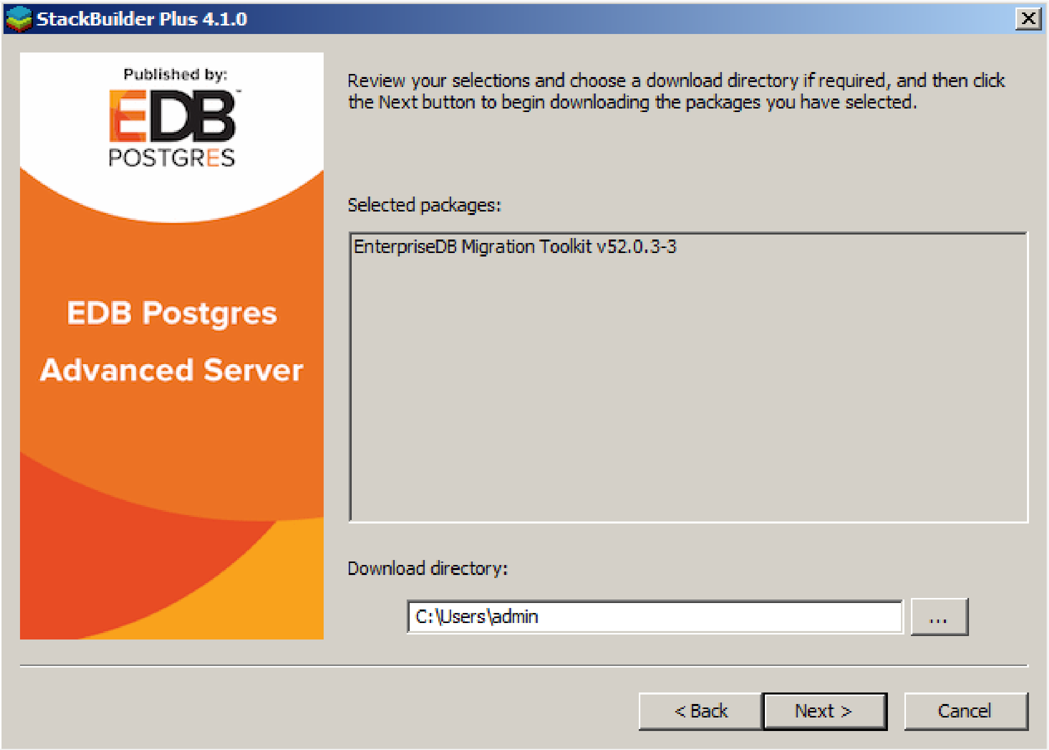
The Migration Toolkit is a powerful command-line tool that offers granular control of the migration process. It facilitates migration of database

Figure 3.22 –The StackBuilder Plus module selection window.

The tree control on the StackBuilder Plus module selection window (shown in Figure 3.22) displays a node for each module category.

Expand a module, and highlight a component name in the tree control to review a detailed description of the component. To add one or more components to the installation or to upgrade a component, check the box to the left of a module name and click `Next`.

StackBuilder Plus confirms the packages selected (Figure 3.23).



Review your selections and choose a download directory if required, and then click the Next button to begin downloading the packages you have selected.

Selected packages:

EnterpriseDB Migration Toolkit v52.0.3-3

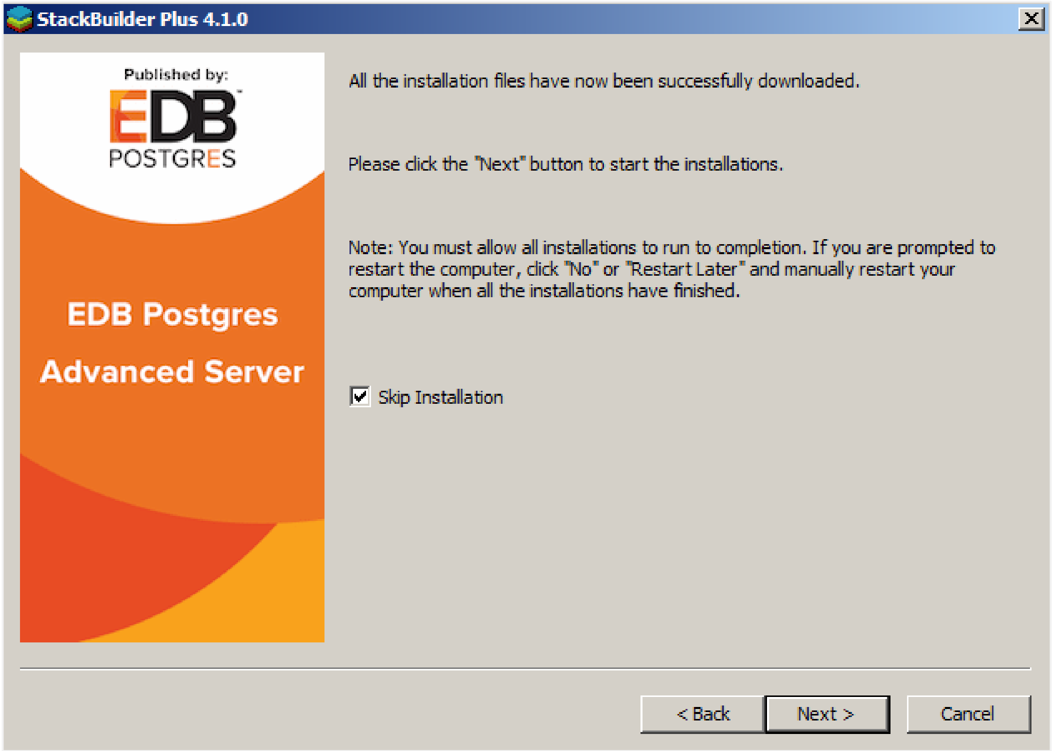
Download directory:

C:\Users\admin

Figure 3.23 -A summary window displays a list of selected packages.

Use the browse icon (...) to the right of the `Download directory` field to open a file selector, and choose an alternate location to store the downloaded installers. Click `Next` to connect to the server and download the required installation files.

When the download completes, a window opens that confirms the installation files have been downloaded and are ready for installation (see Figure 3.24).



All the installation files have now been successfully downloaded.

Please click the "Next" button to start the installations.

Note: You must allow all installations to run to completion. If you are prompted to restart the computer, click "No" or "Restart Later" and manually restart your computer when all the installations have finished.

