Understanding `pg_read_all_data` and `pg_write_all_data` in PostgreSQL

1. What are `pg_read_all_data` and `pg_write_all_data`?

- These are **global roles** provided by PostgreSQL.

- They grant access to **all databases** in the PostgreSQL cluster.

- No need to manually select or connect to each database during grant.

2. Behavior of Granting

When you run:

GRANT pg_read_all_data TO username;

- PostgreSQL attaches the `pg_read_all_data` privilege to the user.

- The user can now **SELECT** from all tables, views, and sequences in **every database**.

Similarly, for:

GRANT pg_write_all_data TO username;

- The user can **INSERT, UPDATE, DELETE** on all tables across all databases.

3. Example

Suppose you have three databases:

- salesdb

- hrdb

- marketingdb

And your user is `akash.nishad`.

You run:

GRANT pg_read_all_data TO akash.nishad;

Now, when `akash.nishad` connects to any of these databases, he can read all tables.

4. Important Points

Server-wide grant: Works for all existing and future databases.

Connect permission: You must allow CONNECT privilege separately if needed.

No control over specific DB: If you want control on only one DB, do NOT use `pg_read_all_data`.

5. If You Need Access to Only One Database

If you want to give access to only one database, manually grant access:

psql -d salesdb

Then run:

GRANT CONNECT ON DATABASE salesdb TO akash.nishad;

GRANT USAGE ON SCHEMA public TO akash.nishad;

GRANT SELECT ON ALL TABLES IN SCHEMA public TO akash.nishad;

ALTER DEFAULT PRIVILEGES IN SCHEMA public GRANT SELECT ON TABLES TO akash.nishad;

6. Final Summary

Granting `pg_read_all_data` or `pg_write_all_data` automatically applies to all databases on the server. You do not need to select a database during grant.

7. Quick Summary Table

Task: Global (All DBs) access

Method: GRANT pg_read_all_data TO user;

Task: Specific (One DB) access

Method: Manually grant access after connecting to that database.