

PostgreSQL Buffers

Vik Fearing

PGDay.FR Toulouse
8 juin 2017

2ndQuadrant[®] PostgreSQL

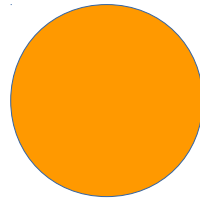
Vik Fearing
Change “and and” to “and”.

irc: xocolatl

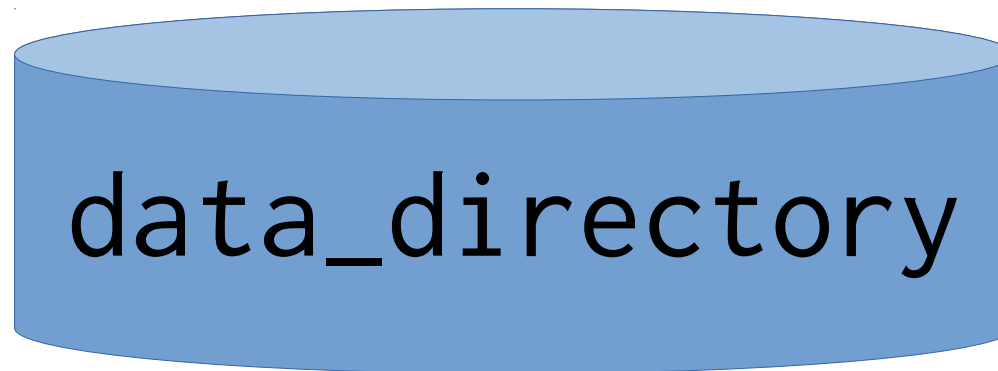
Twitter: @pg_xocolatl

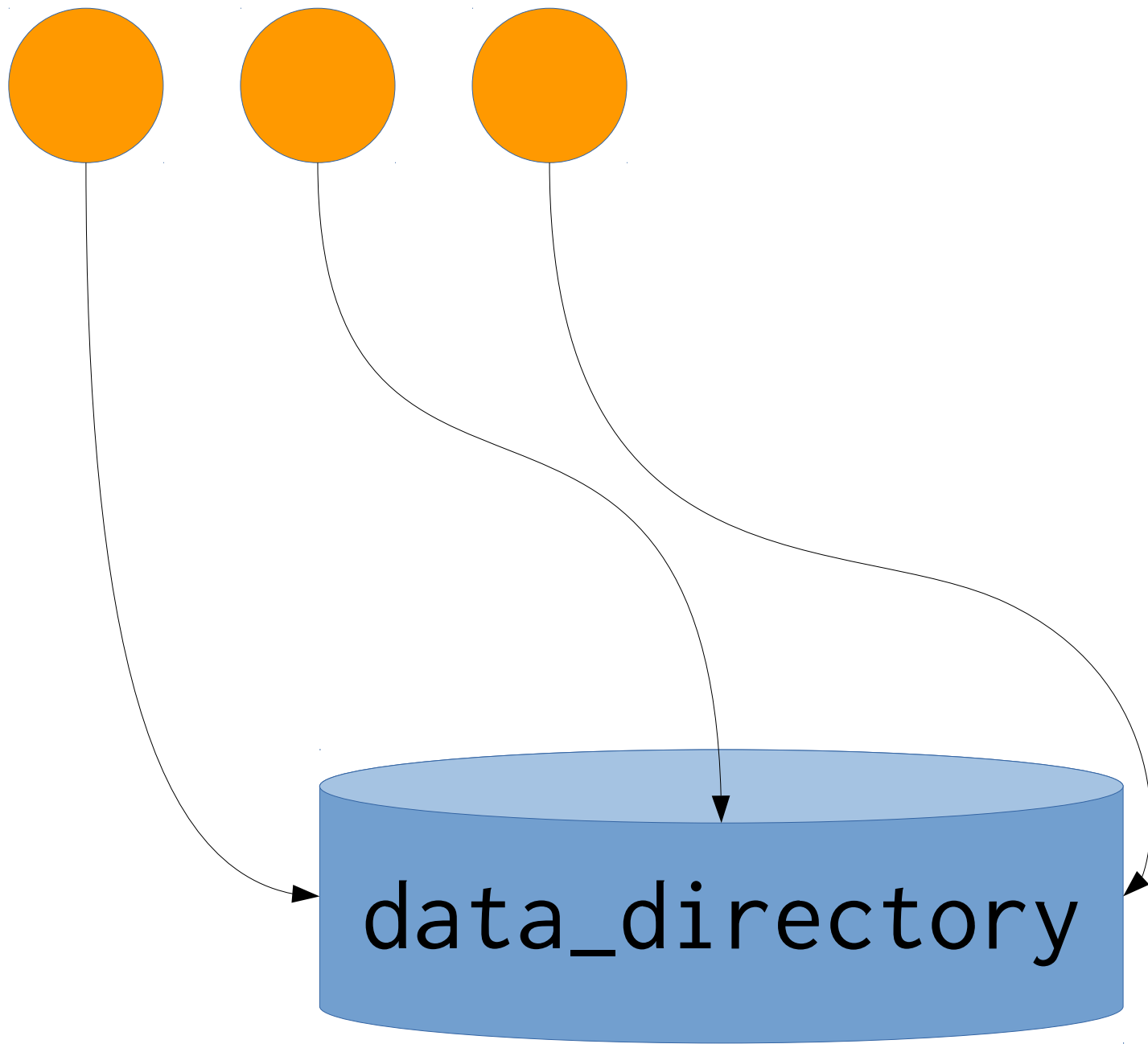
PostgreSQL Buffers

