

Documentation

<https://www.postgresql.org/docs/15/index.html>
<https://postgrespro.com/docs/postgresql/15/index>

Preparing for the Installation

If PostgreSQL 15 package is not available in the default package repository, enable its official package repository

Execute update

```
$ sudo apt update && sudo apt upgrade
```

Check PostgreSQL Version

```
$postgres --version or $postgres -V
```

If not found execute `$locate bin/postgres`
 and then `$/usr/lib/postgresql/15/bin/postgres -V`

Check Postgres version from SQL Shell

```
$sudo -u postgres psql
# SELECT version();
```

Installation

Ubuntu

```
install $ sudo apt install -y postgresql-15
uninstall $ sudo apt-get --purge remove postgresql postgresql-*
```

Server config

```
sudo /usr/lib/postgresql/15/bin/pg_config --configure
```

List clusters

```
$ sudo pg_lsclusters
```

Creat and drop a cluster

```
$ sudo pg_createcluster [options] version name
$ sudo pg_dropcluster [--stop] version name
```

Start, stop, restart service and cluster

When installing from a package, the launch of the PostgreSQL cluster is added to the OS startup settings. Therefore, after loading the operating system, you do not need to start PostgreSQL separately.

Managing the PostgreSQL service

```
$ sudo systemctl start | stop | restart postgresql
```

You can explicitly control the cluster with the following commands:

```
$ sudo pg_ctlcluster 15 main start | stop | restart | status | reload
```

Directory

Installation directory

```
/usr/lib/postgresql/15
```

Configuration directory

```
/etc/postgresql/15/main
```

Default cluster location main (PGDATA)

```
/var/lib/postgresql/15/main
```

Database directories

```
/var/lib/postgresql/15/main/base
# select oid, datname from pg_database;
```

Data location

```
# SHOW data_directory;
/var/lib/postgresql/15/main
```

Server message log

```
$ ls -l /var/log/postgresql/postgresql-15-main.log
$ tail -n 10 /var/log/postgresql/postgresql-15-main.log
```

Links

<https://www.postgresql.org/docs/current/storage-file-layout.html>
<https://postgrespro.com/docs/postgresql/15/storage-file-layout>

User creation

Set a password for the postgres user

```
$sudo -u postgres psql
# \password postgres
Enter new password:
or
# ALTER USER postgres PASSWORD '<new-password>';
```

user list

```
# \du
```

Creating a new role (user)

```
# create user <username> with password '123456';
# alter user <username> with SUPERUSER;
or
$sudo -u postgres createuser --interactive
```



Tablespace

List tablespaces

```
# SELECT * FROM pg_tablespace; or # \db
```

CREATE TABLESPACE

```
$ sudo mkdir /var/lib/postgresql/test_dir
$ sudo chown postgres /var/lib/postgresql/test_dir
# CREATE TABLESPACE test LOCATION '/var/lib/postgresql/test_dir';
```

Creating a database in a new tablespace

```
# CREATE DATABASE appdb TABLESPACE test;
```

Tablespace size

```
SELECT pg_size_pretty( pg_tablespace_size('test') );
```

Delet tablespace

```
# DROP TABLESPACE test;
```

Moving a directory with default data

```
Stop cluster
sudo pg_ctlcluster 15 main stop
Copy data to new directory
Change the data_directory variable in the config file
/etc/postgresql/15/main/postgresql.conf
Start cluster
sudo pg_ctlcluster 15 main start
```

Links

<https://www.postgresql.org/docs/current/manage-ag-tablespace-s.html>
<https://postgrespro.com/docs/postgrespro/15/sql-createtablespace>

Connection configuration

Configuration file

```
/etc/postgresql/15/main/postgresql.conf
edit the listen_addresses from localhost to *. Enable the listen_addresses by removing the #
/etc/postgresql/15/main/pg_hba.conf
```

To connect to a particular database, a user must not only pass the pg_hba.conf checks, but must have the CONNECT privilege for the database.
 GRANT CONNECT ON DATABASE database_name TO username;

A record can have several formats:

```
local database user auth-method [auth-options]
host database user address auth-method [auth-options]
host database user IP-address IP-mask auth-method [auth-options]

Allow any user from host 192.168.12.10 to connect to database "postgres" if the user's password is correctly supplied.
```

Connection configuration (cont)

```
# TYPE DATABASE USER ADDRESS METHOD
host postgres all 192.168.12.10/32 scram-sha-256

from all IP
host postgres all 0.0.0.0/0 scram-sha-256
```

Links

<https://www.postgresql.org/docs/current/auth-pg-hba-conf.html>
<https://postgrespro.com/docs/postgrespro/10/auth-pg-hba-conf>

Backup & Restore

pg_dumpall

pg_dumpall — extract a PostgreSQL database cluster into a script file

```
pg_dumpall [connection-option...] [option...]
```

```
$ pg_dumpall > db.out
$ psql -f db.out postgres
```

pg_dump

pg_dump — extract a PostgreSQL database into a script file or other archive file

```
pg_dump [connection-option...] [option...] [dbname]
```

To dump a database called mydb into an SQL-script file:

```
$ pg_dump mydb > db.sql
```

To reload such a script into a (freshly created) database named newdb:

```
$ psql -d newdb -f db.sql
```

To dump a database into a custom-format archive file:

```
$ pg_dump -Fc mydb > db.dump
```

To dump a database into a directory-format archive:

```
$ pg_dump -Fd mydb -f dumpdir
```

To reload an archive file into a (freshly created) database named newdb:

```
$ pg_restore -d newdb db.dump
```

To reload an archive file into the same database it was dumped from, discarding the current contents of that database:

```
$ pg_restore -d postgres --clean --create db.dump
```

Links

<https://www.postgresql.org/docs/current/app-pgdump.html>
<https://postgrespro.com/docs/postgrespro/15/app-pgdump>