PgBouncer Guide

Version 1.0

Built at 2020-12-10T19:32:26

1 Installation

This section walks you through installing PgBouncer on a CentOS, Debian/Ubuntu, and a Windows host.

1.1 Installing PgBouncer on a CentOS Host

If you have previously used an RPM package to install Advanced Server, you have probably already created the repository configuration file and have EnterpriseDB credentials. If that is the case, you can install PgBouncer with the following command:

On RHEL/CentOS 6 and 7:

```
yum install edb-pgbouncer<xx>
```

Where `<xx>` is the PgBouncer version you want to install.

For example, to install PgBouncer 1.9.0.1 on a CentOS/RHEL 6 and 7 host, the command is:

```
yum install edb-pgbouncer19
```

On a RHEL/CentOS 8 host, you can use the `dnf` package manager to install PgBouncer:

```
dnf install edb-pgbouncer<xx>
```

Where `<xx>` is the PgBouncer version you want to install.

Similarly, to install PgBouncer 1.13.0.1 on CentOS/RHEL 8, the command is:

```
dnf install edb-pgbouncer113
```

To create the repository file, follow the steps given below.

Creating a Repository Configuration File to Install PgBouncer

Before creating the repository configuration file, you must have credentials that allow access to the EnterpriseDB repository. For information about requesting credentials, visit the EnterpriseDB website.

1. To create the repository configuration file, assume superuser privileges, and invoke one of the following platform-specific commands:

On RHEL/CentOS 6 and 7:

```
yum -y install https://yum.enterprisedb.com/edb-repo-rpms/edb-repo-latest.noarch.rpm
```

On CentOS/RHEL 8:

```
dnf -y install https://yum.enterprisedb.com/edb-repo-rpms/edb-repo-latest.noarch.rpm
```

The repository configuration file is named `edb.repo`, which resides in `/etc/yum.repos.d`.

2. After creating the `edb.repo` file, use your choice of editor to open

this file and ensure that the value of the enabled parameter is `1`, and the `username` and `password` placeholders in the `baseurl` specification are replaced with the name and password of a registered EnterpriseDB user.

```
[edb]
name=EnterpriseDB RPMs $releasever - $basearch
baseurl=https://<username>:
<password>@yum.enterprisedb.com/edb/redhat/rhel-
$releasever-$basearch
enabled=1
gpgcheck=1
gpgkey=file:///etc/pki/rpm-gpg/ENTERPRISEDB-GPG-KEY
```

3. Save your changes to the configuration file and exit the editor.

4. Execute the following commands to update the metadata:

```
yum clean all
```

```
yum makecache
```

5. Before installing PgBouncer, you must install the Extra Packages for Enterprise Linux (EPEL) release package by executing the following command:

   On RHEL/CentOS 6 and 7:

```
yum -y install epel-release
```

   On RHEL/CentOS 8:

```
dnf -y install epel-release
```

Note

You may need to enable the `[extras]` repository definition in the `CentOS-Base.repo` file (located in `/etc/yum.repos.d`).

6. Then, use one of the following platform-specific command to install PgBouncer.

   On RHEL/CentOS 6 and 7:

   ```
   yum install edb-pgbouncer<xx>
   ```

Where `<xx>` is the PgBouncer version you want to install.

For example, the following command installs PgBouncer 1.9.0.1 on RHEL/CentOS 6 and 7:

```
yum install edb-pgbouncer19
```

On RHEL/CentOS 8:

```
dnf install edb-pgbouncer<xx>
```

Where `<xx>` is the PgBouncer version you want to install.

Similarly, to install PgBouncer 1.13.0.1 on CentOS/RHEL 8, the command is:

```
dnf install edb-pgbouncer113
```

When you install an RPM package that is signed by a source that is not recognized by your system, yum may ask for your permission to import the key to your local server. If prompted, and you are satisfied that the packages come from a trustworthy source, enter `y`, and press `Return` to continue.

During the installation, yum may encounter a dependency that it cannot resolve. If it does, it will provide a list of the required dependencies that you must manually resolve. PgBouncer will be installed in the `/usr/edb/pgbouncer<x.x>` directory.

1.2 Installing PgBouncer on a Debian or Ubuntu Host

You must install Advanced Server before installing PgBouncer. For details about installing and configuring Advanced Server, see the EDB Postgres Advanced Server Installation Guide. To install a package on a Debian or Ubuntu host, you must have credentials to access the EnterpriseDB repository. If you need EnterpriseDB credentials, visit the EnterpriseDB website.

The following steps will walk you through using the EnterpriseDB repository to install a DEB package. When using the commands, replace the `username` and `password` with the credentials provided by EnterpriseDB.

Please note that if you are using the pdf version of this document, using cut/paste to copy command may result in extra spaces or carriage returns in the pasted command. If a command fails, check the command carefully for additional characters.

1. Assume superuser privileges:

   ```
   sudo su –
   ```

2. Configure the EnterpriseDB repository:

```
sh -c 'echo "deb https://<username>:
<password>@apt.enterprisedb.com/$(lsb_release -cs)-edb
$(lsb_release -cs) main" > /etc/apt/sources.list.d/edb-
$(lsb_release -cs).list'
```

3. Add support to your system for secure APT repositories:

```
apt-get install apt-transport-https
```

4. Add the EDB signing key:

```
wget -q -O - https://<username>:
<password>@apt.enterprisedb.com/edb-deb.gpg.key | apt-
key add -
```

5. Update the repository metadata:

```
apt-get update
```

6. Install the DEB package:

```
apt-get install edb-pgbouncer<xx>
```

Where *<xx>* is the pgbouncer version you want to install.