☑ Skip Installation

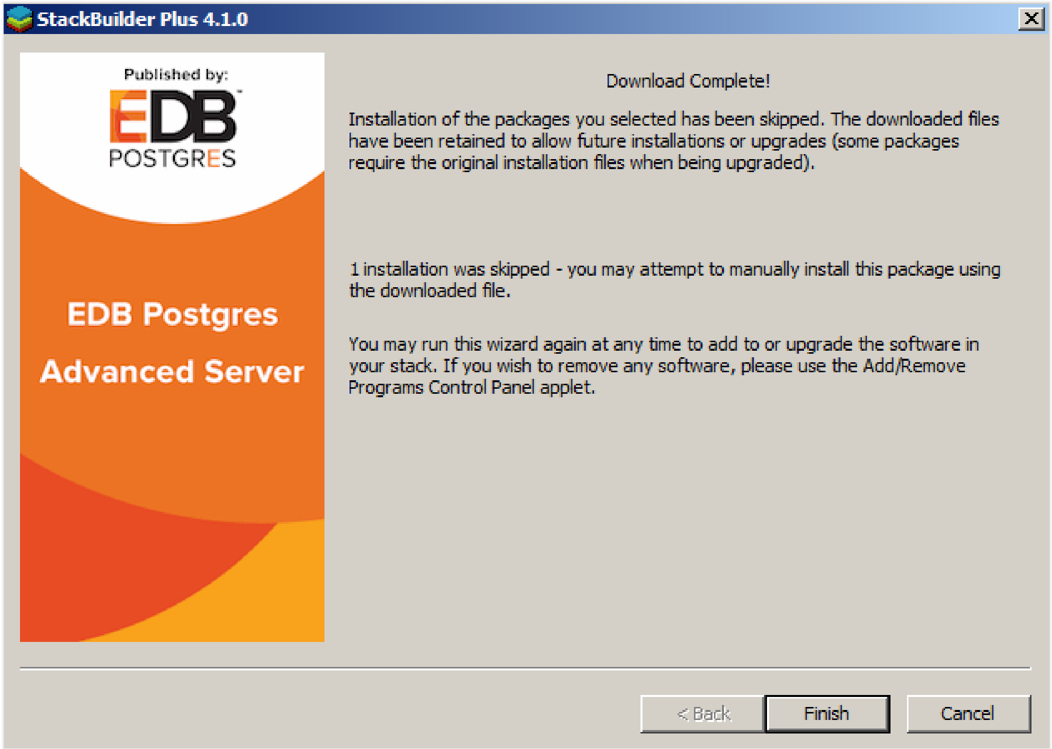
Figure 3.24 -Confirmation that the download process is complete.

You can check the box next to `Skip Installation`, and select `Next` to exit StackBuilder Plus without installing the downloaded files, or leave the box unchecked and click `Next` to start the installation process.

Each downloaded installer has different requirements. As the installers execute, they may prompt you to confirm acceptance of license agreements, to enter passwords, and provide configuration information.

During the installation process, you may be prompted by one (or more) of the installers to restart your system. Select `No` or `Restart Later` until all installations are completed. When the last installation has completed, reboot the system to apply all of the updates.

You may occasionally encounter packages that don't install successfully. If a package fails to install, StackBuilder Plus will alert you to the installation error with a popup dialog, and write a message to the log file at `%TEMP%`.



Download Complete!

Installation of the packages you selected has been skipped. The downloaded files have been retained to allow future installations or upgrades (some packages require the original installation files when being upgraded).

1 installation was skipped - you may attempt to manually install this package using the downloaded file.

You may run this wizard again at any time to add to or upgrade the software in your stack. If you wish to remove any software, please use the Add/Remove Programs Control Panel applet.

Figure 3.25 -StackBuilder Plus confirms the completed installation.

When the installation is complete, StackBuilder Plus will alert you to the success or failure of the installations of the requested packages (see Figure 3.25). If you were prompted by an installer to restart your computer, reboot now.

3.4 Installation Troubleshooting

Difficulty Displaying Java-based Applications

If you encounter difficulty displaying Java-based server features (controls or text not being displayed correctly, or blank windows), upgrading to the latest `libxcb-xlib` libraries should correct the problem on most distributions. Please visit the following link for other possible work-arounds:

http://bugs.sun.com/bugdatabase/view_bug.do?bug_id=6532373

--mode unattended Authentication Errors

Authentication errors from component modules during unattended installations may indicate that the specified values of --`servicepassword` or --`superpassword` may be incorrect.

Errors During an Advanced Server Installation

If you encounter an error during the installation process, exit the installation, and ensure that your version of Windows is up-to-date. After applying any outstanding operating system updates, re-invoke the Advanced Server installer.

The Installation Fails to Complete Due to Existing data Directory Contents

If an installation fails to complete due to existing content in the data directory, the server will write an error message to the server logs:

```
A data directory is neither empty, or a recognisable data
directory.
```

If you encounter a similar message, you should confirm that the data directory is empty; the presence of files (including the system-generated `lost+found` folder) will prevent the installation from completing. Either remove the files from the data directory, or specify a different location for the data directory before re-invoking the installer to complete the installation.

4 Managing an Advanced Server Installation

Unless otherwise noted, the commands and paths noted in the following section assume that you have performed an installation with the interactive installer.

4.1 Starting and Stopping Advanced Server and Supporting Components

A service is a program that runs in the background and requires no user interaction (in fact, a service provides no user interface); a service can be configured to start at boot time, or manually on demand. Services are best controlled using the platform-specific operating system service control utility. Many of the Advanced Server supporting components are services.

