

### 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
```



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### 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>



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