For example, to install the pgbouncer 1.13.0.1 package for Advanced Server 12, execute the following command:

```
apt-get install edb-pgbouncer113
```

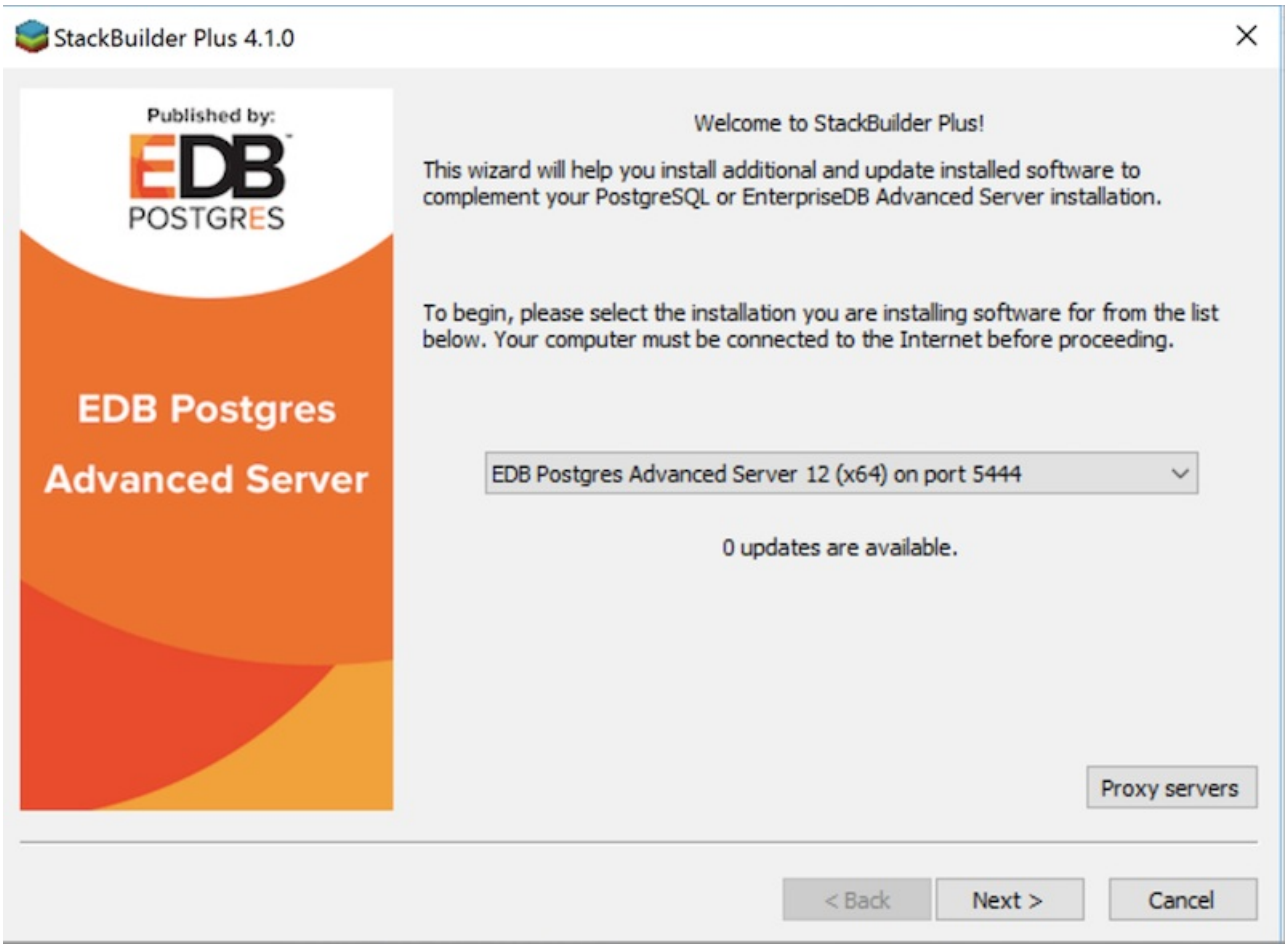
PgBouncer will be installed in the `/usr/edb/pgbouncer<x.x>` directory, where `<x.x>` is the PgBouncer version you have installed.

1.3 Installing PgBouncer on a Windows Host

Graphical installers for PgBouncer are available via StackBuilder Plus (for Advanced Server hosts) or Stack Builder (on PostgreSQL hosts). You can access StackBuilder Plus through your Windows or Linux start menu (Linux installers are available only for versions 1.9.0.1 and 1.7.2.1).

Perform the following steps to install PgBouncer:

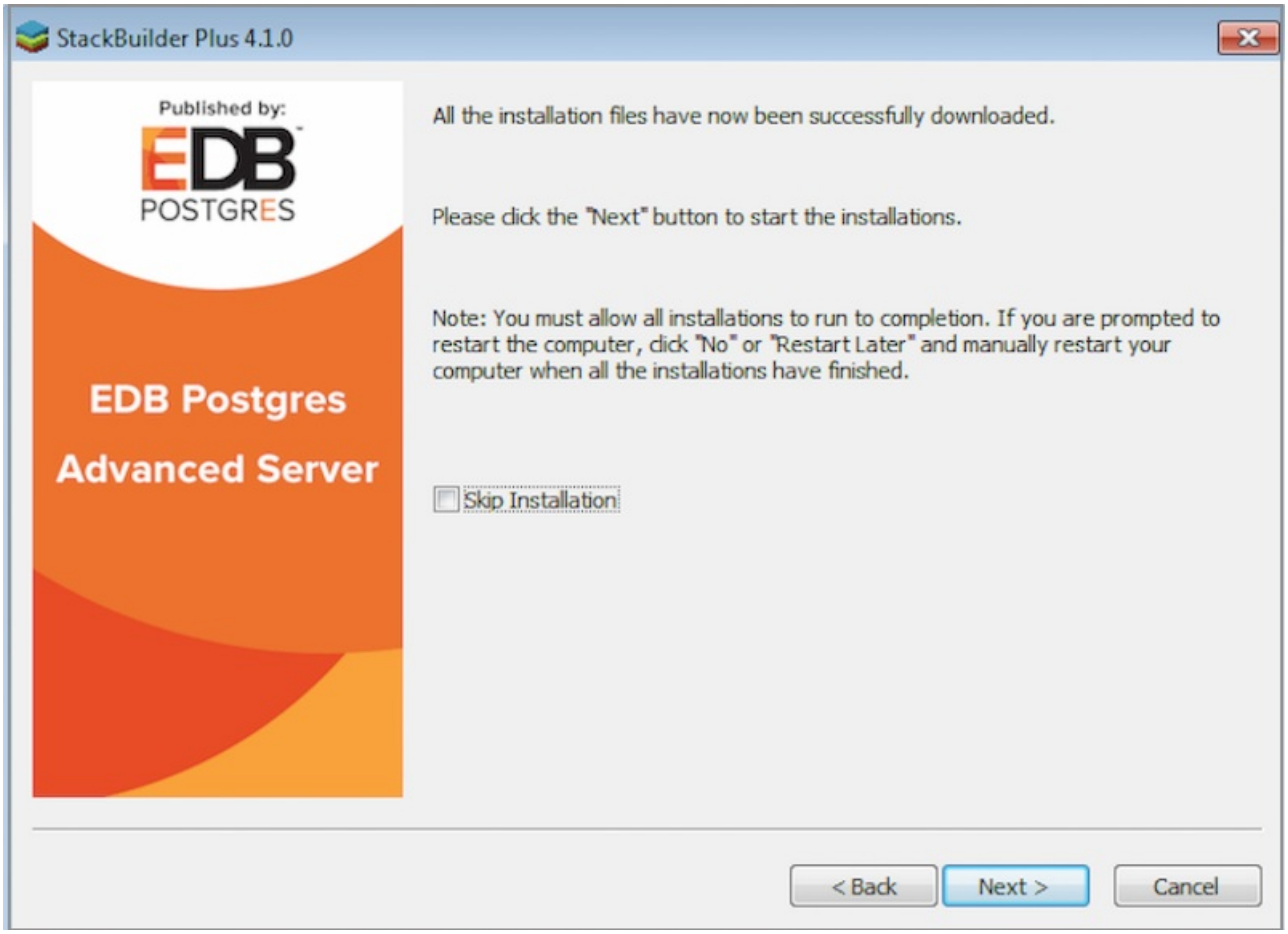
1. Open StackBuilder Plus and select your Advanced Server installation from the drop-down list on the Welcome window. Click Next to continue to the application selection page.