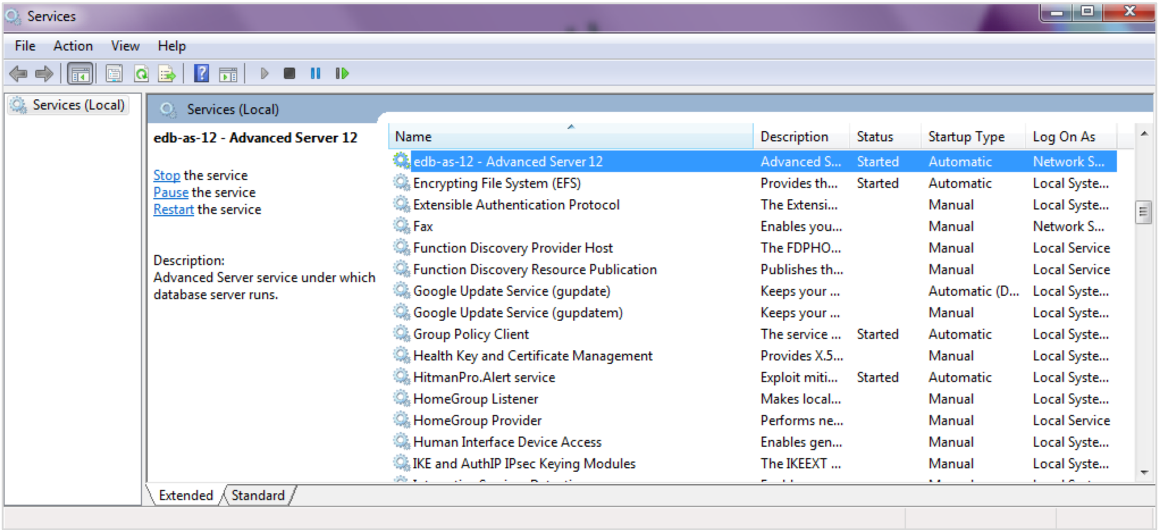
The following table lists the names of the services that control Advanced Server and services that control Advanced Server supporting components:

Advanced Server Component Name	**Windows Service Name**
Advanced Server	edb-as-12
pgAgent	EDB Postgres Advanced Server 12 Scheduling Agent
PgBouncer	edb-pgbouncer-1.12
pgPool-II	N/A
Slony	edb-slony-replication-12

You can use the command line or the Windows Services applet to control Advanced Server's database server and the services of Advanced Server's supporting components on a Windows host.

4.1.1 Using the Windows Services Applet

The Windows operating system includes a graphical service controller that offers control of Advanced Server and the services associated with Advanced Server components. The `Services` utility can be accessed through the `Administrative Tools` section of the Windows `Control Panel`.



edb-as-12 - Advanced Server 12

Stop the service
Pause the service
Restart the service

Description:
Advanced Server service under which database server runs.

Name	Description	Status	Startup Type	Log On As
edb-as-12 - Advanced Server 12	Advanced S...	Started	Automatic	Network S...
Encrypting File System (EFS)	Provides th...	Started	Automatic	Local Syste...
Extensible Authentication Protocol	The Extensi...		Manual	Local Syste...
Fax	Enables you...		Manual	Network S...
Function Discovery Provider Host	The FDPHO...		Manual	Local Service
Function Discovery Resource Publication	Publishes th...		Manual	Local Service
Google Update Service (gupdate)	Keeps your ...		Automatic (D...	Local Syste...
Google Update Service (gupdatem)	Keeps your ...		Manual	Local Syste...
Group Policy Client	The service ...	Started	Automatic	Local Syste...
Health Key and Certificate Management	Provides X.5...		Manual	Local Syste...
HitmanPro.Alert service	Exploit miti...	Started	Automatic	Local Syste...
HomeGroup Listener	Makes local...		Manual	Local Syste...
HomeGroup Provider	Performs ne...		Manual	Local Service
Human Interface Device Access	Enables gen...		Manual	Local Syste...
IKE and AuthIP IPsec Keying Modules	The IKEEXT ...		Manual	Local Syste...

Figure 4.1 - The Advanced Server service in the Windows Services window.

The `Services` window displays an alphabetized list of services; the `edb-as-12` service controls Advanced Server (see Figure 4.1).

- Use the `Stop the service` option to stop the instance of Advanced Server. Please note that any user (or client application) connected to the Advanced Server instance will be abruptly disconnected if you stop the service.
- Use the `Start the service` option to start the Advanced Server service.
- Use the `Pause the service` option to tell Advanced Server to reload the server configuration parameters without disrupting user sessions for many of the configuration parameters. See Section 5, *Configuring Advanced Server* for more information about the parameters that can be updated with a server reload.
- Use the `Restart the service` option to stop and then start the Advanced Server. Please note that any user sessions will be terminated when you stop the service. This option is useful to reset server parameters that only take effect on server start.

4.1.2 Using pg_ctl to Control Advanced Server

You can use the `pg_ctl` utility to control an Advanced Server service from the command line on any platform. `pg_ctl` allows you to start, stop, or restart the Advanced Server database server, reload the configuration parameters, or display the status of a running server. To invoke the utility, assume the identity of the cluster owner, navigate into the home directory of Advanced Server, and issue the command:

```
./bin/pg_ctl -D data_directory action
```

`data_directory`

`data_directory` is the location of the data controlled by the Advanced Server cluster.

`action`

`action` specifies the action taken by the `pg_ctl` utility. Specify:

- `start` to start the service.
- `stop` to stop the service.
- `restart` to stop and then start the service.
- `reload` sends the server a `SIGHUP` signal, reloading configuration parameters
- `status` to discover the current status of the service.

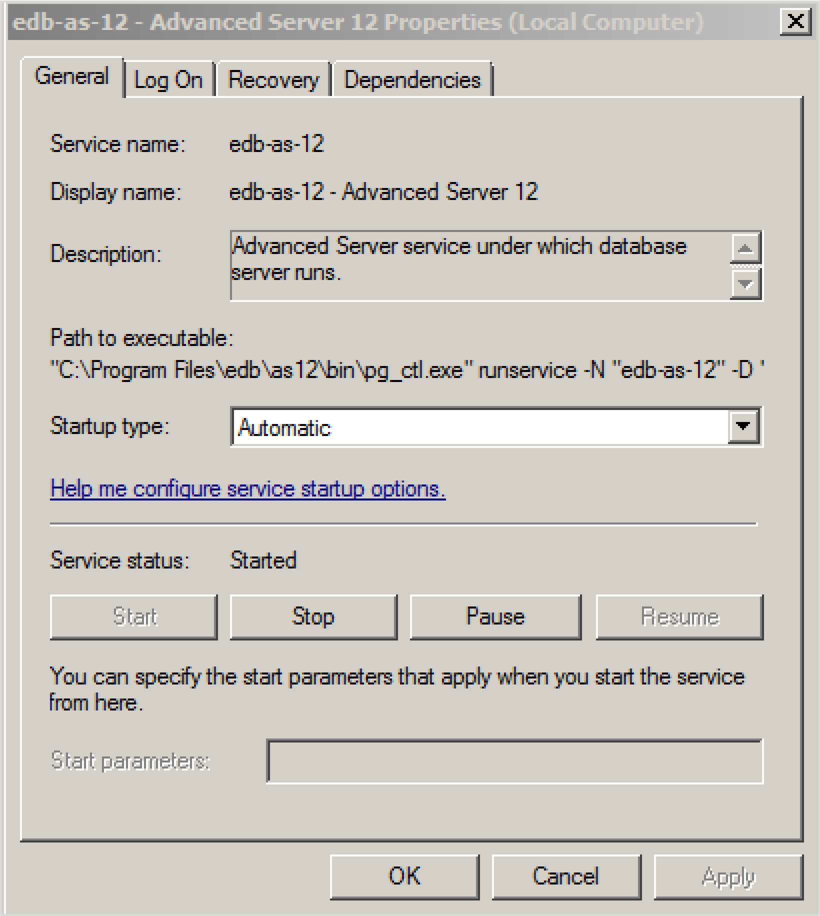
For more information about using the `pg_ctl` utility, or the command line options available, please see the official PostgreSQL Core Documentation available at:

https://www.postgresql.org/docs/12/static/app-pg-ctl.html

4.1.3 Controlling Server Startup Behavior on Windows

You can use the Windows Services utility to control the startup behavior of the server. Right click on the name of the service you wish to update, and select `Properties` from the context menu to open the `Properties` dialog.

Use the drop-down listbox in the `Startup type` field (shown in Figure 4.2) to specify how the Advanced Server service will behave when the host starts.



Service name: edb-as-12

Display name: edb-as-12 - Advanced Server 12

Description: Advanced Server service under which database server runs.

Path to executable:
"C:\Program Files\edb\as12\bin\pg_ctl.exe" runservice -N "edb-as-12" -D '

Startup type: Automatic

Help me configure service startup options.

Service status: Started

You can specify the start parameters that apply when you start the service from here.

Start parameters:

Figure 4.2 - Specifying Advanced Server's startup behavior.

- Specify `Automatic (Delayed Start)` to instruct the service controller to start after boot.
- Specify `Automatic` to instruct the service controller to start and stop the server whenever the system starts or stops.
- Specify `Manual` to instruct the service controller that the server must be started manually.

- Specify `Disabled` to instruct the service controller to disable the service; after disabling the service, you must stop the service or restart the server to make the change take effect. Once disabled, the server's status cannot be changed until `Startup type` is reset to `Automatic (Delayed Start)`, `Automatic,` or `Manual`.

5 Configuring Advanced Server

You can easily update parameters that determine the behavior of Advanced Server and supporting components by modifying the following configuration files:

- The `postgresql.conf` file determines the initial values of Advanced Server configuration parameters.
- The `pg_hba.conf` file specifies your preferences for network authentication and authorization.
- The `pg_ident.conf` file maps operating system identities (user names) to Advanced Server identities (roles) when using `ident`-based authentication.

You can use your editor of choice to open a configuration file, or on Windows navigate through the `EDB Postgres` menu to open a file (see Figure 5.1).

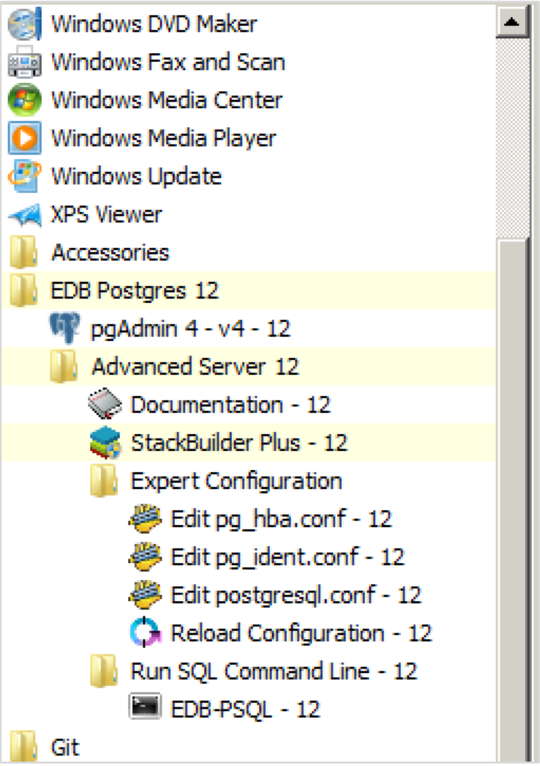
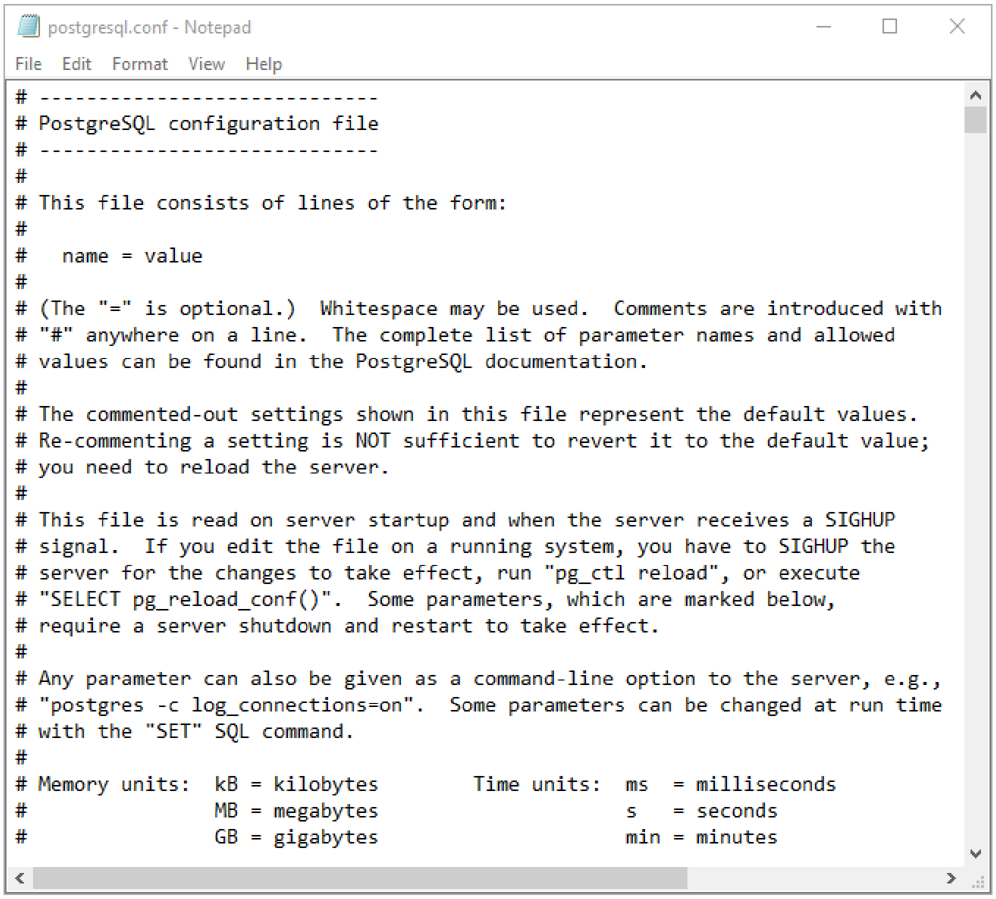


