**# PostgreSQL Migration & Backup User Guide**

This guide provides step-by-step instructions on backing up a local PostgreSQL database and restoring it to **Render's PostgreSQL service**, including dealing with version compatibility issues and connecting **pgAdmin4** to the remote database.

**1. Backup Local PostgreSQL Database**

**1.1 Generate a Backup File**

Run the following command in your terminal to create a backup of your **local PostgreSQL database**:

pg\_dump -U postgres -d social\_dance\_db -F c -f backup.dump

* -U postgres → The local PostgreSQL username (replace with your actual username)
* -d social\_dance\_db → Name of the database to back up
* -F c → Custom format
* -f backup.dump → Output file name

**1.2 Verify the Backup File**

After execution, confirm that backup.dump exists in the directory by running:

ls -lh backup.dump

**2. Upload Backup File to Render PostgreSQL**

**2.1 Connect to Render PostgreSQL**

To ensure connectivity to the remote PostgreSQL instance on Render, run:

PGPASSWORD=your\_render\_db\_password psql -h your\_render\_db\_host -U your\_render\_db\_user -d social\_dance\_db -p 5432

* Replace your\_render\_db\_password, your\_render\_db\_host, and your\_render\_db\_user with **your Render credentials**.
* If connected successfully, you will see the social\_dance\_db=> prompt.

**2.2 Upload Backup File to Render Server**

Transfer the backup file to the remote database using:

scp backup.dump social\_dance\_db\_user@your\_render\_db\_host:/tmp/

* This will copy backup.dump to /tmp/ on the remote server.

**3. Restore Database on Render PostgreSQL**

**3.1 Restore Backup**

Run the following command to restore the database on Render:

PGPASSWORD=your\_render\_db\_password pg\_restore -h your\_render\_db\_host -U your\_render\_db\_user -d social\_dance\_db -p 5432 --verbose /tmp/backup.dump

* This command restores the database from backup.dump.

**3.2 Check for Errors & Incompatibilities**

If errors appear related to **ownership** or **roles**, run:

sed -i 's/OWNER TO postgres/OWNER TO social\_dance\_db\_user/g' backup.dump

Then retry the restoration:

PGPASSWORD=your\_render\_db\_password pg\_restore -h your\_render\_db\_host -U your\_render\_db\_user -d social\_dance\_db -p 5432 --verbose backup.dump

**4. Connect pgAdmin4 to Render PostgreSQL**

**4.1 Open pgAdmin4**

1. Launch **pgAdmin4**.
2. Click **Servers** > **Create** > **Server**.

**4.2 Configure Connection to Render**

1. **General Tab:** Set **Name** = Render PostgreSQL.
2. **Connection Tab:**
   * **Host name/address** = your\_render\_db\_host.oregon-postgres.render.com
   * **Port** = 5432
   * **Username** = your\_render\_db\_user
   * **Password** = your\_render\_db\_password
   * **SSL Mode** = Require
3. Click **Save**.
4. Expand the **Databases** section to view social\_dance\_db.

**4.3 Launch Query**

You will see the 2 servers One is for Local PostgreSQL and the other one is for Render PostgreSQL. Right click on social\_dance\_db and near the bottom of the menu will be Query Tool. Click on that and you will get the SQL query window.

**4.3 Verify Data Migration**

Run the following SQL query inside **pgAdmin4 Query Tool**:

SELECT COUNT(\*) FROM events;

If the output shows the expected number of records, the migration was **successful**!

**5. Troubleshooting**

| **Issue** | **Solution** |
| --- | --- |
| Connection refused to Render | Check if **Render PostgreSQL is running** in the dashboard. Ensure **IP whitelisting allows your machine**. |
| pg\_restore: error: must be able to SET ROLE "postgres" | Run sed -i 's/OWNER TO postgres/OWNER TO social\_dance\_db\_user/g' backup.dump before restoring. |
| Incorrect password error | Verify your\_render\_db\_password is correct from Render’s **Database Credentials** section. |

**6. Recap: Key Commands**

**Backup Local DB:**

pg\_dump -U postgres -d social\_dance\_db -F c -f backup.dump

**Upload Backup to Render:**

scp backup.dump social\_dance\_db\_user@your\_render\_db\_host:/tmp/

**Restore Backup on Render:**

PGPASSWORD=your\_render\_db\_password pg\_restore -h your\_render\_db\_host -U your\_render\_db\_user -d social\_dance\_db -p 5432 --verbose /tmp/backup.dump

**Connect to Render PostgreSQL in psql:**

PGPASSWORD=your\_render\_db\_password psql -h your\_render\_db\_host -U your\_render\_db\_user -d social\_dance\_db -p 5432

**Verify Migration in pgAdmin4:**

SELECT COUNT(\*) FROM events;

**7. Conclusion**

By following these steps, you can successfully migrate your PostgreSQL database from your local machine to **Render PostgreSQL**, address compatibility issues, and manage it effectively using **pgAdmin4**. 🚀