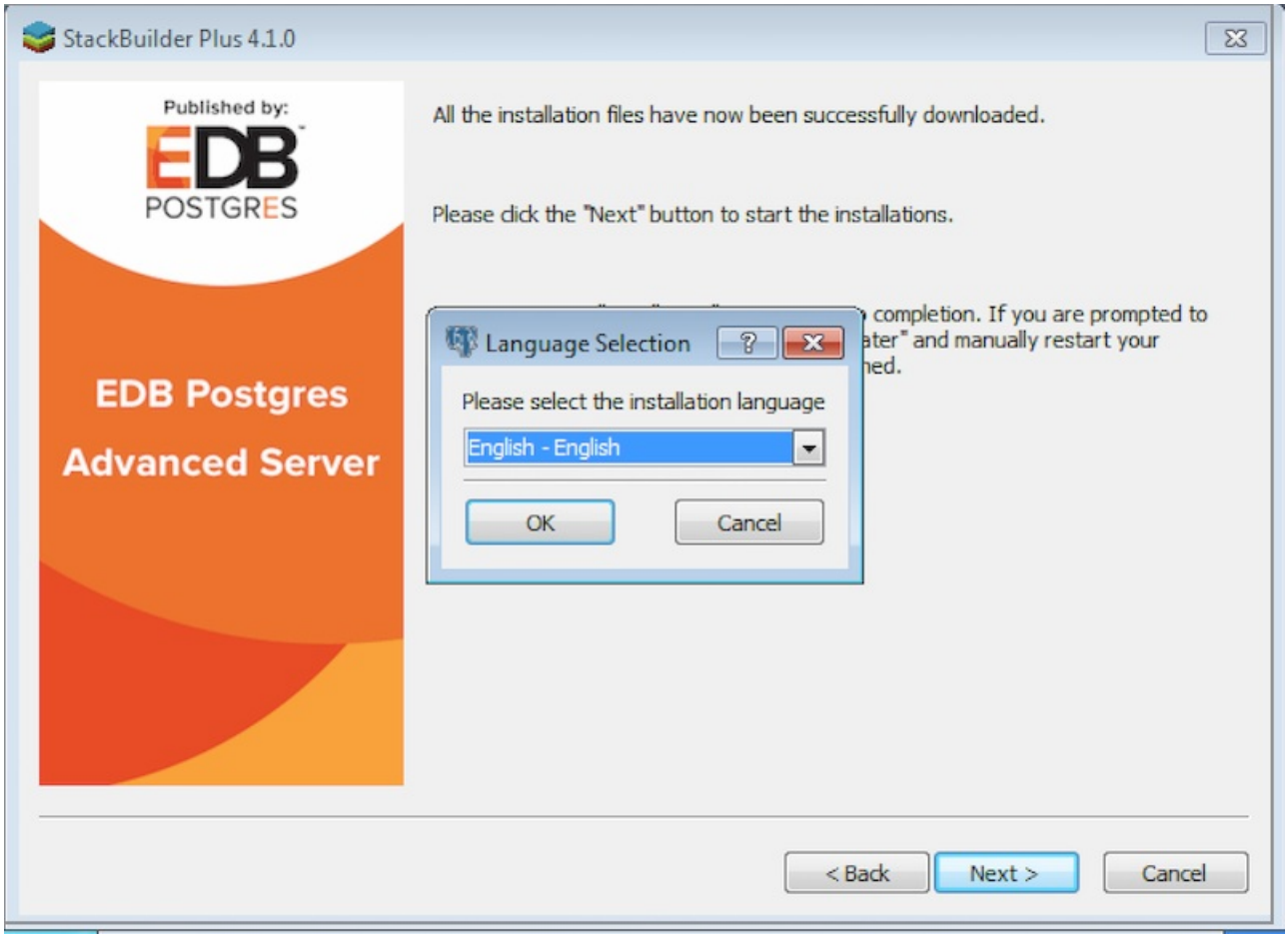
2. Expand the Add-ons, tools and utilities node, and check the box

next to the PgBouncer version. Click Next to continue.