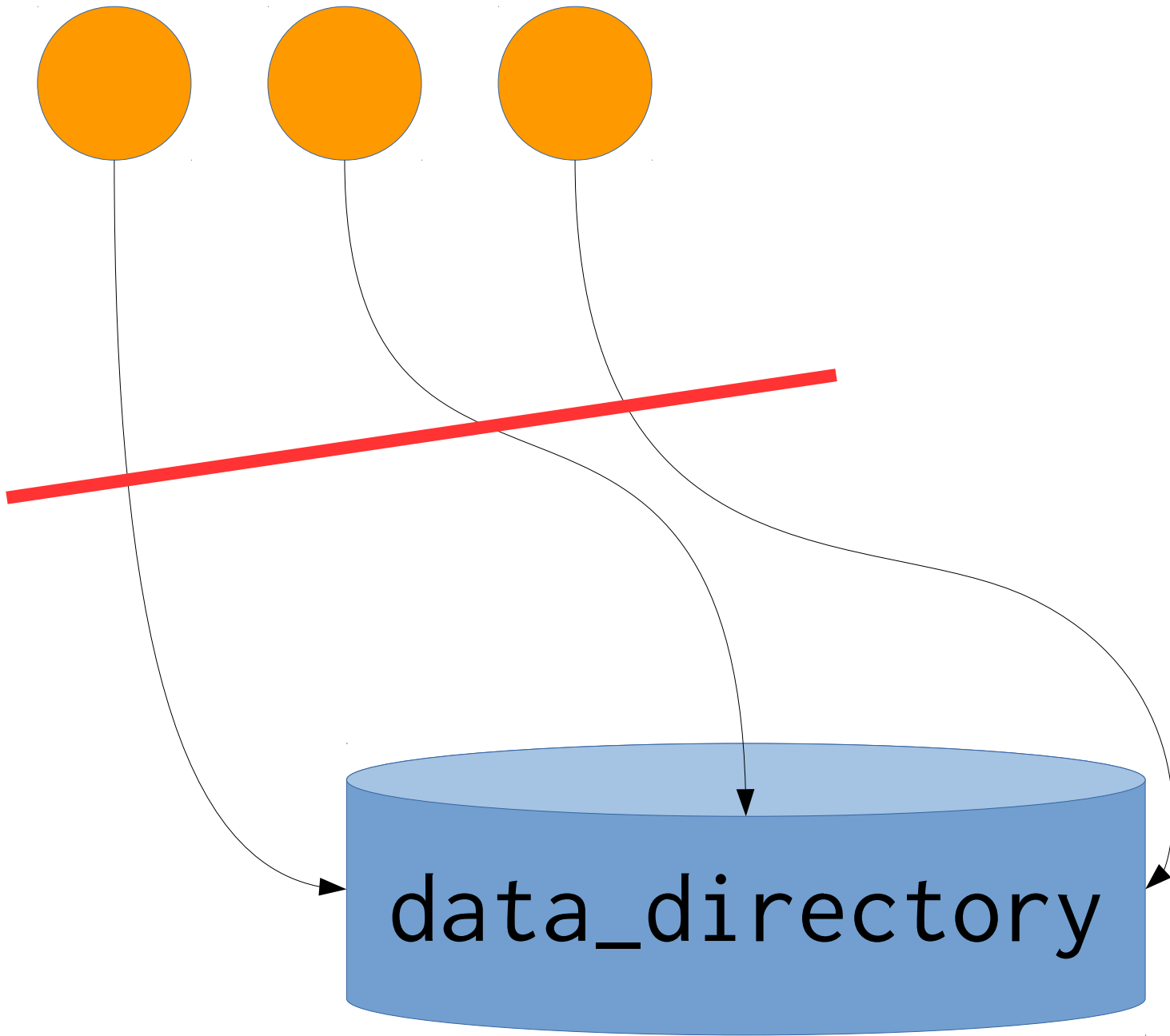
Backend



Data Directory







Page

=

Block

=

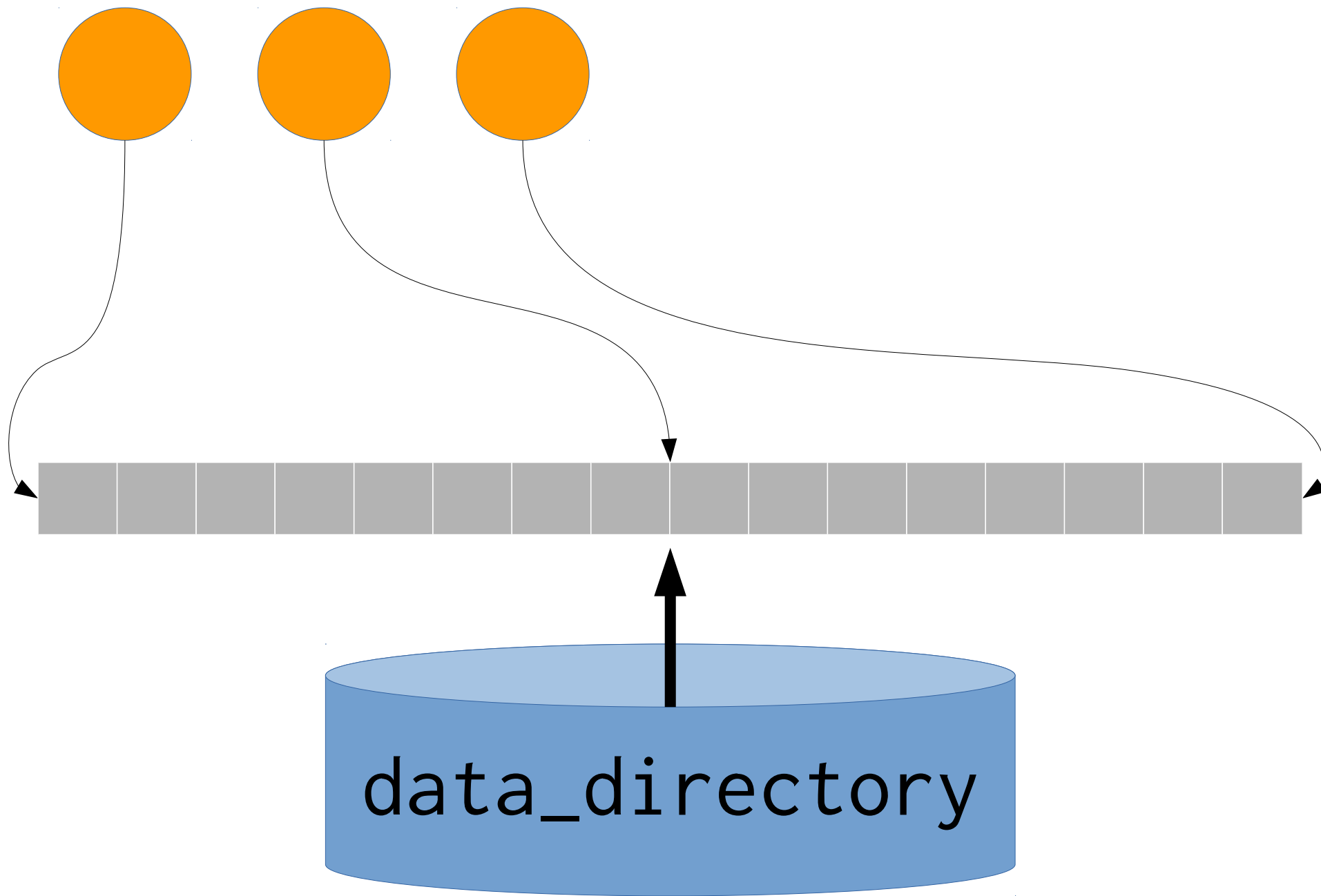
Buffer

8kB

BLOCKSZ