Figure 5.1 -Accessing the configuration files through the Windows system menu.

5.1 Modifying the postgresql.conf File

Configuration parameters in the `postgresql.conf` file specify server behavior with regards to auditing, authentication, encryption, and other behaviors. The `postgresql.conf` file resides in the `data` directory under your Advanced Server installation.



```
# -----------------------------
# PostgreSQL configuration file
# -----------------------------
#
# This file consists of lines of the form:
#
#   name = value
#
# (The "=" is optional.)  Whitespace may be used.  Comments are introduced with
# "#" anywhere on a line.  The complete list of parameter names and allowed
# values can be found in the PostgreSQL documentation.
#
# The commented-out settings shown in this file represent the default values.
# Re-commenting a setting is NOT sufficient to revert it to the default value;
# you need to reload the server.
#
# This file is read on server startup and when the server receives a SIGHUP
# signal.  If you edit the file on a running system, you have to SIGHUP the
# server for the changes to take effect, run "pg_ctl reload", or execute
# "SELECT pg_reload_conf()".  Some parameters, which are marked below,
# require a server shutdown and restart to take effect.
#
# Any parameter can also be given as a command-line option to the server, e.g.,
# "postgres -c log_connections=on".  Some parameters can be changed at run time
# with the "SET" SQL command.
#
# Memory units:  kB = kilobytes        Time units:  ms  = milliseconds
#                MB = megabytes                     s   = seconds
#                GB = gigabytes                     min = minutes
```

Figure 5.2 - The postgresql.conf file.

Parameters that are preceded by a pound sign (#) are set to their default value (as shown in the parameter setting). To change a parameter value, remove the pound sign and enter a new value. After setting or changing a parameter, you must either *reload* or *restart* the server for the new parameter value to take effect.

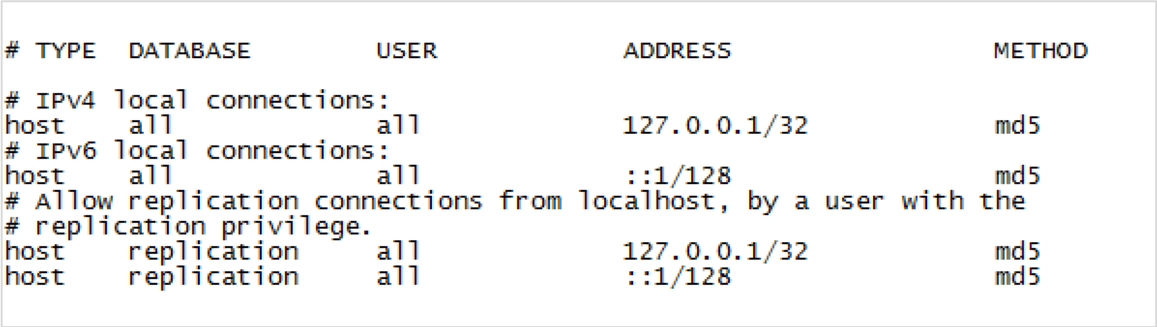
Within the `postgresql.conf` file, some parameters contain comments that indicate `change requires restart` (see Figure 5.2). To view a list of the parameters that require a server restart, execute the following query at the psql command line:

```
SELECT name FROM pg_settings WHERE context = 'postmaster';
```

5.2 Modifying the pg_hba.conf File

Appropriate authentication methods provide protection and security. Entries in the `pg_hba.conf` file specify the authentication method or methods that the server will use when authenticating connecting clients. Before connecting to the server, you may be required to modify the authentication properties specified in the `pg_hba.conf` file.

When you invoke the `initdb` utility to create a cluster, `initdb` creates a `pg_hba.conf` file for that cluster that specifies the type of authentication required from connecting clients. Figure 5.3 displays the default authentication configuration specified in the `pg_hba.conf` file.



```
# TYPE  DATABASE        USER            ADDRESS                 METHOD

# IPv4 local connections:
host    all             all             127.0.0.1/32            md5
# IPv6 local connections:
host    all             all             ::1/128                 md5
# Allow replication connections from localhost, by a user with the
# replication privilege.
host    replication     all             127.0.0.1/32            md5
host    replication     all             ::1/128                 md5
```

Figure 5.3 - The pg_hba.conf file.

To modify the `pg_hba.conf` file, open the file with your choice of editor. After modifying the authentication settings in the `pg_hba.conf` file, use the Windows services utility to restart the server and apply the changes.

For more information about authentication, and modifying the `pg_hba.conf` file, see the PostgreSQL Core Documentation at:

https://www.postgresql.org/docs/12/static/auth-pg-hba-conf.html

5.3 Setting Advanced Server Environment Variables

The graphical installer provides a script that simplifies the task of setting environment variables for Windows users. The script sets the environment variables for your current shell session; when your shell session ends, the environment variables are destroyed. You may wish to invoke `pgplus_env.bat` from your system-wide shell startup script, so that environment variables are automatically defined for each shell session.