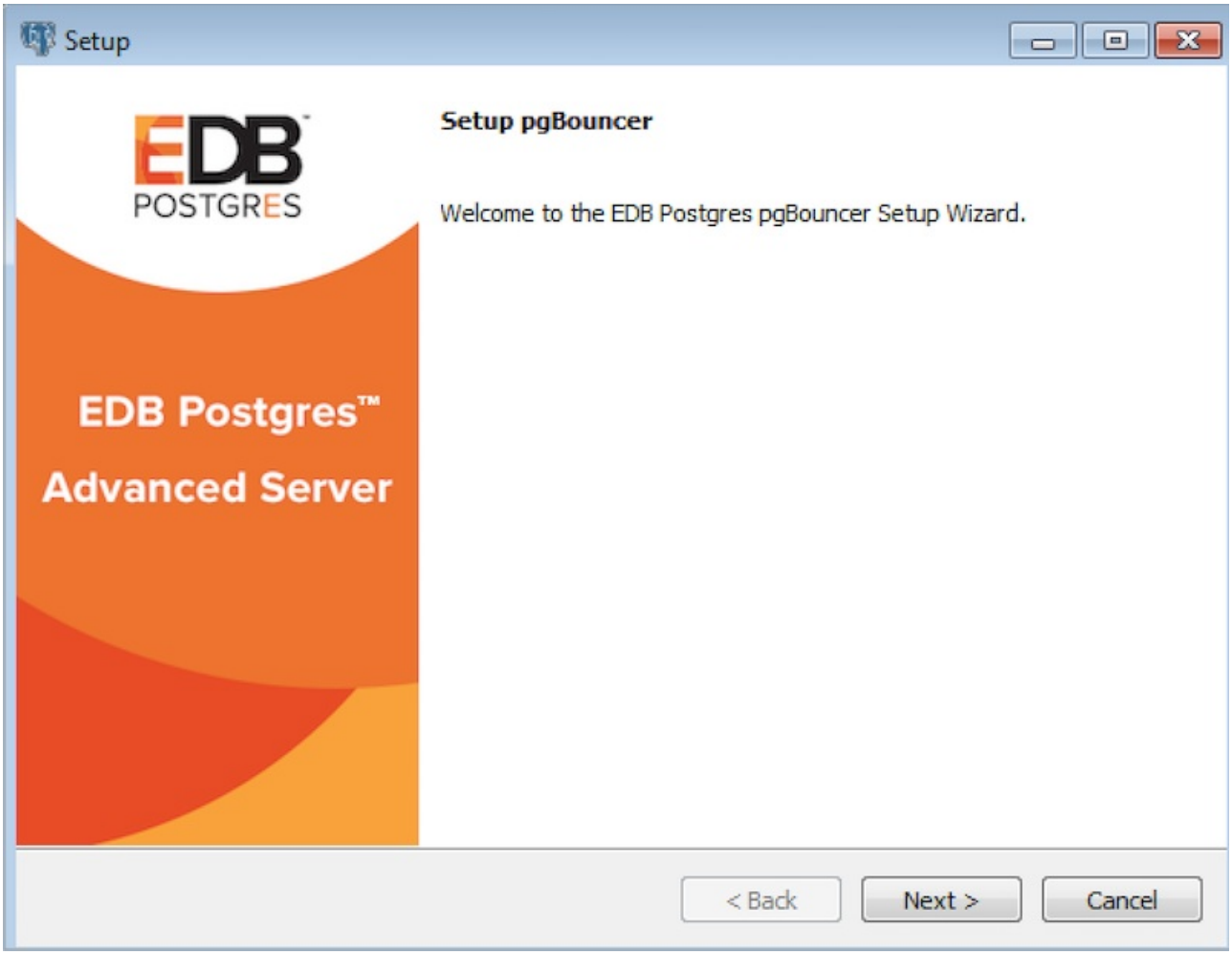
3. The selected packages and the default download directory where the package will be installed are displayed; change the download directory location if required. Click Next.
4. Once you have downloaded the installation files, a confirmation message is displayed. Click Next to start the PgBouncer installation.



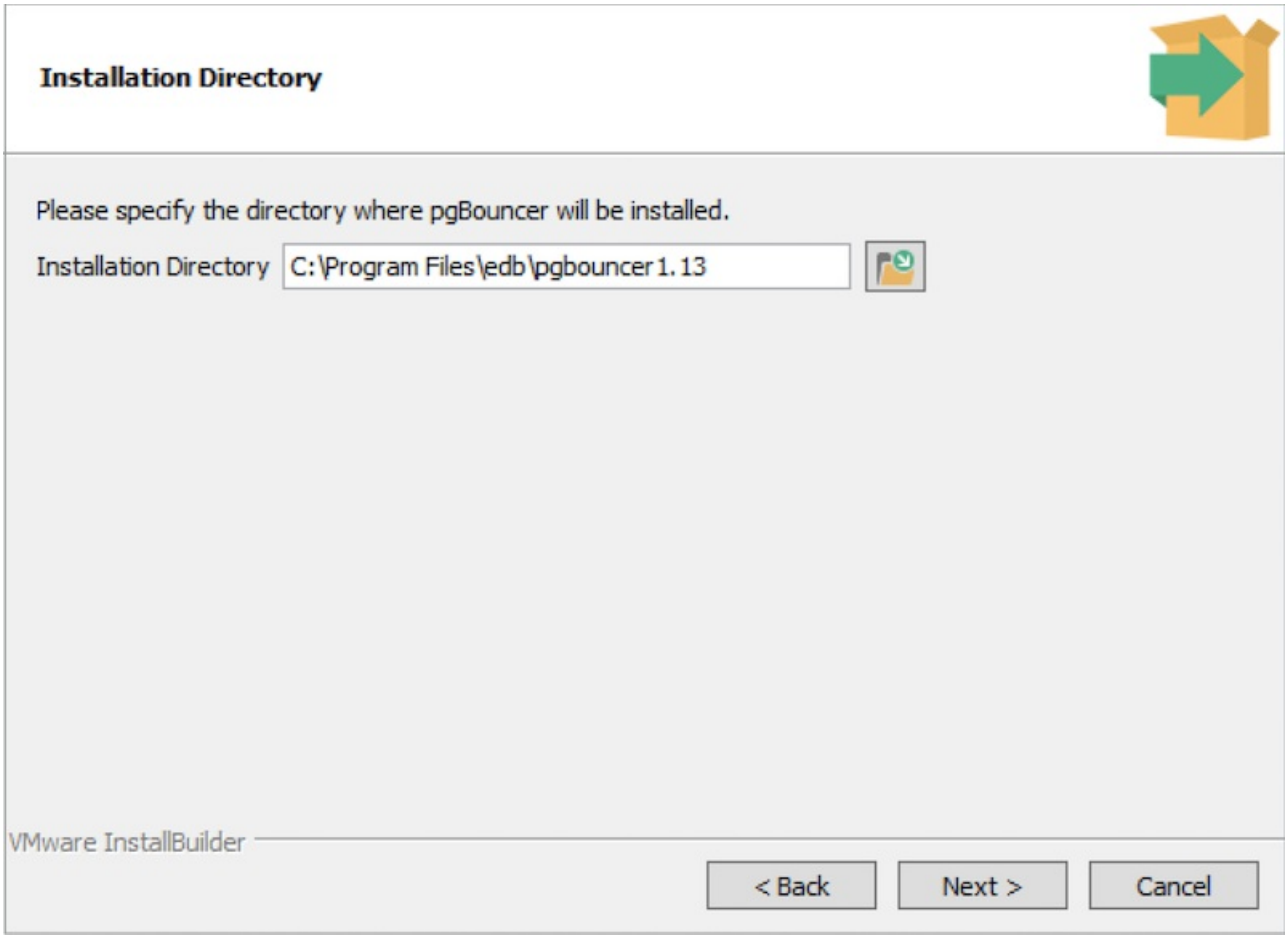
5. Select an installation language and click OK.