Shared Buffers

shared_buffers



Usage Count

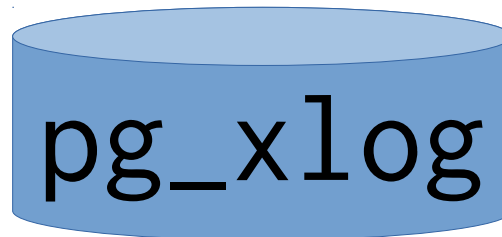
1 .. 5

ClockSweep



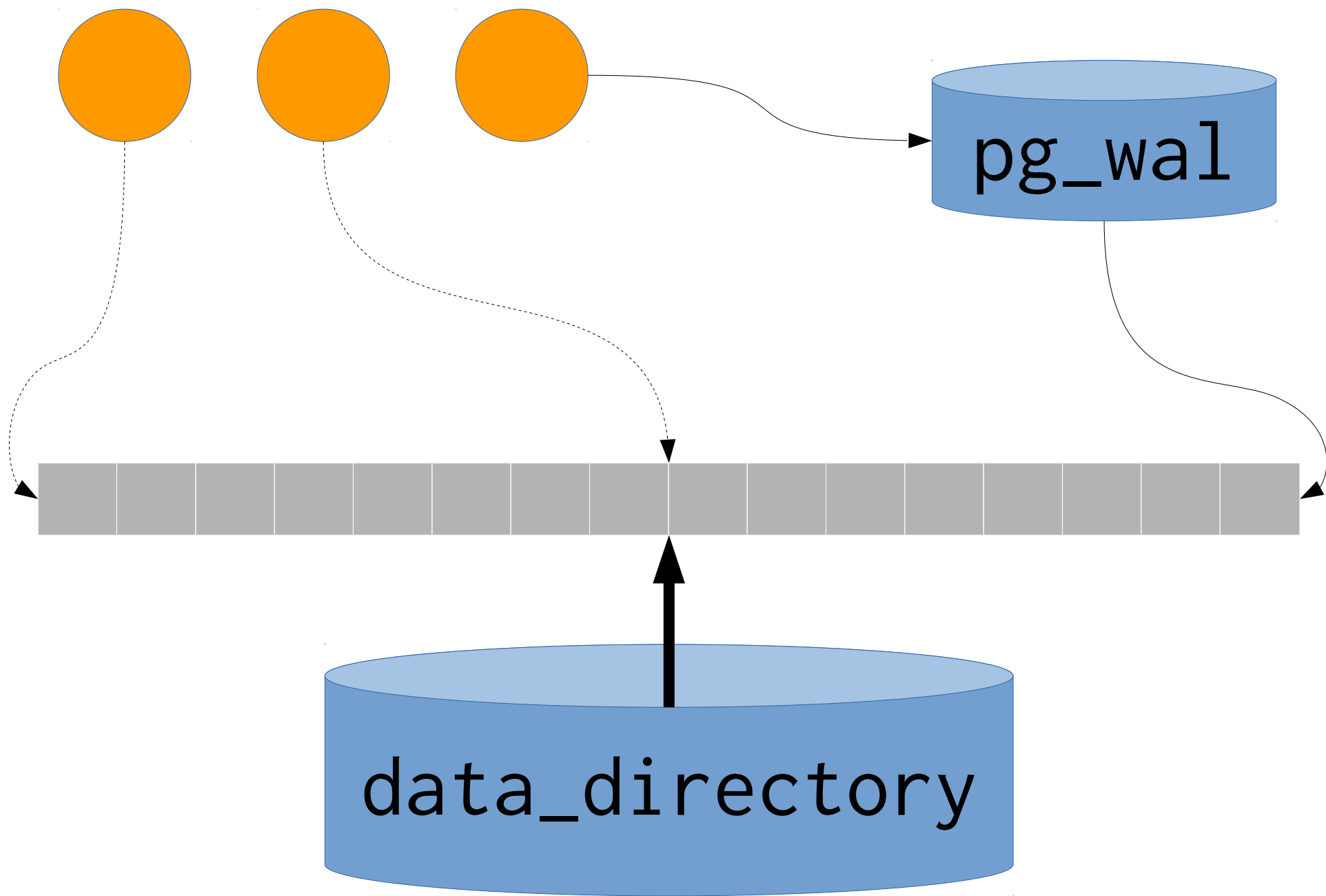
Whups!