The `pgplus_env` script is created during the Advanced Server installation process and reflects the choices made during installation. To invoke the script, open a command line and enter:

```
C:\Program Files\edb\as12\pgplus_env.bat
```

As the `pgplus_env.bat` script executes, it sets the following environment variables:

```
PATH="C:\Program Files\edb\as12\bin";%PATH%
EDBHOME=C:\Program Files\edb\as12
PGDATA=C:\Program Files\edb\as12\data
PGDATABASE=edb
REM @SET PGUSER=enterprisedb
PGPORT=5444
PGLOCALEDIR=C:\Program Files\edb\as12\share\locale
```

If you have used an installer created by EnterpriseDB to install PostgreSQL, the `pg_env` script performs the same function:

```
C:\Progra~1\PostgreSQL\12\pg_env.bat
```

As the `pg_env.bat` script executes on PostgreSQL, it sets the following environment variables:

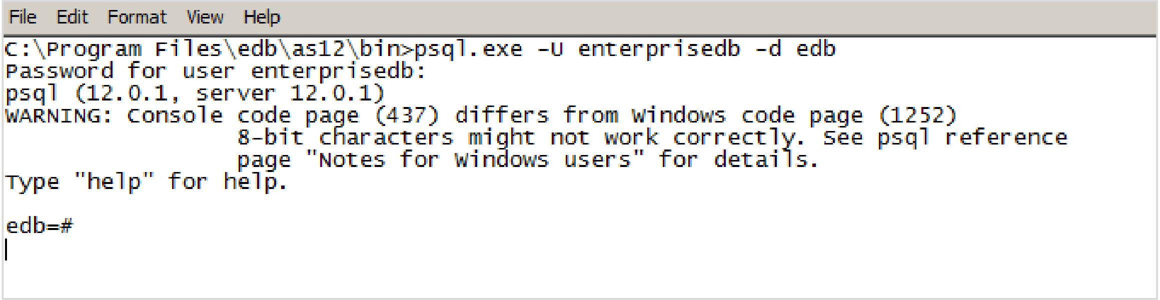
```
PATH="C:\Program Files\PostgreSQL\12\bin";%PATH%
PGDATA=C:\Program Files\PostgreSQL\12\data
PGDATABASE=postgres
PGUSER=postgres
PGPORT=5432
PGLOCALEDIR=C:\Program Files\PostgreSQL\12\share\locale
```

5.4 Connecting to Advanced Server with psql

`psql` is a command line client application that allows you to execute SQL commands and view the results. To open the psql client, the client must be in your search path. The executable resides in the `bin` directory, under your Advanced Server installation.

Use the following command and options to start the psql client (see Figure 5.4):

```
psql -d edb -U enterprisedb
```



```
C:\Program Files\edb\as12\bin>psql.exe -U enterprisedb -d edb
Password for user enterprisedb:
psql (12.0.1, server 12.0.1)
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.

edb=#
```

Figure 5.4 - Connecting to the server.

Where:

`-d` specifies the database to which psql will connect;

`-U` specifies the identity of the database user that will be used for the session.

If you have performed an installation with the interactive installer, you can access the psql client by selecting `EDB-PSQL` from the `EDB Postgres` menu. When the client opens, provide connection information for your session.

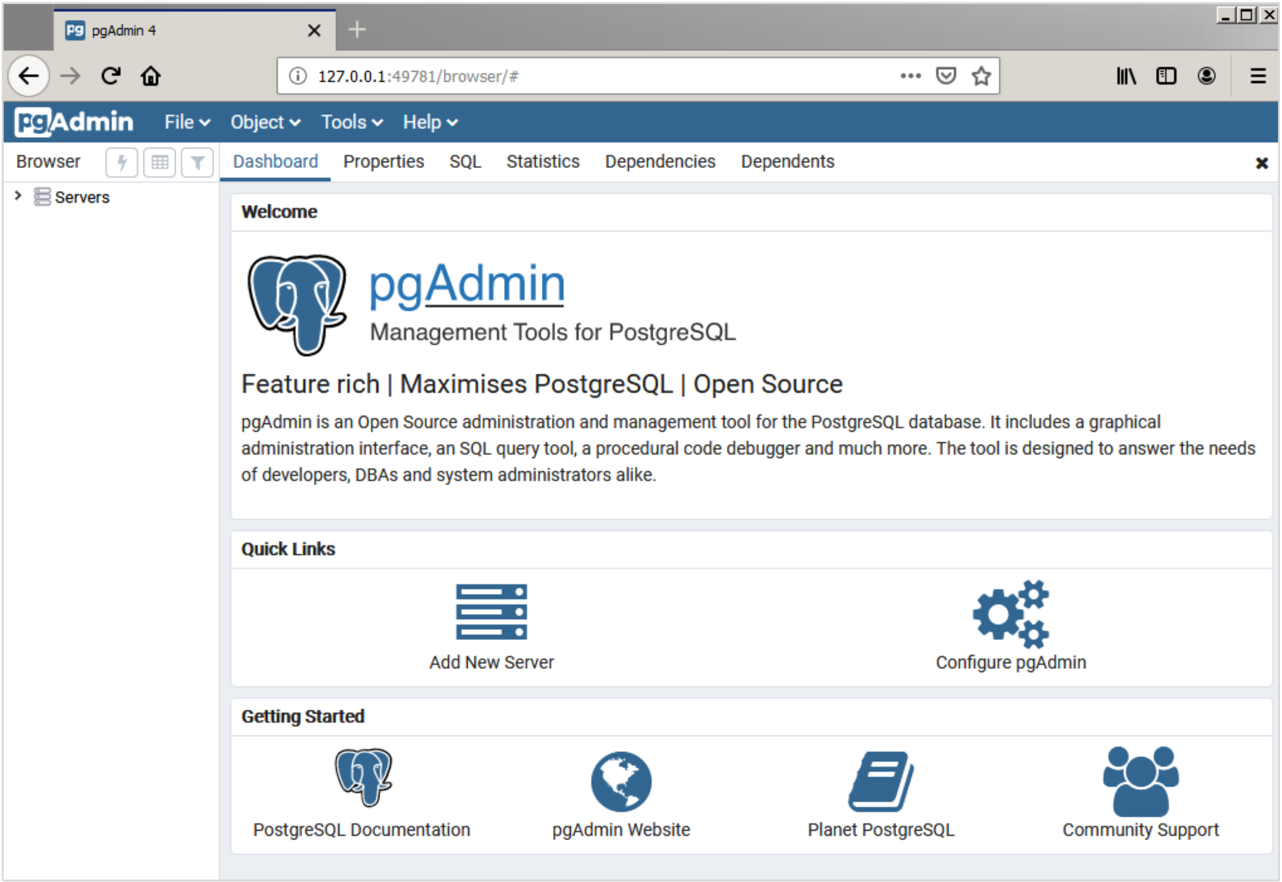
For more information about using the command line client, please refer to the PostgreSQL Core Documentation at:

https://www.postgresql.org/docs/12/static/app-psql.html

5.5 Connecting to Advanced Server with the pgAdmin 4 Client

pgAdmin 4 provides an interactive graphical interface that you can use to manage your database and database objects. Easy-to-use dialogs and online help simplify tasks such as object creation, role management, and granting or revoking privileges. The tabbed browser panel provides quick access to information about the object currently selected in the pgAdmin tree control.