6. The installer welcomes you to the setup wizard. Click Next.



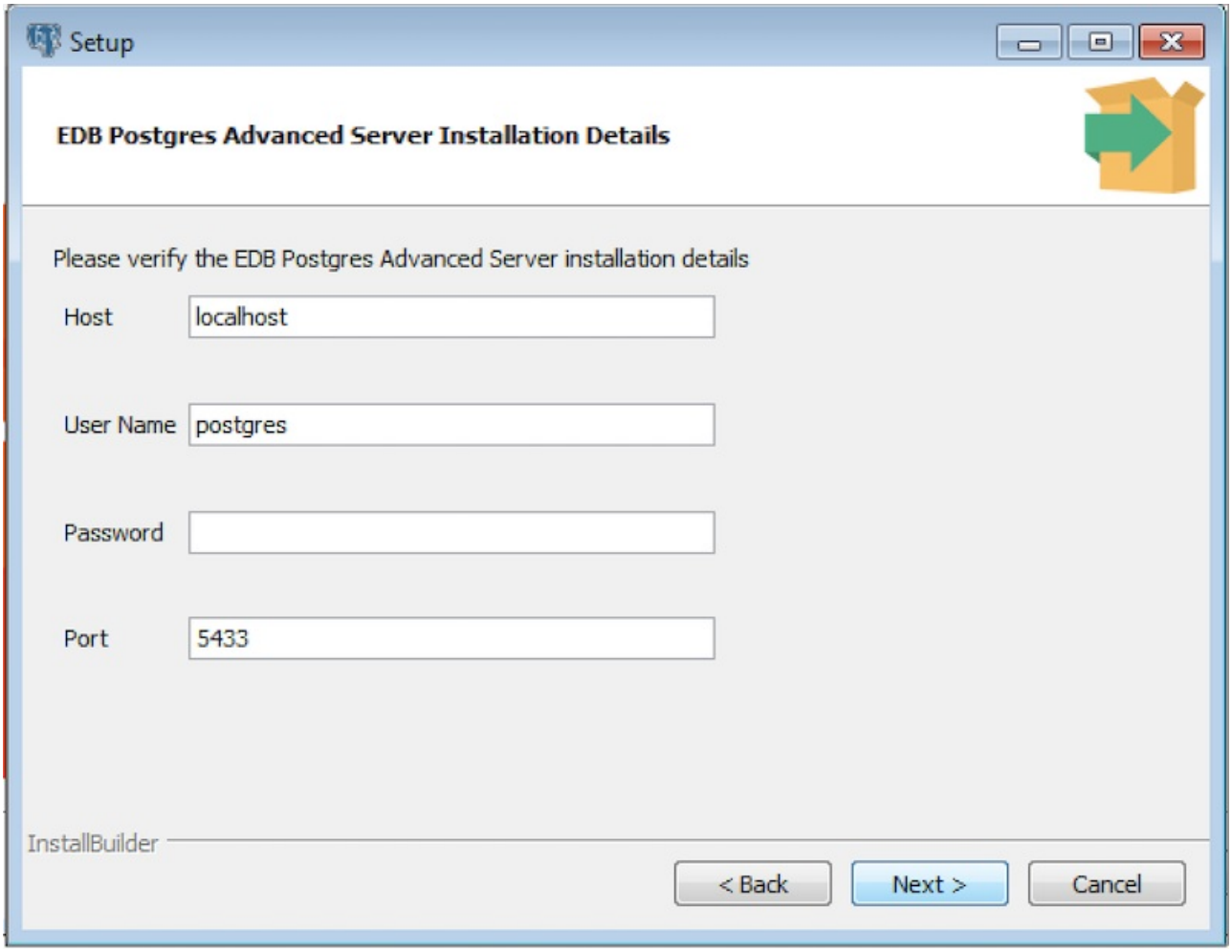
7. Use the Installation Directory field to specify the directory in which you wish to install PgBouncer (the default installation directory is C:\Program Files\edb) Then, click Next to continue.



8. Use fields on the EDB Postgres Advanced Server Installation Details window to provide connection information for the Advanced Server host:

   - Use the Host field to identify the system on which Advanced Server resides.
   - Provide the name of the role that PgBouncer will use for connections to the server in the User Name field.
   - Provide the password associated with the role in the Password field.
   - Use the Port field to identify the listener port that Advanced Server monitors for client connections.

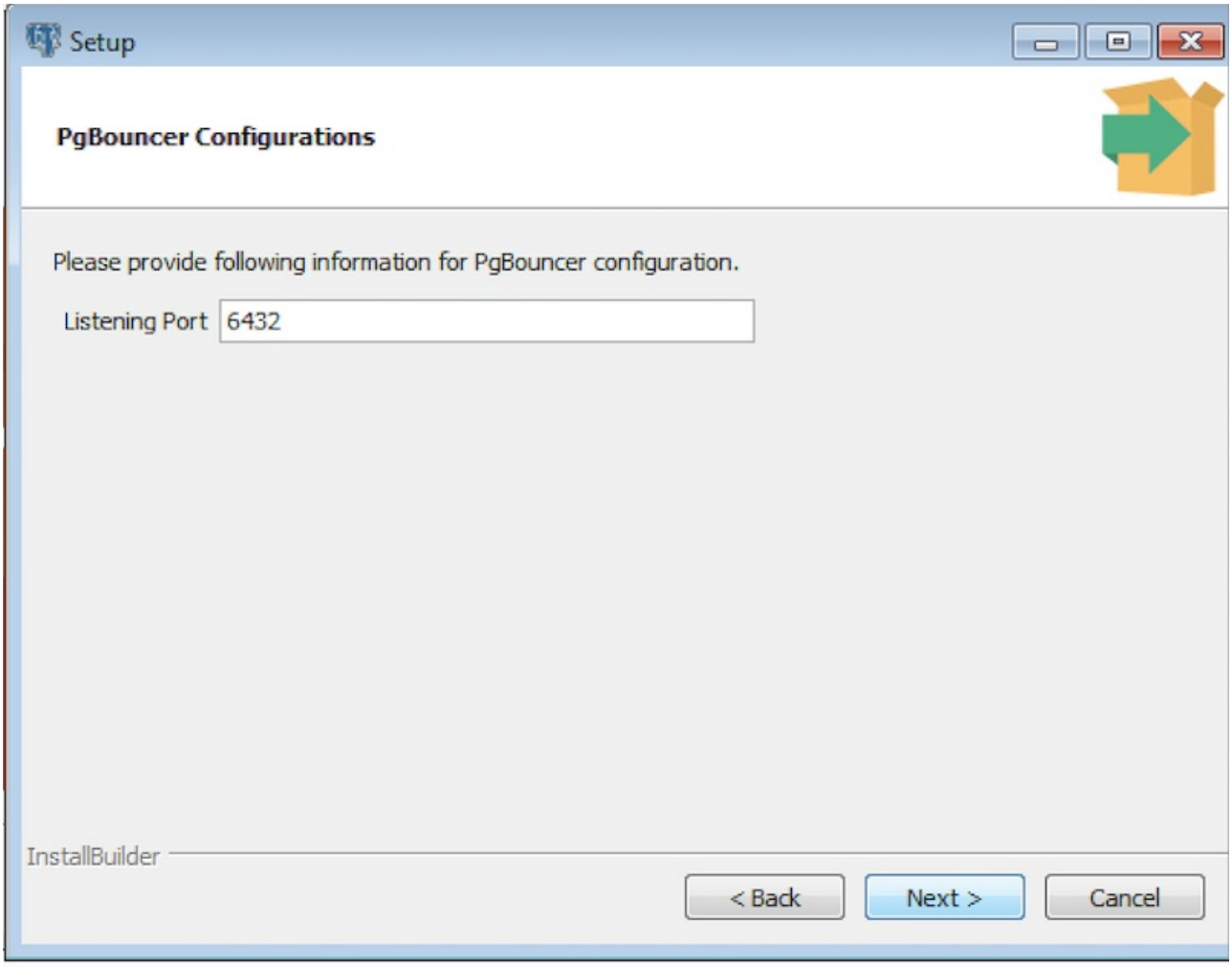
   Then, click Next to continue.