Write-Ahead Log (WAL)



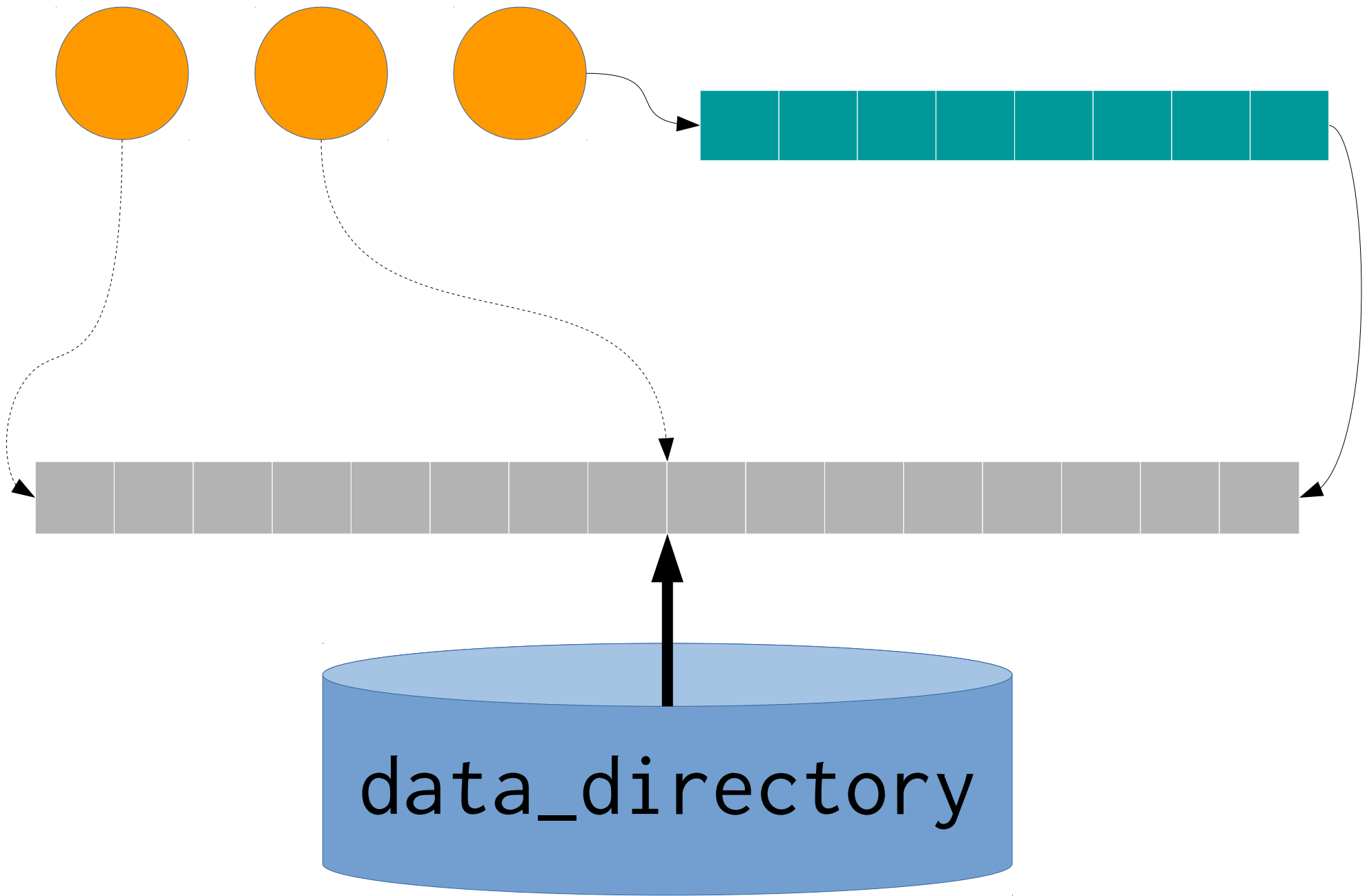
Write-Ahead Log (WAL)





