

Info

Bgwriter slow mean settings are set to default while fast mean we are using the following aggressive settings

bgwriter_delay = 10ms
bgwriter_lru_maxpages = 5000
bgwriter_lru_multiplier = 10.0

p0 = wal pipeline disabled
p1 = wal pipeline enabled

In archive recovery producer have to wait for the restore command (cp in this case)

Archive Recoveries (30 mins)

		shared buffers	bgwriter	Time Elapsed (p0)	Time Elapsed (p1)	% perf	Workload	Base DB size
a-t-1	simple-update	128 MB	slow	9m 35s 920ms	7m 41s 960ms	19.79%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b simple-update	4494 MB
a-t-2	simple-update	8 GB	slow	3m 51s 320ms	3m 9s 260ms	18.18%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b simple-update	4494 MB
a-t-3	simple-update	128 MB	fast	9m 9s 610ms	7m 28s 590ms	18.38%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b simple-update	4494 MB
a-t-4	simple-update	8 GB	fast	3m 43s 330ms	3m 0s 780ms	19.05%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b simple-update	4494 MB
a-t-5	tpcb-like	128 MB	slow	7m 56s 240ms	6m 39s 850ms	16.04%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b tpcb-like	4494 MB
a-t-6	tpcb-like	8 GB	slow	3m 44s 140ms	3m 9s 340ms	15.53%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b tpcb-like	4494 MB
a-t-7	tpcb-like	128 MB	fast	8m 3s 50ms	6m 39s 120ms	17.38%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b tpcb-like	4494 MB
a-t-8	tpcb-like	8 GB	fast	4m 4s 840ms	3m 24s 340ms	16.54%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b tpcb-like	4494 MB

To mimic a crash recovery we copy all the archived wal to the base backup. In this case producer doesn't have copy the wal it self, just have to replay the available wal in pg_wal

Crash Recoveries (30 mins)

		shared buffers	bgwriter	Time Elapsed (p0)	Time Elapsed (p1)	% perf	Workload	Base DB size
c-t-1	simple-update	128 MB	slow	6m 8s 150ms	4m 42s 80ms	23.38%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b simple-update	4494 MB
c-t-2	simple-update	8 GB	slow	1m 40s 230ms	1m 17s 890ms	22.29%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b simple-update	4494 MB
c-t-3	simple-update	128 MB	fast	5m 7s 160ms	4m 17s 870ms	16.05%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b simple-update	4494 MB
c-t-4	simple-update	8 GB	fast	1m 40s 350ms	1m 18s 290ms	21.98%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b simple-update	4494 MB
c-t-5	tpcb-like	128 MB	slow	5m 8s 560ms	4m 1s 850ms	21.62%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b tpcb-like	4494 MB
c-t-6	tpcb-like	8 GB	slow	1m 39s 400ms	1m 16s 420ms	23.12%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b tpcb-like	4494 MB
c-t-7	tpcb-like	128 MB	fast	4m 36s 0ms	3m 32s 570ms	22.98%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b tpcb-like	4494 MB
c-t-8	tpcb-like	8 GB	fast	1m 39s 350ms	1m 16s 510ms	22.99%	pgbench -n -c 20 -M prepared -j 20 -T 1800 -b tpcb-like	4494 MB

DB init for base backup	
pgbench workload	pgbench -i -s 300 postgres

Machine Specs:

CPU: AMD Ryzen 7 6800HS

Thread(s) per core: 2
Core(s) per socket: 8

nproc: 16

Memory: 24 GB