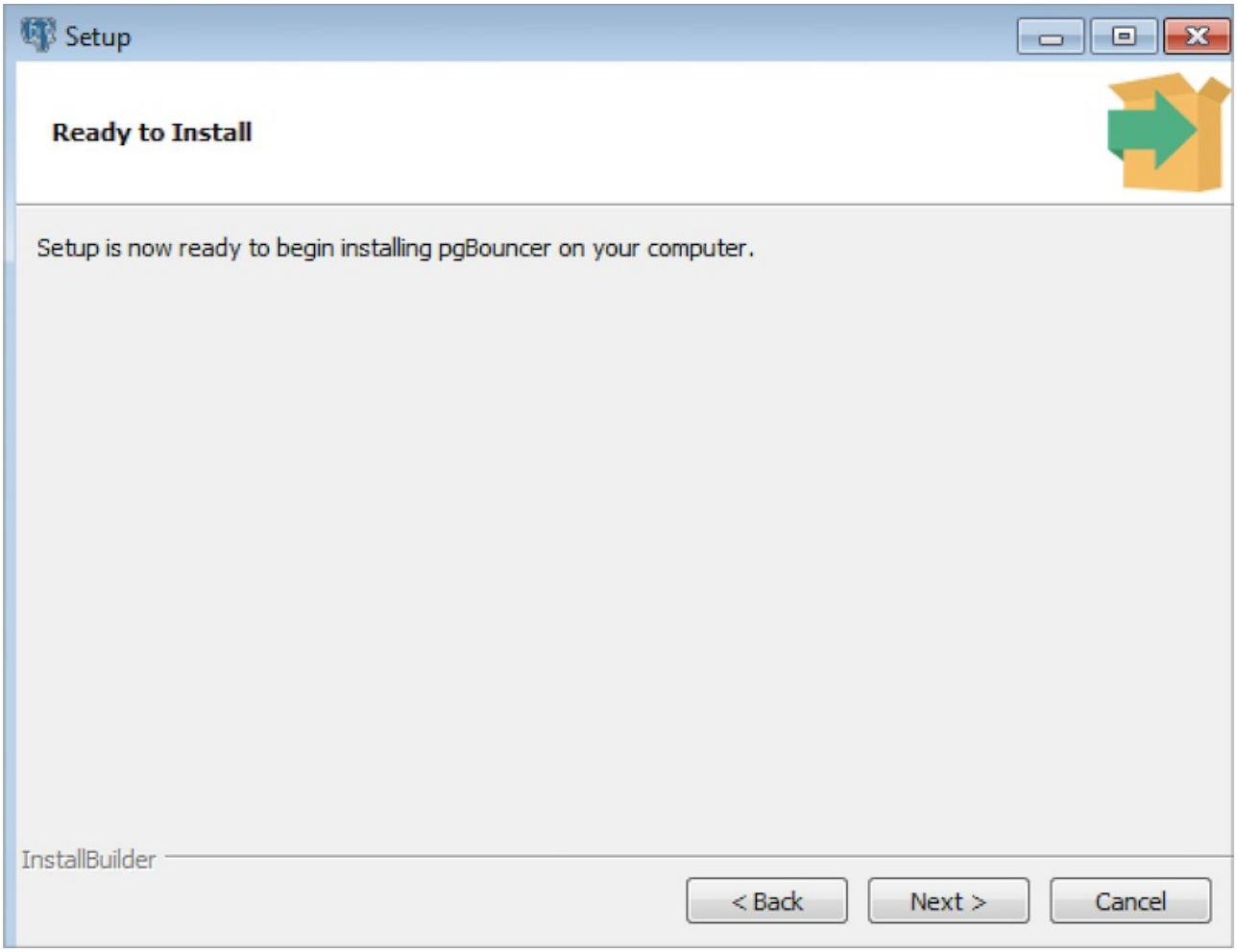
9. Use fields on the pgbouncer Configuration window to provide your preferences for the PgBouncer installation:

   - Use the Listening Port field to specify the port that PgBouncer monitors for connections.
   - Use the Operating System User field to specify the name of the Linux operating system user that PgBouncer will change to after startup. This option is not supported on Windows hosts.

