Postgres Replication

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Disclaimer

What is Postgres

PostgreSQL, often simply Postgres, is an object-relational database management system with an emphasis on extensibility and standards compliance

A bit of history

- About 30 years ago by Michael Stonebraker
- Now by Postgres Global Development Group

Users

Apple, Cisco, IMDB, Red Hat, Skype, Sourceforge, Yahoo, Yandex

Why Replication?

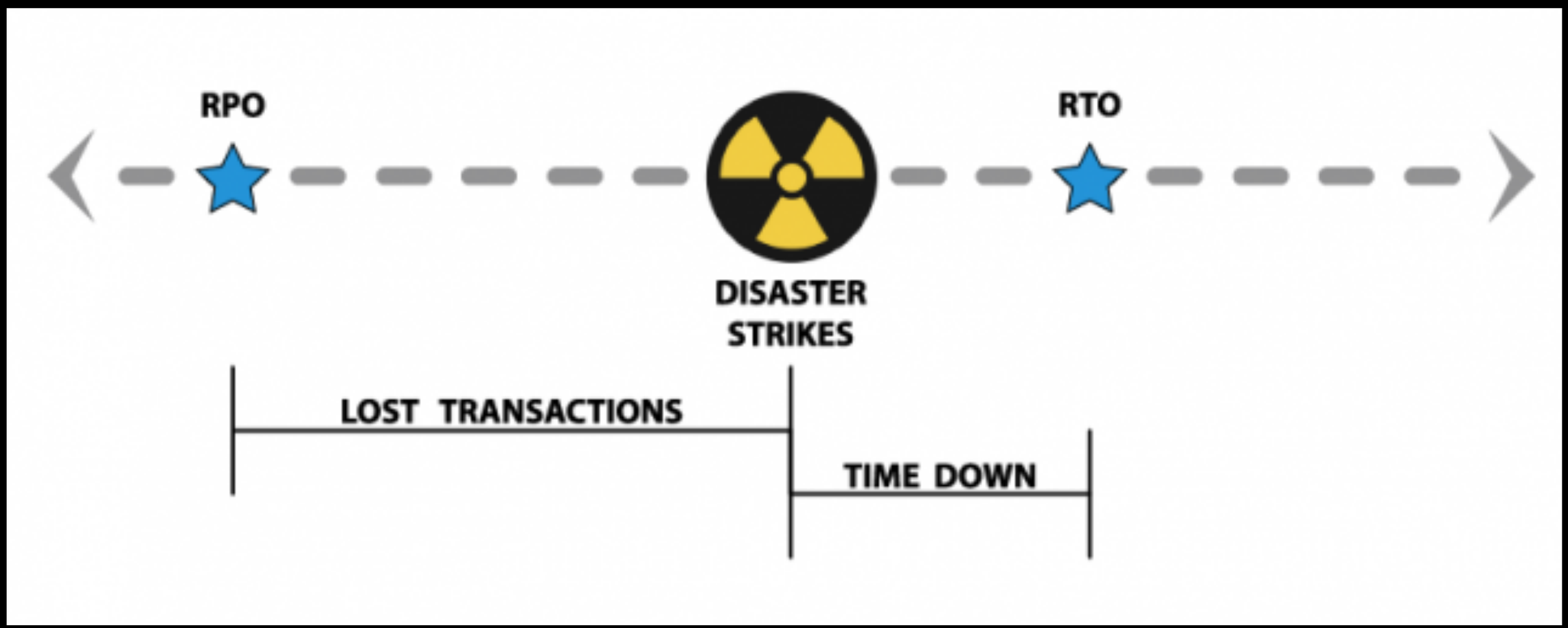
Copying data frequently from a database in one server to a database in another server, to achieve:

- Reliability
- Fault-Tolerance
- Accessibility

Disaster Recovery

Recovery Point Objective (RPO) refers to the point in time in the past to which you will recover.

Recovery Time Objective (RTO) refers to the point in time in the future at which you will be up and running again.


RPO
RTO
DISASTER
STRIKES
LOST TRANSACTIONS
TIME DOWN

Do I realllllly need it?

- Bussiness
- Tech reasons
- Morphy LaW

Oh!