WAL Buffers

wal_buffers

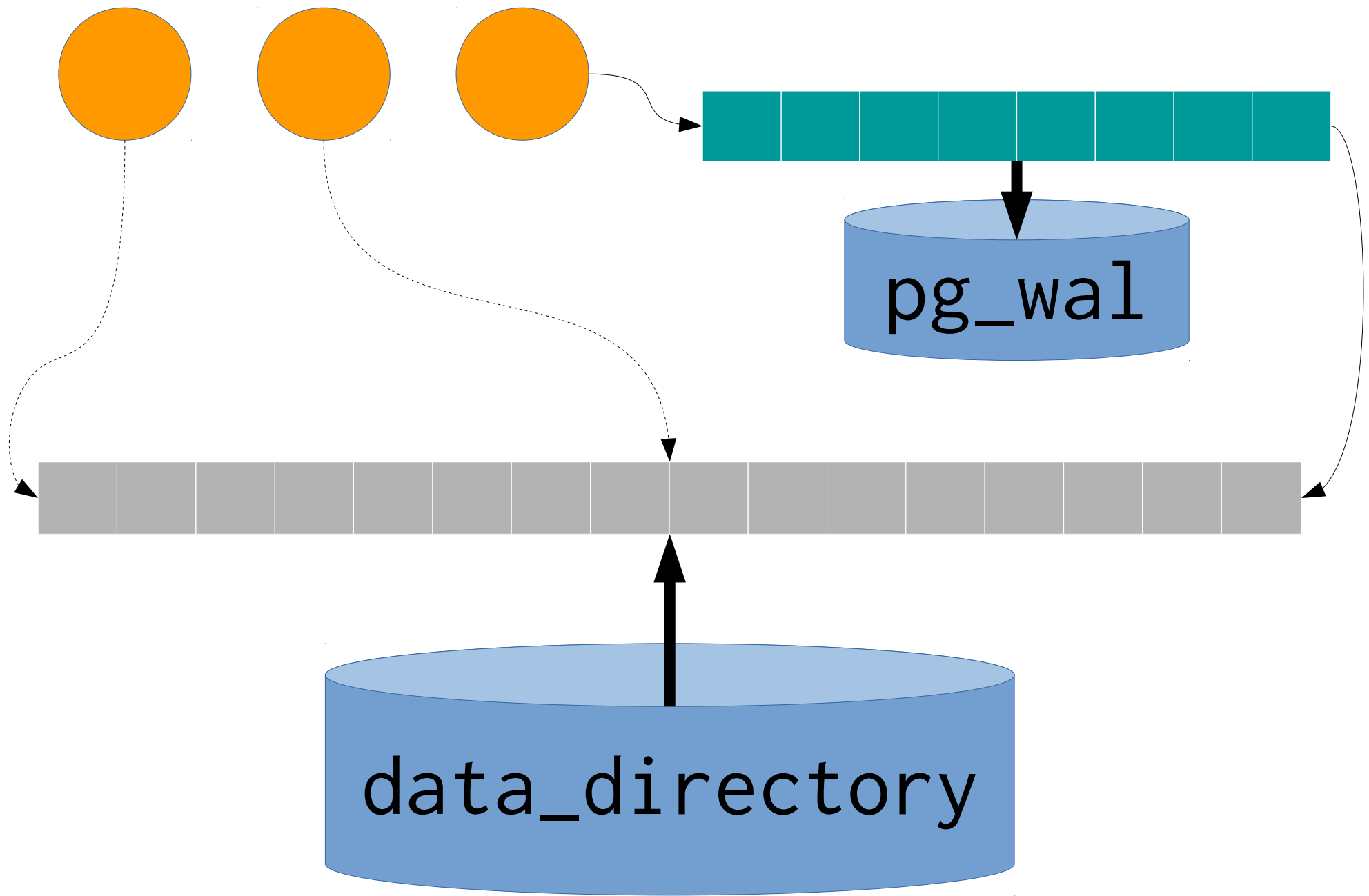




Whups!

