Getting Started With Postgresql13 on Ubuntu:

Overview

- Install Postgresql 13
- Configure Postgresql
- Create database
- Restore database
- Allow access via DBeaver

1. Create the file repository configuration:

sudo sh -c 'echo "deb http://apt.postgresql.org/pub/repos/apt $(lsb_release -cs)-pgdg main" > /etc/apt/sources.list.d/pgdg.list'

```
root@master-node:/home/ubuntu# sudo sh -c 'echo "deb http://apt.postgresql.org/pub/repos/apt $(lsb_release -cs)-pgdg main" > /etc/apt/sources.list.d/pgdg.list'
```

2. Create the file repository configuration:

sudo sh -c 'echo "deb http://apt.postgresql.org/pub/repos/apt $(lsb_release -cs)-pgdg main" > /etc/apt/sources.list.d/pgdg.list'

```
root@master-node:/home/ubuntu# sudo sh -c 'echo "deb http://apt.postgresql.org/pub/repos/apt $(lsb_release -cs)-pgdg main" > /etc/apt/sources.list.d/pgdg.list'
```

3. Import the repository signing key:

wget --quiet -O - https://www.postgresql.org/media/keys/ACCC4CF8.asc | sudo apt-key add -

```
root@master-node:/home/ubuntu# wget --quiet -O - https://www.postgresql.org/media/keys/ACCC4CF8.asc | sudo apt-key add -
OK
```

4. Update the package lists:

sudo apt-get update

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```
root@master-node:/home/ubuntu# sudo apt-get update
Get:1 http://jed1.mirror.bluvalt.com/ubuntu bionic InRelease [242 kB]
Hit:2 https://artifacts.elastic.co/packages/7.x/apt stable InRelease
Hit:4 https://baltocdn.com/helm/stable/debian all InRelease
Hit:5 http://jed1.mirror.bluvalt.com/ubuntu bionic-updates InRelease
```

5. Install the latest version of PostgreSQL.

If you want a specific version, use 'postgresql-12' or similar instead of 'postgresql':

sudo apt-get -y install postgresql

```
root@master-node:/home/ubuntu# sudo apt-get -y install postgresql
Reading package lists... Done
Building dependency tree
```

Note: at the end it should print out all needed info such as directory path, log etc.

```
Success. You can now start the database server using:

    pg_ctlcluster 13 main start

Ver Cluster Port Status Owner    Data directory              Log file
13  main    5432 down   postgres /var/lib/postgresql/13/main /var/log/postgresql/postgresql-13-main.log
```

6. To check postgresql status issue the following:

systemctl status postgresql:

```
root@master-node:/home/ubuntu# systemctl status postgresql
● postgresql.service - PostgreSQL RDBMS
   Loaded: loaded (/lib/systemd/system/postgresql.service; enabled; vendor preset: enabled)
   Active: active (exited) since Thu 2021-09-09 10:09:10 UTC; 3min 4s ago
 Main PID: 2765566 (code=exited, status=0/SUCCESS)
    Tasks: 0 (limit: 19217)
```

systemctl stop postgresql > if you want to stop it.

systemctl restart postgresql > if you want to restart it.

7. Let's configure postgresql which is located in:

```
root@master-node:/etc/postgresql/13/main# vi /etc/postgresql/13/main/postgre
sql.conf
```

Edit the below:

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```
listen_addresses = '*' # what IP address(es) to listen on;
port = 5432                             # (change requires restart)
max_connections = 100                   # (change requires restart)
shared_buffers = 1000MB                         # min 128kB
work_mem = 64MB                                 # min 64kB
maintenance_work_mem = 128MB                    # min 1MB
log_line_prefix = '%m [%p] %q%u@%d '            # special values
```

Once you're done save the configuration and exit.

```
#------------------------------------------------------------------------------
# CUSTOMIZED OPTIONS
#------------------------------------------------------------------------------

# Add settings for extensions here
:wq!
```

8. You need to restart Postgresql once you applied the above:

```
root@master-node:/etc/postgresql/13/main# systemctl restart postgresql
root@master-node:/etc/postgresql/13/main# systemctl status postgresql
● postgresql.service - PostgreSQL RDBMS
   Loaded: loaded (/lib/systemd/system/postgresql.service; enabled; vendor preset: enabled)
   Active: active (exited) since Thu 2021-09-09 10:28:43 UTC; 15s ago
  Process: 2791660 ExecStart=/bin/true (code=exited, status=0/SUCCESS)
 Main PID: 2791660 (code=exited, status=0/SUCCESS)

Sep 09 10:28:43 master-node systemd[1]: Starting PostgreSQL RDBMS...
Sep 09 10:28:43 master-node systemd[1]: Started PostgreSQL RDBMS.
```

9. Access Postgresql via command line:

sudo su -l postgres

psql

```
root@master-node:/etc/postgresql/13/main# sudo su -l postgres
postgres@master-node:~$ psql
Warning: ignoring invalid line 22 in /etc/postgresql-common/user_clusters
psql (13.4 (Ubuntu 13.4-1.pgdg18.04+1))
Type "help" for help.

postgres=#
```