The client is distributed with the graphical installer. To open pgAdmin, select pgAdmin4 from the `EDB Postgres` menu. The client opens in your default browser (see Figure 5.5).

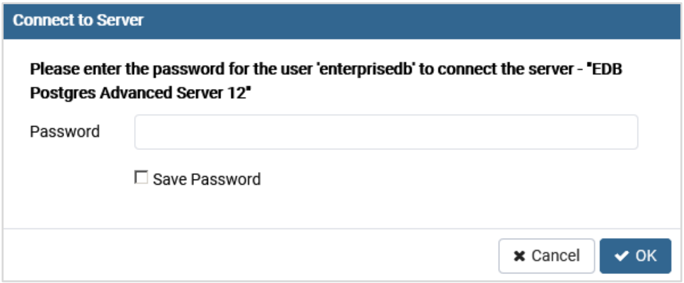


Feature rich | Maximises PostgreSQL | Open Source

pgAdmin is an Open Source administration and management tool for the PostgreSQL database. It includes a graphical administration interface, an SQL query tool, a procedural code debugger and much more. The tool is designed to answer the needs of developers, DBAs and system administrators alike.

Figure 5.5 – The pgAdmin 4 client Dashboard.

To connect to the Advanced Server database server, expand the `Servers` node of the `Browser` tree control, and right click on the `EDB Postgres Advanced Server` node. When the context menu opens, select `Connect Server`. The `Connect to Server` dialog opens (see Figure 5.6).



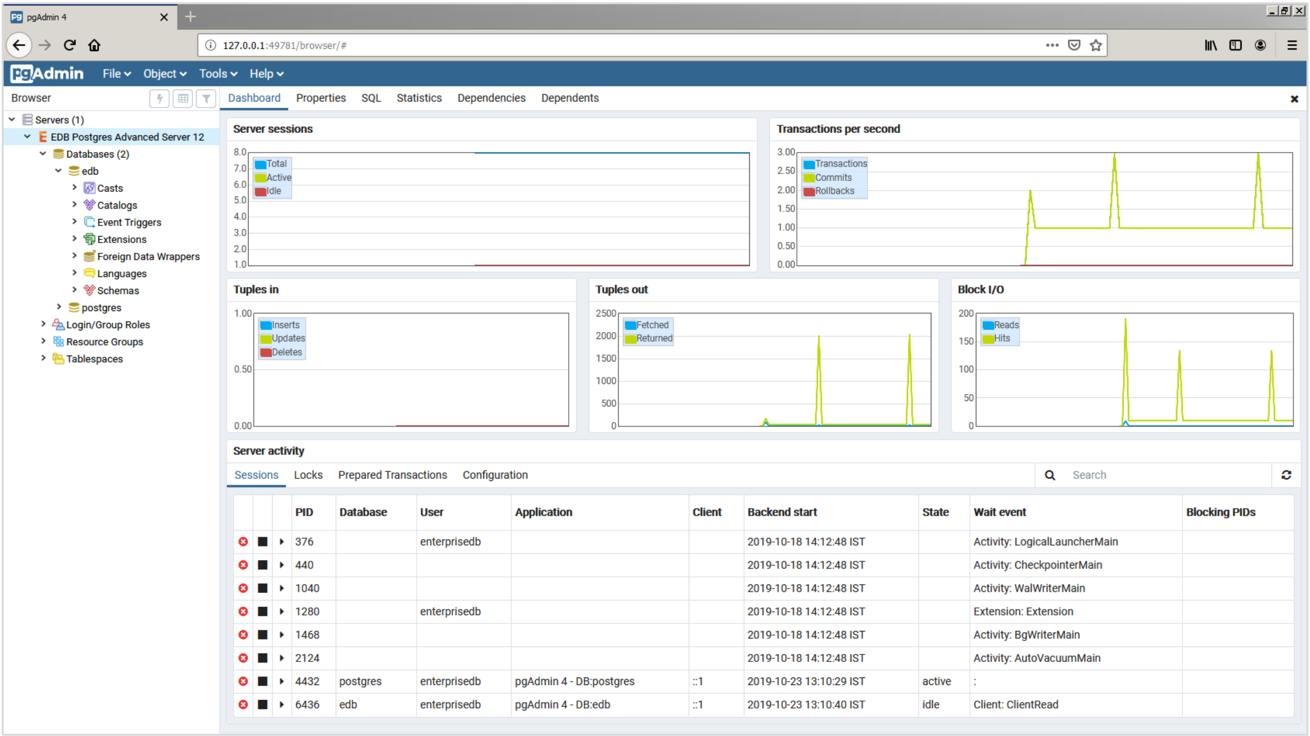
Please enter the password for the user 'enterprisedb' to connect the server - "EDB Postgres Advanced Server 12"

Password

□ Save Password

Figure 5.6 – The Connect to Server dialog.

Provide the password associated with the database superuser in the `Password` field, and click `OK` to connect.



			PID	Database	User	Application	Client	Backend start	State	Wait event	Blocking PIDs
⊗	■	▸	376		enterprisedb			2019-10-18 14:12:48 IST		Activity: LogicalLauncherMain	
⊗	■	▸	440					2019-10-18 14:12:48 IST		Activity: CheckpointerMain	
⊗	■	▸	1040					2019-10-18 14:12:48 IST		Activity: WalWriterMain	
⊗	■	▸	1280		enterprisedb			2019-10-18 14:12:48 IST		Extension: Extension	
⊗	■	▸	1468					2019-10-18 14:12:48 IST		Activity: BgWriterMain	
⊗	■	▸	2124					2019-10-18 14:12:48 IST		Activity: AutoVacuumMain	
⊗	■	▸	4432	postgres	enterprisedb	pgAdmin 4 - DB:postgres	::1	2019-10-23 13:10:29 IST	active	:	
⊗	■	▸	6436	edb	enterprisedb	pgAdmin 4 - DB:edb	::1	2019-10-23 13:10:40 IST	idle	Client: ClientRead	

Figure 5.7 – Connecting to an Advanced Server database.