WAL Writer

wal_writer_delay

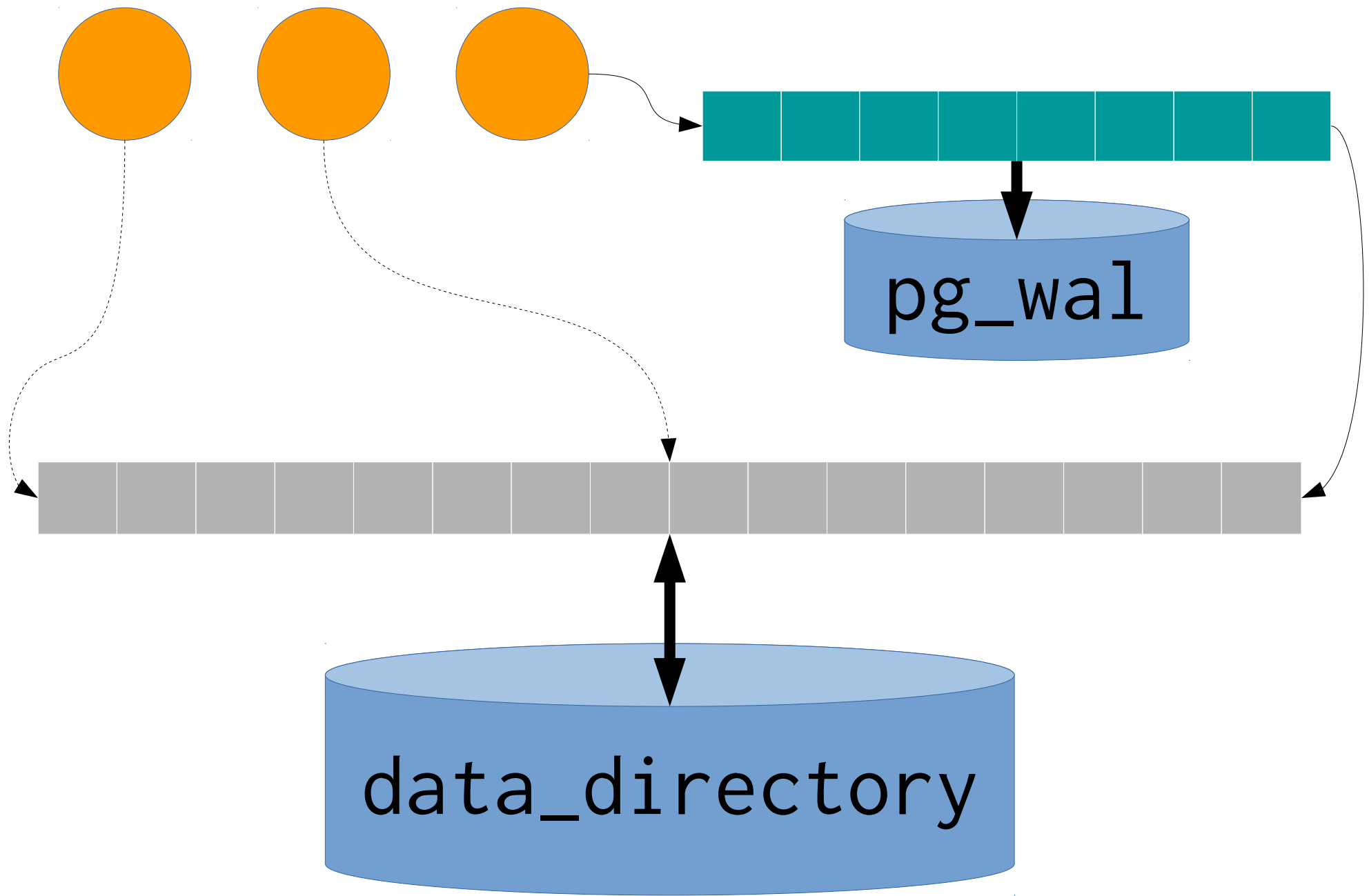


Background Writer

bgwriter_lru_multiplier
bgwriter_lru_maxpages
bgwriter_delay

Checkpoints

checkpoint_timeout
checkpoint_completion_target
min_wal_size • max_wal_size

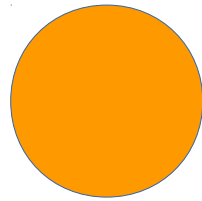


Temporary Tables

`temp_buffers`

`temp_tablespaces`

~~`temp_file_limit`~~



View "public.pg_buffercache"

Column	Type	Modifiers
bufferid	integer	
relfilenode	oid	
reltablespace	oid	
reldatabase	oid	
relforknumber	smallint	
relblocknumber	bigint	
isdirty	boolean	
usagecount	smallint	
pinning_backends	integer	

View "pg_catalog.pg_stat_bgwriter"

Column	Type	Modifiers
checkpoints_timed	bigint	
checkpoints_req	bigint	
checkpoint_write_time	double precision	
checkpoint_sync_time	double precision	
buffers_checkpoint	bigint	
buffers_clean	bigint	
maxwritten_clean	bigint	
buffers_backend	bigint	
buffers_backend_fsync	bigint	
buffers_alloc	bigint	
stats_reset	timestamp with time zone	

```
SET track_io_timing = on;
```

```
EXPLAIN (ANALYZE, BUFFERS)
```

-> Nested Loop Left Join
 (cost=365718.92..9633816.57 rows=1270632 width=84)
 (actual time=31305.214..75833773.678 rows=2175641 loops=1)
Join Filter: (u.x = v.y)
Rows Removed by Join Filter: 18363801709
Buffers: shared hit=6003348712 read=2378746 dirtied=7984
I/O Timings: read=961454.651

View "pg_catalog.pg_stat_database"

Column	Type	Modifiers
datid	oid	
datname	name	
numbackends	integer	
xact_commit	bigint	