- YES You Really need it (at some point)

Dive in

Replication

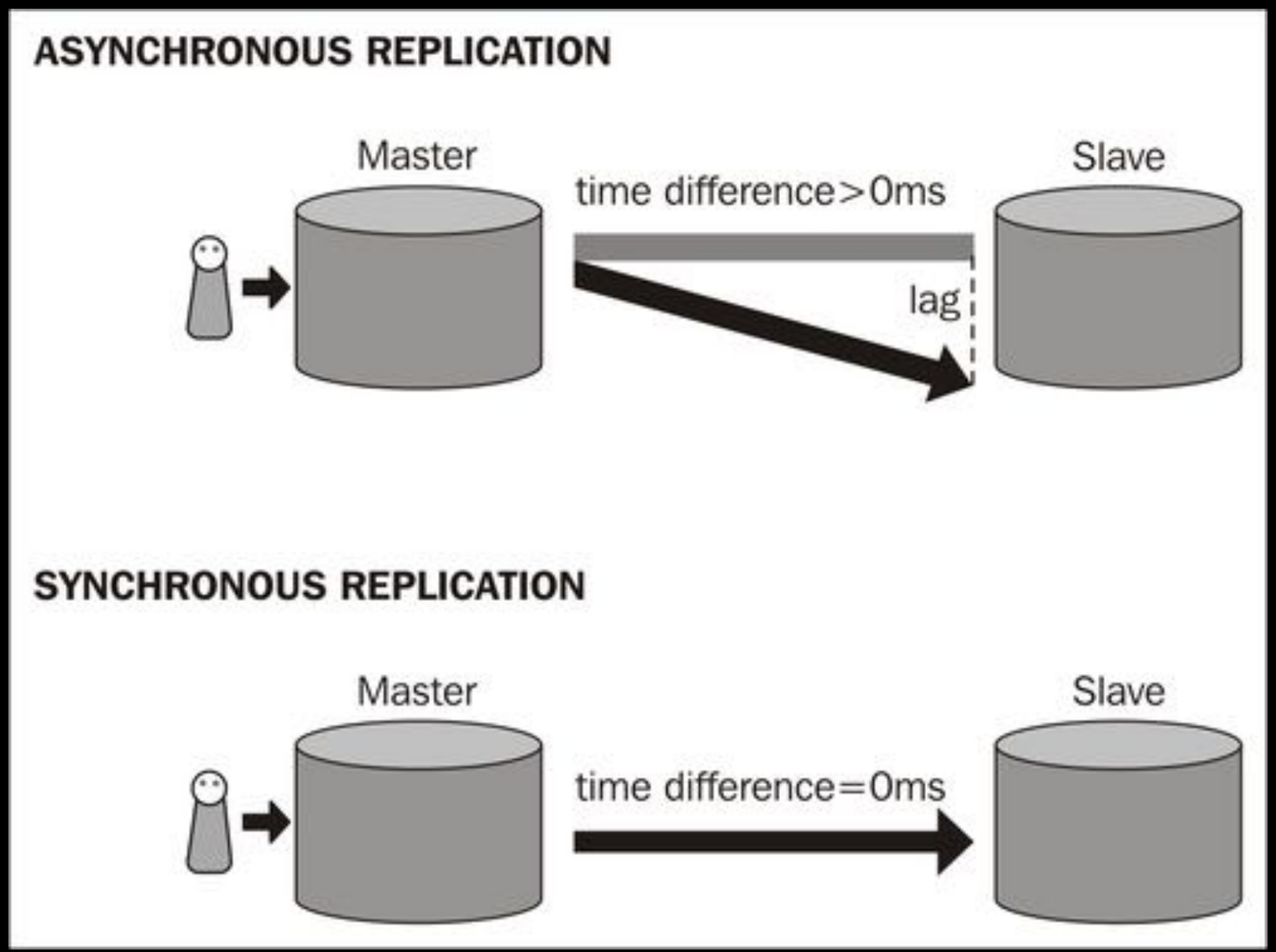
Types of replication

- Single-Master vs Multi-Master
- Synchronous vs Asynchronous
- Logical vs Physical
- Streaming replication vs Log Shipping
- Hot Standby vs Warm Standby