10. Create and restore database:

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```
postgres=# create database test;
CREATE DATABASE
postgres=# \c test
You are now connected to database "test" as user "postgres"
```

To restore into the **test** database that we just created you will need the backup file which you prefer to restore it. I have backup database labeled as **data_export.sql.gz:**

```
root@master-node:/home/ubuntu# pwd
/home/ubuntu
root@master-node:/home/ubuntu# ls -lahS data_export.sql.gz
-rw-rw-r-- 1 ubuntu ubuntu 336M Aug 11 12:47 data_export.sql.gz
```

To restore to **test,** you need to access postgres and the navigate to the path where your backup file at**:**

```
root@master-node:/home/ubuntu# sudo su -l postgres
postgres@master-node:~$ pwd
/var/lib/postgresql
postgres@master-node:~$ cd /home/ubuntu/
postgres@master-node:/home/ubuntu$ ls
data_export.sql.gz
```

Now let's restore it:

```
postgres@master-node:/home/ubuntu$ gunzip -c data_export.sql.gz | psql test
```

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To access and view table sizes:

```
postgres@master-node:/home/ubuntu$ psql
Warning: ignoring invalid line 22 in /etc/postgresql-common/user_clusters
psql (13.4 (Ubuntu 13.4-1.pgdg18.04+1))
Type "help" for help.

postgres=# \c test
You are now connected to database "test" as user "postgres".
test=# select schemaname as table_schema,
       relname as table_name,
       pg_size_pretty(pg_relation_size(relid)) as data_size
from pg_catalog.pg_statio_user_tables
order by pg_relation_size(relid) desc;
 table_schema | table_name | data_size
--------------+------------+------------
 public       | students   | 1389 MB
 public       | degree     | 15 MB
 public       | status     | 4712 kB
 public       | id         | 312 kB
 public       | create_at  | 8192 bytes
(5 rows)
```

As you can see all tables are restored.

If you want to backup this **test** database:

```
postgres@master-node:~$ pg_dump test | gzip > test_backup.sql.gz
postgres@master-node:~$ ls -lahs
total 336M
4.0K drwxr-xr-x  3 postgres postgres 4.0K Sep  9 11:25 .
4.0K drwxr-xr-x 57 root     root     4.0K Sep  9 10:09 ..
4.0K -rw-------  1 postgres postgres  289 Sep  9 11:25 .bash_history
4.0K -rw-------  1 postgres postgres 1.2K Sep  9 11:25 .psql_history
4.0K drwxr-xr-x  3 postgres postgres 4.0K Sep  9 10:09 13
336M -rw-rw-r--  1 postgres postgres 336M Sep  9 11:27 test_backup.sql.gz
```

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10. Create a user and allow access from outside: (All scripts are attached in the repo).

```
postgres@master-node:~$ psql
Warning: ignoring invalid line 22 in /etc/postgresql-common/user_clusters
psql (13.4 (Ubuntu 13.4-1.pgdg18.04+1))
Type "help" for help.

postgres=# CREATE USER test_user WITH  PASSWORD '[redacted]';
CREATE ROLE
postgres=# \c test
You are now connected to database "test" as user "postgres".
test=# GRANT CONNECT ON DATABASE test TO test_user;
GRANT
test=# grant select, update, insert,delete   on ALL TABLES in SCHEMA public to test_user;
GRANT
test=# grant select, insert ,delete on ALL TABLES in SCHEMA public to test_user;
GRANT
test=# GRANT USAGE ON all SEQUENCES IN SCHEMA public TO test_user;
GRANT
test=# GRANT select  ON ALL SEQUENCES IN SCHEMA public TO test_user;
GRANT
test=# ALTER DEFAULT PRIVILEGES IN SCHEMA public GRANT USAGE  ON SEQUENCES TO test_user;
ALTER DEFAULT PRIVILEGES
test=# ALTER DEFAULT PRIVILEGES IN SCHEMA public GRANT select ON SEQUENCES TO test_user;
ALTER DEFAULT PRIVILEGES
test=# GRANT ALL PRIVILEGES ON ALL FUNCTIONS IN SCHEMA public TO test_user;
GRANT
test=# ALTER DEFAULT PRIVILEGES IN SCHEMA public GRANT ALL ON FUNCTIONS TO test_user;
ALTER DEFAULT PRIVILEGES
test=# ALTER DEFAULT PRIVILEGES IN SCHEMA public GRANT select, update, insert, delete ON TABLES TO test_user;
ALTER DEFAULT PRIVILEGES
test=# GRANT ALL ON ALL TABLES IN SCHEMA public to test_user;
GRANT
test=# GRANT ALL ON ALL SEQUENCES IN SCHEMA public to test_user;
GRANT
test=# GRANT ALL ON ALL FUNCTIONS IN SCHEMA public to test_user;
GRANT
```

To grant the following user **test_user** access to **test** database, we need to allow it in pg_hba.conf with source IP for the **test_user** and add the following line as well as reload in order to apply changes:

```
host    test    test_user       YourIp/32               md5
```

```
root@master-node:/home/ubuntu# vi /etc/postgresql/13/main/
conf.d/          environment      pg_ctl.conf      pg_hba.conf      pg_iden
root@master-node:/home/ubuntu# vi /etc/postgresql/13/main/pg_hba.conf
root@master-node:/home/ubuntu# sudo su -l postgres
postgres@master-node:~$ psql
Warning: ignoring invalid line 22 in /etc/postgresql-common/user_clusters
psql (13.4 (Ubuntu 13.4-1.pgdg18.04+1))
Type "help" for help.

postgres=# SELECT pg_reload_conf();
 pg_reload_conf
----------------
 t
(1 row)
```

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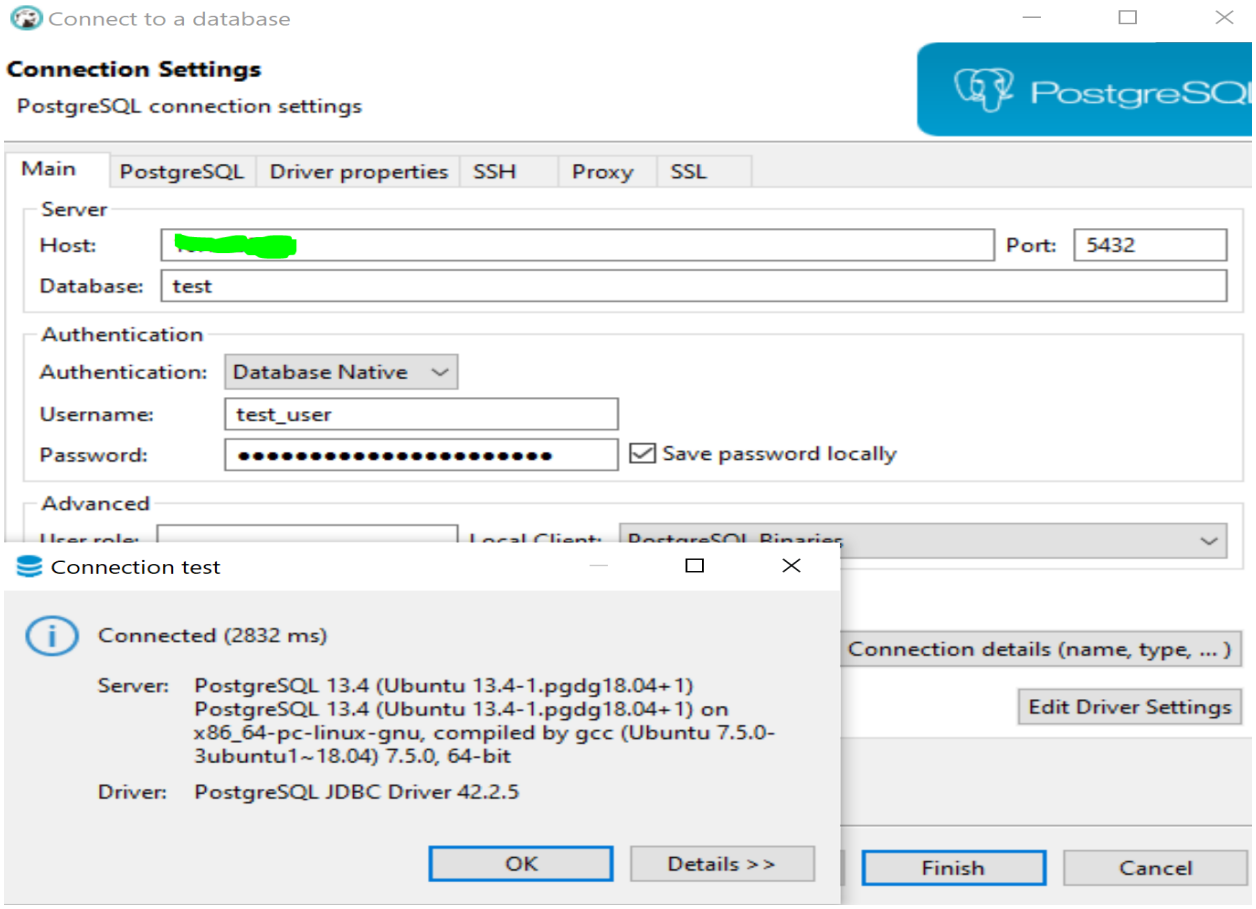
NOTE: Please note **PostgreSQL provides an access policy configuration file which is pg_hba.conf , so it's important to configure proper access and limit unknown sources.**

11. Now let's try access the database from DBeaver or any other software you prefer:



You're all set! Hope this helps you get started with Postgresql.