**Lab Exercise 17- Configuring Logical Replication and Replication Slots in PostgreSQL**

**Objective**

* Understand and configure logical replication
* Create publications and subscriptions
* Manage replication slots

**Prerequisites**

* Two PostgreSQL installations (on same or different machines)
* PostgreSQL version 10 or later
* Superuser access
* Ensure firewalls allow connections on port 5432 if remote

**Step 1: Configure the Publisher Server**

**A. Edit postgresql.conf on Publisher**

File path:

C:\Program Files\PostgreSQL\15\data\postgresql.conf

Enable the following parameters:

wal\_level = logical

max\_replication\_slots = 4

max\_wal\_senders = 4

Save and close the file.

**B. Edit pg\_hba.conf on Publisher**

File path:

C:\Program Files\PostgreSQL\15\data\pg\_hba.conf

Add the following line:

host replication replicator 192.168.1.101/32 md5

Replace 192.168.1.101 with the IP address of the subscriber server.

**C. Restart PostgreSQL Service on Publisher**

**D. Create Replication User**

Log in to psql on the publisher:

CREATE ROLE replicator WITH REPLICATION LOGIN PASSWORD 'replpass';

**E. Create a Table for Replication**

CREATE DATABASE pubdb;

\c pubdb

CREATE TABLE products (

id SERIAL PRIMARY KEY,

name TEXT,

price NUMERIC

);

**F. Create a Publication**

CREATE PUBLICATION pub\_products FOR TABLE products;

**Step 2: Configure the Subscriber Server**

**A. Create Database on Subscriber**

CREATE DATABASE subdb;

**B. Create Same Table Structure**

\c subdb

CREATE TABLE products (

id SERIAL PRIMARY KEY,

name TEXT,

price NUMERIC

);

The structure must match the publisher.

**C. Create a Subscription**

CREATE SUBSCRIPTION sub\_products

CONNECTION 'host=192.168.1.100 port=5432 dbname=pubdb user=replicator password=replpass'

PUBLICATION pub\_products;

Replace 192.168.1.100 with the IP address of the publisher.

**Step 3: Test Logical Replication**

On the **publisher**, insert a record:

INSERT INTO products (name, price) VALUES ('Laptop', 1200);

On the **subscriber**, query the table:

SELECT \* FROM products;

You should see the same data replicated.

**Step 4: Manage Replication Slots**

**A. View Replication Slots**

On the publisher:

SELECT \* FROM pg\_replication\_slots;

**B. Drop a Slot (if needed)**

SELECT pg\_drop\_replication\_slot('sub\_products');

**Summary Table**

| **Task** | **Publisher** | **Subscriber** |
| --- | --- | --- |
| Configure postgresql.conf | Enable logical replication | Not needed |
| Configure pg\_hba.conf | Allow subscriber access | Not needed |
| Create database and table | Yes | Yes |
| Create publication | CREATE PUBLICATION | Not needed |
| Create subscription | Not needed | CREATE SUBSCRIPTION |
| Test replication | Insert into table | Query from table |
| View slots | pg\_replication\_slots | Not applicable |