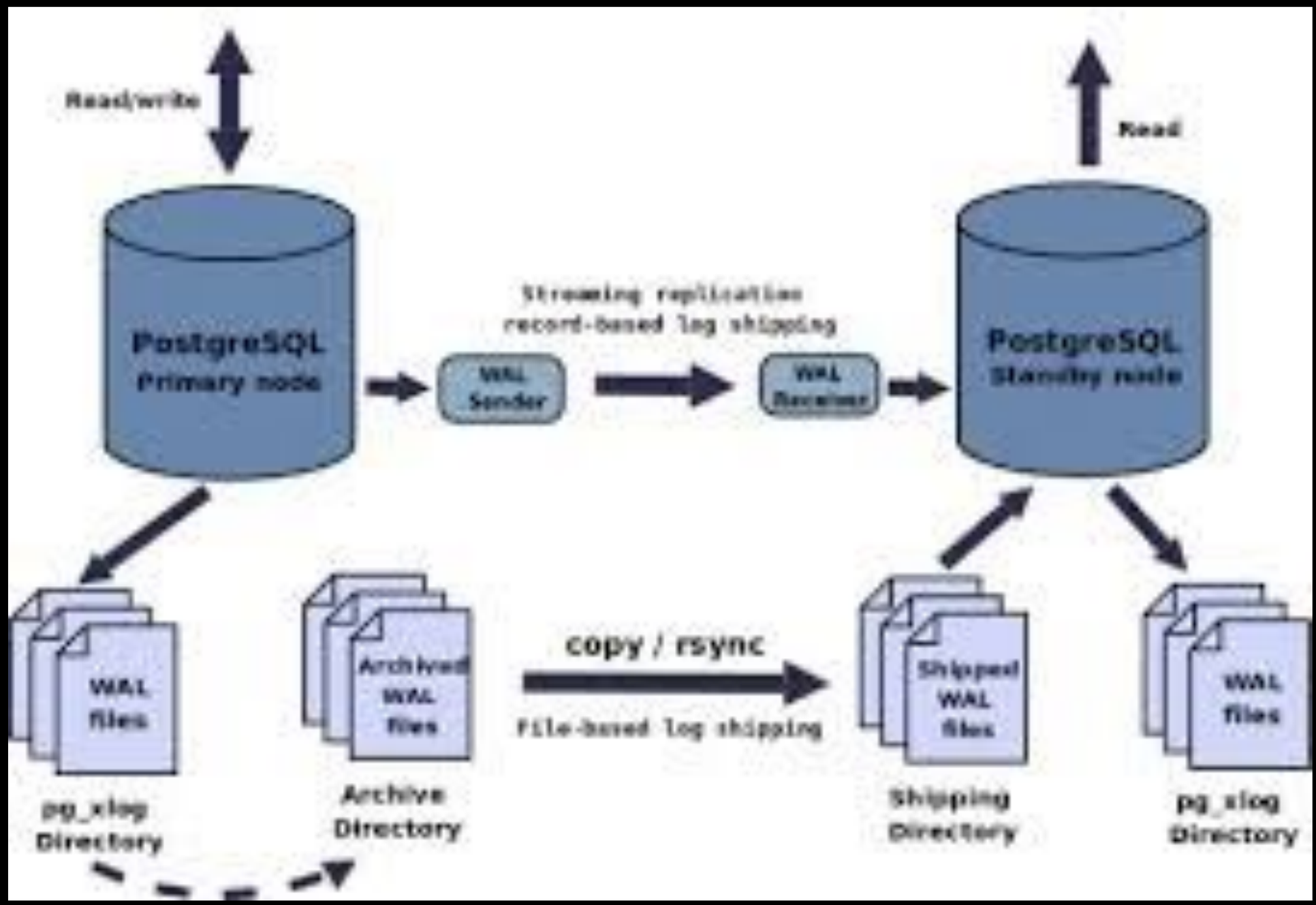
WAL

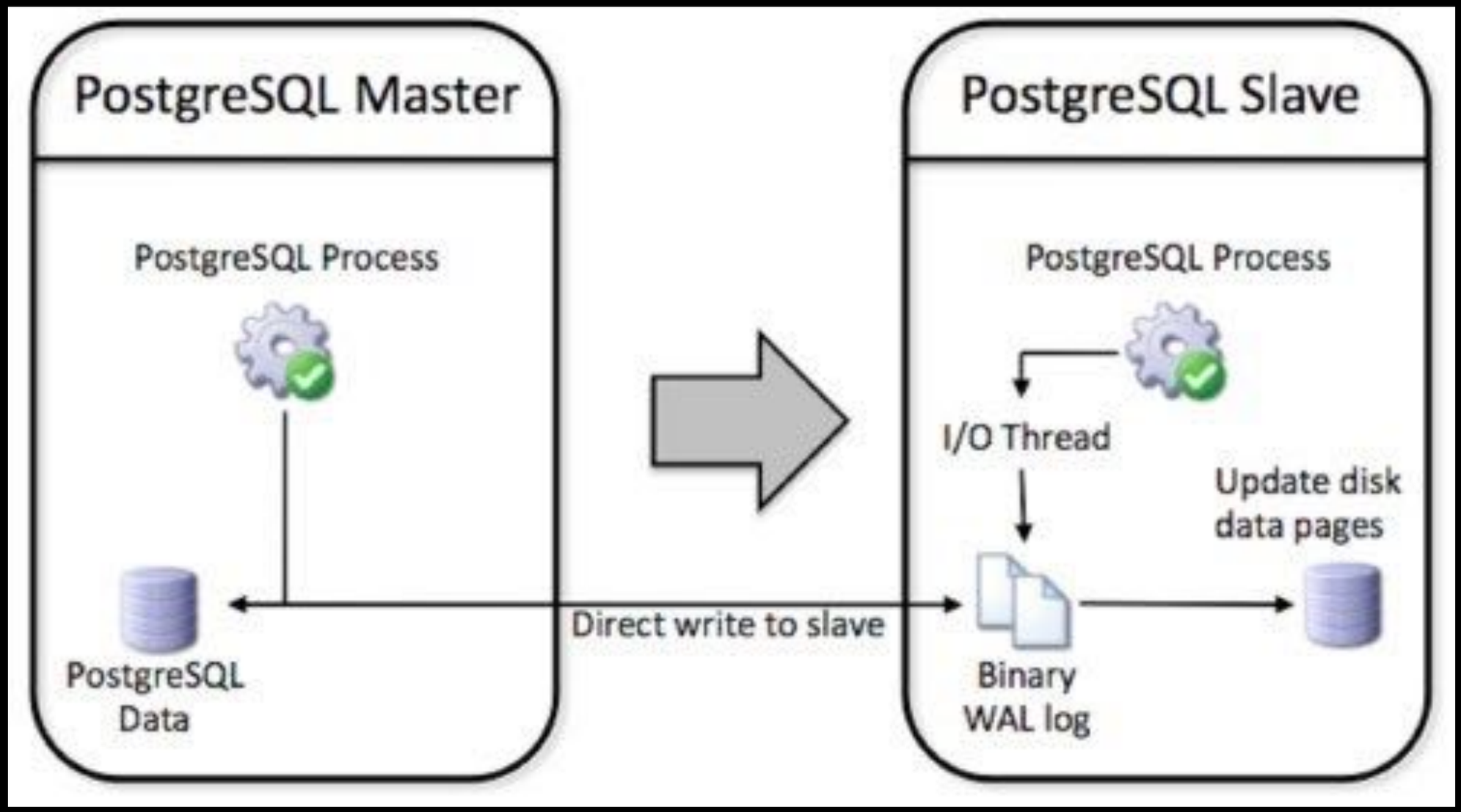
- What if database crashes mid of a Transaction?
- Write Ahead Log
- Binary format (NoSQL). Pun intended
- 16MB

Sync VS Async



Shipping WAL




PostgreSQL Master
PostgreSQL Process
PostgreSQL Data
Direct write to slave
PostgreSQL Slave
PostgreSQL Process
I/O Thread
Update disk data pages
Binary WAL log

Logical Replication

```
CREATE PUBLICATION testpub FOR TABLE users,
addresses;
```

```
CREATE SUBSCRIPTION testsub CONNECTION
'host=upstream-host dbname=users ...'
 PUBLICATION testpub;
```

2ndQuadrant

pgrepmgr

repmgr master register

repmgr standby register

Failover

- Beware of brain splitting
- Application Level Handling of Failover

Questions ?

I have answers (hopefully)

For More Info

https://www.slideshare.net/hansjurgenschonig/postgresql-replication-tutorial

https://www.youtube.com/watch?v=knUitQQnpJo

k1h.ir/postgresql_replication

Thank You !