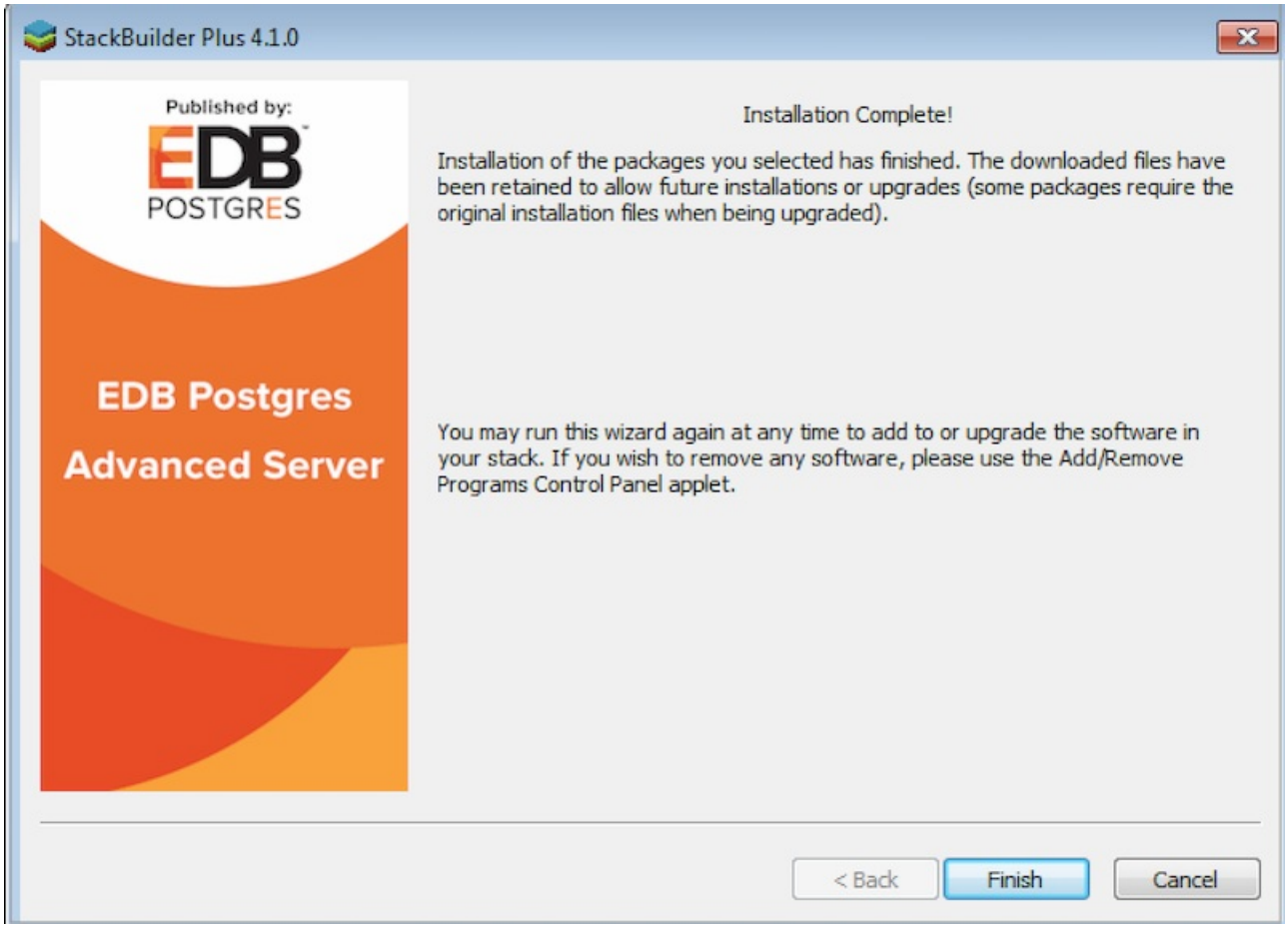
   Then, click Next to continue.



10. The Ready to Install window notifies you when the installer has all of the information needed to install PgBouncer on your system. Click Next to install PgBouncer. Progress bars inform you as the installation progresses.



11. The installer notifies you when the setup wizard has completed the installation. Click Finish to exit the installer.



2 Configuration and Usage

This section walks you through how to configure and use PgBouncer.

Configuring PgBouncer

When the pgbouncer service is running, any Postgres client connecting to the pgbouncer listener port specified in the configuration file will use connection pooling.

PgBouncer connection and configuration information is stored in the

`.ini` file, located in the following directory:

On Linux:

`/etc/edb/pgbouncer1.13/edb-pgbouncer-1.13.ini`

On Debian:

`/etc/edb/pgbouncer1.13/pgbouncer.ini`

On Windows:

`C:\Program Files\edb\pgbouncer1.13\share\pgbouncer.ini`

The pgbouncer configuration file is divided into two sections: `[databases]` and `[pgbouncer]`.

The `[databases]` section of the configuration file contains a list of databases and the associated connection information. In an Advanced Server installation, the configuration file contains an entry for the installation of Advanced Server that installed pgbouncer:

```
edb = host=127.0.0.1 port=5444
```

You can specify additional database connection information in the configuration file in the form of `keyword=value` pairs. You can include the following parameters:

Parameter	Description
name	The name of the database to which the client application will connect.
host	The IP address of the host.
port	The port on which the host is listening.
dbname	The (optional) database name.

Parameter	Description
user	A username (if different than the information specified by the connecting client).
password	A password (if different than the information specified by the connecting client).

The following example demonstrates the syntax allowed in the `[databases]` section of the configuration file:

```
[databases]
edb = host=127.0.0.1 port=5444
acctg = host=192.168.10.101 port=5432 user=bob
password=XXXXXX
```

Include the `dbname` parameter to map the connection name to an alternate database name. For example:

```
hr = host=127.0.0.1 port=5445 dbname=humanresources
```

When the client provides authentication information, that information is used to connect to pgbouncer, which in turn uses the information specified in the pgbouncer configuration file to connect to the database server. The user information provided in the configuration file must match a role defined in the Postgres database cluster.

Note

If you do not specify user details in `pgbouncer.ini`, the username and password will be authenticated by the database server and pgbouncer. As such, the username and password should be included in the `userlist.txt` file and the database cluster.

The `[pgbouncer]` section of the configuration file contains configuration details specific to pgbouncer:

Parameter	Description
admin_users	A comma-delimited list of users that are allowed to access the Admin Console (for management and monitoring purposes). By default, pgbouncer is installed with an admin_users = enterprisedb.
auth_file	The path to the authentication file that contains username and passwords of clients that may connect to pgbouncer. The authentication file (userlist.txt) is located in /opt/edb/pgbouncer-<x.x>/etc, and contains *username/password* pairs that specify the identities that clients may use to access pgbouncer. Within the authentication file, the username and password must be specified within double-quotes, as shown below: *"user_name" "password"* To make changes to the identities that can access pgbouncer, you can edit the existing authentication file, or specify an alternate authentication file with the auth_file parameter. auth_type
auth_type	The authentication method used by pgbouncer. May be: md5, crypt, plain, trust or any. The default value is md5.