When the client connects (see Figure 5.7), you can use the `Browser` tree control to retrieve information about existing database objects, or to create new objects. For more information about using the pgAdmin client, use the `Help` drop-down menu to access the online help files.

6 Uninstalling Advanced Server

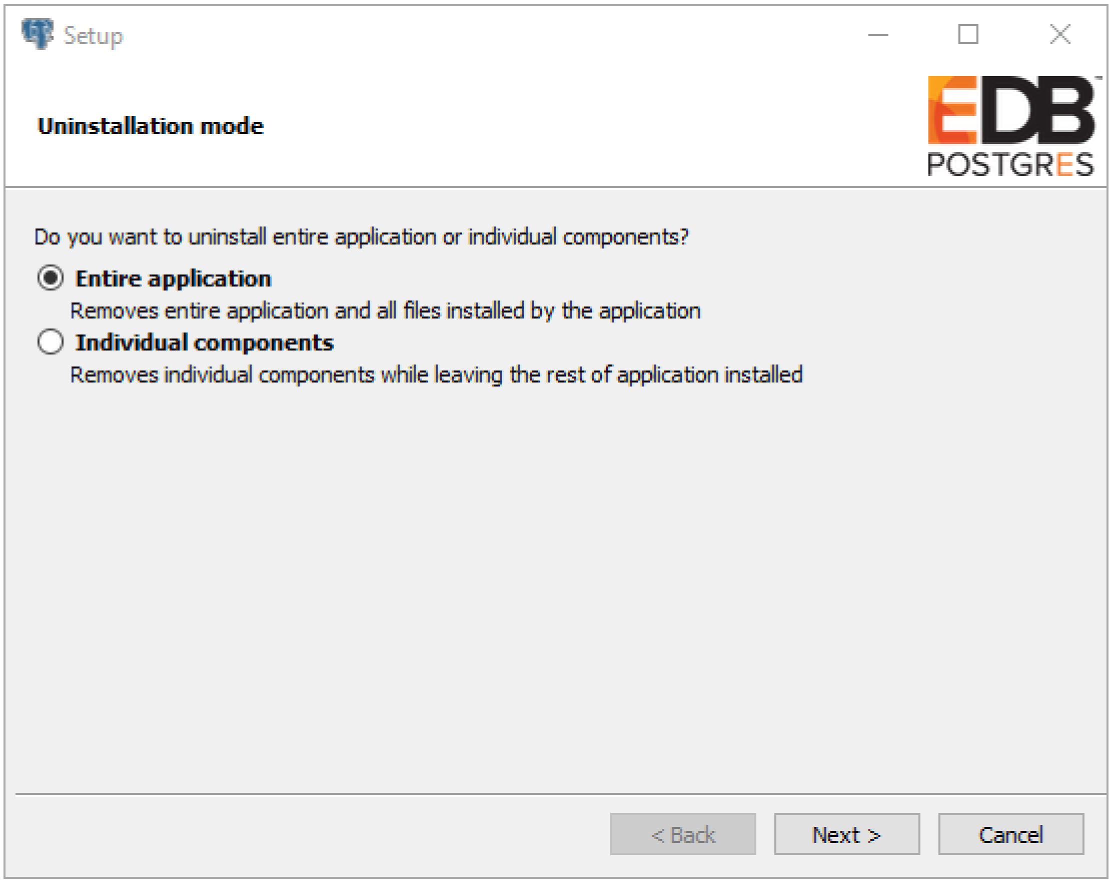
Note that after uninstalling Advanced Server, the cluster data files remain intact and the service user persists. You may manually remove the cluster data and service user from the system.

6.1 *Using Advanced Server Uninstallers at the Command Line*

The Advanced Server interactive installer creates an uninstaller that you can use to remove Advanced Server or components that reside on a Windows host. The uninstaller is created in `C:\Program Files\edb\as12`. To open the uninstaller, assume superuser privileges, navigate into the directory that contains the uninstaller, and enter:

```
    uninstall-edb-as12-server.exe
```

The uninstaller opens as shown in Figure 6.1.



Uninstallation mode

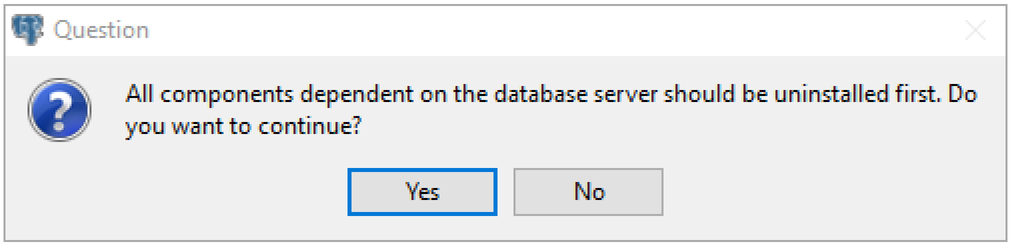
Do you want to uninstall entire application or individual components?

● **Entire application**
Removes entire application and all files installed by the application

○ **Individual components**
Removes individual components while leaving the rest of application installed

Figure 6.1 – The Advanced Server uninstaller.

You can remove the `Entire application` (the default), or select the radio button next to `Individual components` to select components for removal; if you select `Individual components`, a dialog will open, prompting you to select the components you wish to remove. After making your selection, click `Next`.



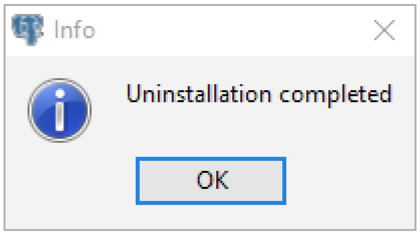
Question

All components dependent on the database server should be uninstalled first. Do you want to continue?

Figure 6.2 – Acknowledge that dependent components are removed first.

If you have elected to remove components that are dependent on Advanced Server, those components will be removed first; click `Yes` to acknowledge that you wish to continue (see Figure 6.2).

Progress bars are displayed as the software is removed. When the uninstallation is complete, an `Info` dialog opens to confirm that Advanced Server (and/or its components) has been removed (see Figure 6.3).



Info

Uninstallation completed

Figure 6.3 - The uninstallation is complete.