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Creating a PostgreSQL user and database, and connecting with psql

Engines & Performance

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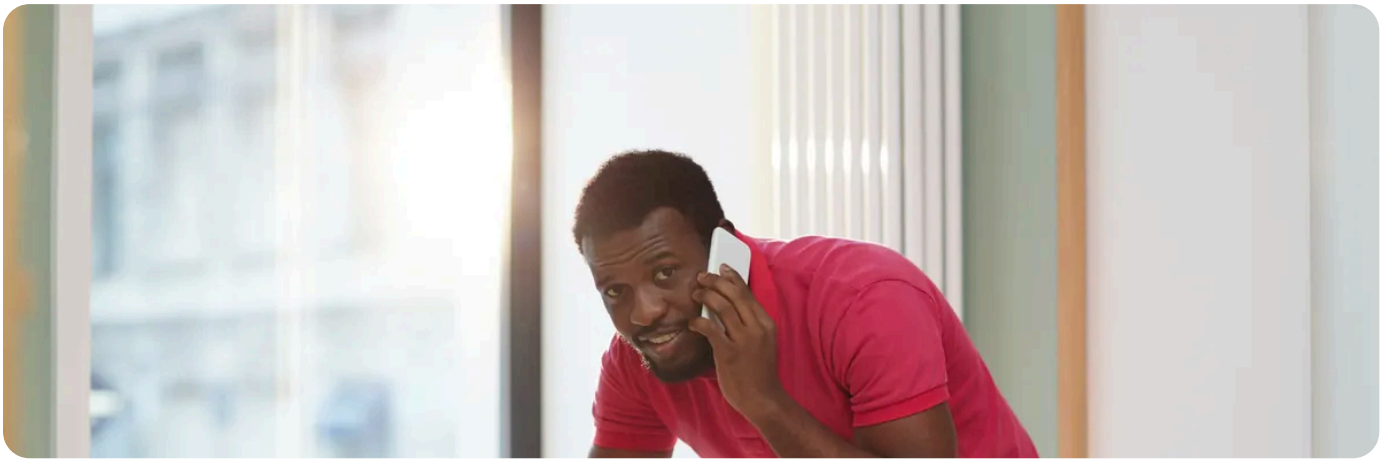

On a VPS with PostgreSQL already installed, enter as the system user `postgres` with `sudo -u postgres psql`, then create the user and the database with two commands: `CREATE USER ...` and `CREATE DATABASE ... OWNER ...`. Then connect with `psql -h 127.0.0.1 -U user -d database`. This assumes a VPS with root access, preferably running Ubuntu 22.04 LTS, and the installation is yours. If you have not installed it yet, start with **installing PostgreSQL**.

Step by step

1. Enter PostgreSQL: `sudo -u postgres psql`. The prompt becomes `postgres=#`.

2. Create the user with a strong password (the **password generator** will do):

```
CREATE USER shop WITH PASSWORD 'a-strong-password';
```

3. Create the database and hand it over to that user:

```
CREATE DATABASE shop OWNER shop;
```

4. Check with `\l` (lists databases) and `\du` (lists users). Leave with `\q`.

5. Connect as the new user, **over the local network**:

```
psql -h 127.0.0.1 -U shop -d shop
```

Then `psql` asks for the password.

6 In the application use the host `127.0.0.1`, the port `5432`, and the three values: database, user and password.

Commands you will use often

Command	What it does
`\l`	Lists the databases.
`\c name`	Switches to another database.
`\dt`	Lists the tables in the current database.
`\du`	Lists users (roles).
`ALTER USER shop WITH PASSWORD 'new';`	Changes the password.
`DROP DATABASE shop;`	Deletes the database. **There is no undo.**

"Peer authentication failed"

shows up when you try `psql -U shop` without `-h 127.0.0.1`. Without `-h`, `psql` connects through a local file and expects the system user to have the same name. With `-h 127.0.0.1` it asks for the password, which is what you want. Another trap: SQL commands end with a **semicolon**. Without it `psql` waits and looks frozen.

Giving another user read-only access

For a second user who only reads (a reporting dashboard, say), create it and, inside the database (`\c shop`), give it the essentials: `GRANT CONNECT ON DATABASE shop TO reader;` and `GRANT SELECT ON ALL TABLES IN SCHEMA public TO reader;`. The first lets it in, the second lets it read the tables that **already exist**. Tables created later are not covered automatically: you have to repeat the command or set default privileges. To take access away there is `REVOKE`, which does the opposite of `GRANT`.

Do not give the application the `postgres` user.

That one administers everything. One user per application, owner of its own database only, limits the damage if something goes wrong. To keep the password out of the command, `psql` reads it from a `~/.pgpass` file, which should be yours alone (`chmod 600`).

NEED A HAND?

PostgreSQL is running on your VPS and the application will not connect? Show us the error message, without the password.

Open a support ticket →

SEE ALSO

- **Allowing remote PostgreSQL connections on a VPS, safely** →
- **Backing up with mysqldump and pg_dump, and restoring the copy** →
- **How far our support goes: what we handle and what is yours** →

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