Parameter	Description
default_pool_size	The amount of user connections that are allowed to access the server. The default is 20 active connections.
group_connections	Clients providing the same application_name will be grouped to use the same connection. The default is 0.
ignore_startup_parameters	A comma-delimited list of application startup packets that pgbouncer should ignore. The default is application_name .
listen_addr	The IP address on which pgbouncer listens for client connections. If omitted, only Unix socket connections are allowed; the client must also reside on the same host as pgbouncer and may not specify a host IP address when connecting to pgbouncer.
listen_port	The port that pgbouncer monitors for client connections. By default, pgbouncer listens on port 6432.
logfile	The path to the pgbouncer log file.
max_client_conn	The maximum number of connections allowed. The default is 100.
pidfile	The path to the process ID file.
pool_mode	The value of pool_mode specifies when the server connection can be made available to the connection pool. May be: session, transaction or statement. The default value is session.

Parameter	Description
server_reset_query	The default is DISCARD ALL which instructs pgbouncer to clean any changes made to a database session.
stats_users	A comma delimited list of users who are allowed to connect and run read-only queries. The default is stats_users = enterprisedb.

The following example demonstrates the syntax allowed in the `[pgbouncer]` section of the configuration file for edb-pgbouncer-1.13 version:

```
[pgbouncer]
logfile = /var/log/edb/pgbouncer1.13/edb-pgbouncer-1.13.log
pidfile = /var/run/edb/pgbouncer1.13/edb-pgbouncer-1.13.pid
listen_addr = *
listen_port = 6432
auth_type = md5
auth_file = /opt/edb/pgbouncer-1.13/etc/userlist.txt
admin_users = enterprisedb
stats_users = enterprisedb
pool_mode = session
server_reset_query = DISCARD ALL
ignore_startup_parameters = application_name
max_client_conn = 100
default_pool_size = 20
group_connections = 0
```

For more information about the settings used in the `pgbouncer.ini` file, see the PgBouncer documentation.

After editing the pgbouncer configuration file to reflect your

environment, you must restart the pgbouncer service for the changes to take effect. The name of the pgbouncer service is `edb-pgbouncer-1.13`; use platform specific commands to stop, start, or restart the service as needed.

Using the PgBouncer Admin Console

The Admin Console allows you to retrieve statistical information about pgbouncer activity, and to control the pgbouncer process. You can use the edb-psql client to access the pgbouncer Admin Console by connecting to the `pgbouncer` database. The following example connects to the `pgbouncer` database with the edb-psql client on a Linux system. pgbouncer is listening on port `6432`, with a user name of `enterprisedb`:

Enter following command after navigating to the `bin` directory under your Advanced Server installation:

```
# ./edb-psql -p 6432 -U enterprisedb pgbouncer
```

Please note that the required connection information will vary according to the connecting client, platform and authentication information required by the server.

After connecting to the `pgbouncer` database, you can use the `SHOW CLIENTS` command to retrieve client-related information:

```
# SHOW CLIENTS;
```

The `SHOW CLIENTS` command returns:

```
--[ RECORD 1]-+------------------
  type        | C
  user        | postgres
```

```
database    | pgbouncer
state       | active
addr        | unix
port        | 6432
local_addr  | unix
local_port  | 6432
connect_time | 2010-05-25 05:26:20
request_time | 2010-05-25 05:39:46
ptr         | 0x8655d20
link        |
```

You can use other variations of the `SHOW` command to retrieve information about pgbouncer:

```
SHOW STATS
SHOW SERVERS
SHOW POOLS
SHOW LISTS
SHOW USERS
SHOW DATABASES
SHOW FDS
SHOW CONFIG
```

You can use the following commands to control the pgbouncer process:

`PAUSE`

> Use the `PAUSE` command to disconnect all servers after waiting for current queries to complete.

`SUSPEND`

> Use the `SUSPEND` command to flush the socket buffers and suspend the pgbouncer process.

`RESUME`

> Use the `RESUME` command to resume work after a `PAUSE` or `SUSPEND` command.

`SHUTDOWN`

> Use the `SHUTDOWN` command to stop the pgbouncer process and exit.

`RELOAD`

> Use the `RELOAD` command to reload the pgbouncer configuration files.

For more information about using pgbouncer, visit the PgBouncer project.

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3 Uninstallation

This section walks you through uninstalling PgBouncer.

Uninstalling PgBouncer on a CentOS Host

To uninstall PgBouncer on a CentOS host, assume the identity of the root user and invoke the following command:

On RHEL/CentOS 6 and 7:

```
yum erase edb-pgbouncer<xx>
```

On RHEL/CentOS 8:

```
dnf erase edb-pgbouncer<xx>
```

Where `<xx>` is the pgbouncer version.

Uninstalling PgBouncer on a Debian or Ubuntu Host

To uninstall PgBouncer on a Debian or Ubuntu host, invoke the following command:

```
apt-get remove edb-pgbouncer<xx>
```

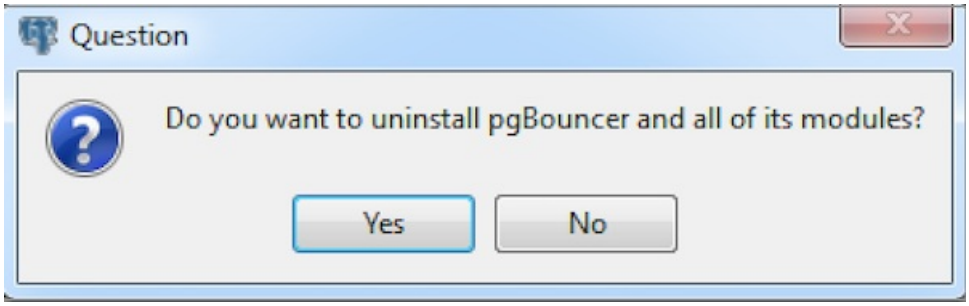
Where `<xx>` is the version you want to uninstall.

Uninstalling PgBouncer on a Windows Host

The PgBouncer graphical installer creates an uninstaller in the installation directory that you have specified while installing PgBouncer.

To uninstall PgBouncer on a Windows Host:

1. Navigate into the directory that contains the uninstaller and assume superuser privileges. Open the uninstaller and click `Yes` to begin uninstalling PgBouncer:



2. The uninstallation process begins. Click OK when the uninstallation completes: