Setting up PostgreSQL

How to prepare PostgreSQL for an Exponential site - the user and a UTF8 database it owns, the pgcrypto extension the driver needs for MD5, the settings block, the installers, and the server-side settings...

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This page is for database administrators who prepare PostgreSQL for an Exponential site, the project's recommended database server. It answers: how to create the account and the database, why the account must own the database, why `pgcrypto` is needed and how to provide it, what the settings look like and how to run the installer. Source: 9.4 PostgreSQL; driver `lib/ezdb/classes/ezpostgresqldb.php`.

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Requirements

- PostgreSQL **13 or later** (the wizard accepts 8.0, but `pgcrypto` is a trusted extension only from 13 on, and the installer relies on that). The project's CI runs PostgreSQL 15; the development server runs 13.
- PHP extension `pgsql` in every PHP that uses the site (PHP extensions per engine).
- Your distribution's PostgreSQL contrib package, which carries `pgcrypto`, if the server does not have it yet.

Create the user and the database

Shell

```
sudo -u postgres createuser --pwprompt exponential
sudo -u postgres createdb --owner=exponential --encoding=UTF8 --template=template0 exponential
```

- **The owner matters.** From PostgreSQL 15 on, ordinary users may no longer create tables in the `public` schema of a database they do not own. Making the site's account the owner gives it what the installer and every later update file need, and nothing more.
- `--template=template0` lets you choose the encoding regardless of the server's default.

- `--pwprompt` asks for the password instead of taking it on the command line.

None of the installers creates the database or the user; create them first.

pgcrypto

The driver computes MD5 with `encode(digest(..., 'md5'), 'hex')`, and `digest()` comes from `pgcrypto`. The installer runs `CREATE EXTENSION IF NOT EXISTS pgcrypto` when the server ships the extension; as a trusted extension the database owner may create it. If the server lacks it, install the contrib package, then, as the owner or a superuser:

Shell

```
sudo -u postgres psql -d exponential -c 'CREATE EXTENSION IF NOT EXISTS pgcrypto;'
```

When it is missing, the setup wizard says: "The 'digest' function is not available in your database, and Exponential cannot run without it." Create the extension and click Next again. The update files also need `digest()` (11.3 per-database notes).

Allow the connection

"Connection refused" or an authentication error at the first connection is usually the server's own configuration:

- `listen_addresses` in `postgresql.conf` must include the address the web servers connect to (for a database on the same machine `localhost` is enough);
- `pg_hba.conf` needs a line that allows the site's user, from the web servers' addresses, to the site's database, with a password method.

Reload PostgreSQL after a change. The authoritative reference is PostgreSQL's client authentication chapter.

The settings

In `settings/override/site.ini.append.php` (the installers write it):

INI

```
[DatabaseSettings]
DatabaseImplementation=ezpostgresql
Server=localhost
# 5432 is the server's default
Port=5432
User=exponential
Password=<the password>
Database=exponential
# enabled: pg_pconnect instead of pg_connect
UsePersistentConnection=disabled
```

The aliases `postgresql` and `pgsql` name the same driver.

Install

Shell

```
EXP_INSTALL_DB_PASSWORD='<the password>' php bin/php/console exp:install --apply --db=pgsql \
    --db-host=127.0.0.1 --db-name=exponential --db-user=exponential --allow-root-user
```

`exp:install` takes the password from `EXP_INSTALL_DB_PASSWORD`, so it stays out of the process list. `--db=postgresql` and `--db=postgres` are accepted too. The setup wizard prefills port 5432 and user `postgres` (`settings/setup.ini` `DefaultPort_pgsql`, `DefaultUser_pgsql`); replace the user with the site's account. The kickstarter takes `[database_choice]` `Type=pgsql`.

First checks

Shell

```
psql -U exponential -d exponential -c '\dx'                       # pgcrypto is listed
psql -U exponential -d exponential -c "SELECT name, value FROM ezsite_data WHERE name LIKE 'ezpub
lish-%';"
psql -U exponential -d exponential -c '\dt' | wc -l               # the kernel's tables are there
```

Then open **Setup > System information**: the Database card shows PostgreSQL, the server version and `UTF8`.

Checklist

- ☐ PostgreSQL 13 or later, a release with security support.
- ☐ The site's account owns the database; the database is `UTF8`.
- ☐ `pgcrypto` exists in the site's database.
- ☐ `pg_hba.conf` allows only the web servers, with a password method.
- ☐ The account is not a superuser.
- ☐ Backups with `pg_dump -Fc` are scheduled (Backups per engine).

Related pages

- Operating PostgreSQL: sequences, case and gotchas
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