xact_rollback	bigint	
blks_read	bigint	
blks_hit	bigint	
tup_returned	bigint	
tup_fetched	bigint	
tup_inserted	bigint	
tup_updated	bigint	
tup_deleted	bigint	
conflicts	bigint	
temp_files	bigint	
temp_bytes	bigint	
deadlocks	bigint	
blk_read_time	double precision	
blk_write_time	double precision	
stats_reset	timestamp with time zone	

View "pg_catalog.pg_statio_all_tables"

Column	Type	Modifiers
relid	oid	
schemaname	name	
relname	name	
heap_blks_read	bigint	
heap_blks_hit	bigint	
idx_blks_read	bigint	
idx_blks_hit	bigint	
toast_blks_read	bigint	
toast_blks_hit	bigint	
tidx_blks_read	bigint	
tidx_blks_hit	bigint	

View "pg_catalog.pg_statio_all_indexes"

Column	Type	Modifiers
relid	oid	
indexrelid	oid	
schemaname	name	
relname	name	
indexrelname	name	
idx_blks_read	bigint	
idx_blks_hit	bigint	

View "public.pg_stat_statements"

Column	Type	Modifiers
userid	oid	
dbid	oid	
queryid	bigint	
query	text	
calls	bigint	
total_time	double precision	
min_time	double precision	
max_time	double precision	
mean_time	double precision	
stddev_time	double precision	
rows	bigint	
shared_blks_hit	bigint	
shared_blks_read	bigint	
shared_blks_dirtied	bigint	
shared_blks_written	bigint	
local_blks_hit	bigint	
local_blks_read	bigint	
local_blks_dirtied	bigint	
local_blks_written	bigint	
temp_blks_read	bigint	
temp_blks_written	bigint	
blk_read_time	double precision	
blk_write_time	double precision	

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