

Logical replication in PostgreSQL is moving forward

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About me

- PostgreSQL since 1999
- 2ndQuadrant since 2016
- EDB since 2020

What is logical replication?

Decoding-based systems

- BDR 1 (PG 9.4)
- pglogical 2 (PG 9.4–)
- *BDR 2 (PG 9.6)*
- nativ (PG 10–)
- *pglogical 3 (PG 10–)*
- *BDR 3 (PG 11–13)*
- *BDR 4 (PG 14–)*

Decoding-based systems

- ~~BDR 1 (PG 9.4)~~
- ~~pglogical 2 (PG 9.4-)~~
- ~~*BDR 2 (PG 9.6)*~~
- *nativ (PG 10-)*
- ~~*pglogical 3 (PG 10-)*~~
- ~~*BDR 3 (PG 11-13)*~~
- *BDR 4 (PG 14-)*

New in PostgreSQL 15

- row filter
- column selection
- replicate all tables in a schema
- skip erroring transactions
- deactivate failing subscriptions (*)
- more pg_stat_*
- less superuser
- ~~replicate sequences~~

Row filter

```
CREATE PUBLICATION p1  
  FOR TABLE tab1 WHERE (x > 0);
```

Column selection

```
CREATE PUBLICATION p1  
  FOR TABLE tab1 (a, b, c);
```

All tables in a schema

```
CREATE PUBLICATION p1  
  FOR ALL TABLES IN SCHEMA sch1;
```

Skip erroring transactions

```
ALTER SUBSCRIPTION s1  
  SKIP (lsn = '0/12345');
```

Deactivate failing subscriptions

```
CREATE SUBSCRIPTION s1  
...  
WITH (disable_on_error = true);
```

More pg_stat_*

```
=# SELECT * FROM pg_stat_subscription_stats;  
subid | subname | apply_error_count | sync_error_count | stats_reset  
-----+-----+-----+-----+-----  
...
```

Less superuser

- owner of subscription does not have to be superuser
- subscription processes don't need to run as superuser anymore
- subscriptions observe table privileges

Plan for PostgreSQL 16

- replicate sequences
- `pg_create_subscriber`
- delayed replication (*)
- initial schema synchronization

Possible future features

- conflict resolution
- schema synchronization/DDL replication
- origin filter
- synchronize slots (logical failover)
- different names (*)
- multi-master
- always: logging and error handling

Summary