PgBouncer Postgres connection pooler

START HERE

`psql -p 6432 pgbouncer`
Open admin console

`SHOW SERVERS;`
Backend connections

`SHOW POOLS;`
Pool states

`RELOAD;`
Re-read config

`SHOW STATS;`
Traffic per database

`PAUSE;`
Drain for maintenance

`SHOW CLIENTS;`
Connected clients

`RESUME;`
Continue after pause

Client many connections → `port 6432` → **PgBouncer** pools by db + user → `few server conns` → **PostgreSQL** port 5432

CONCEPTS

The admin console is a virtual database named pgbouncer; only admin_users and stats_users may log in.

pool_mode decides when a server connection returns to the pool: session (on disconnect), transaction (on commit), statement (after each statement).

In transaction mode, session state (SET, advisory locks, LISTEN, session-level prepared statements) is not reliable across transactions.

RUN AND SIGNALS

`pgbouncer <pgbouncer.ini>`
Start in the foreground

`pgbouncer -d <pgbouncer.ini>`
Run as a daemon
Needs pidfile and logfile or syslog set in the config

`pgbouncer --version`
Show the version

`kill -HUP <pid>`
Reload config (same as RELOAD)

`kill -TERM <pid>`
Wait for clients, then shut down
Since 1.23; a second SIGTERM forces immediate shutdown

CONNECT TO THE CONSOLE

`psql -p 6432 pgbouncer`
Admin console on the default port

`psql -h <host> -p 6432 -U <admin> pgbouncer`
Console over TCP as an admin user

`psql -p 6432 -U <user> <db>`
Use the pooler like a normal database

INSPECT (SHOW)

`SHOW POOLS;`
Client and server counts per pool

INSPECT (SHOW) (cont.)

`SHOW STATS;`
Totals and averages per database

`SHOW CLIENTS;`
Connected clients and their state

`SHOW SERVERS;`
Backend connections and their state

`SHOW DATABASES;`
Configured databases and limits

`SHOW CONFIG;`
Settings, defaults, runtime-changeable?

`SHOW STATE;`
active or paused

CONTROL

`RELOAD;`
Re-read config, auth_file and HBA file

`PAUSE;`
Wait for servers to be released, hold clients
Use before restarting PostgreSQL

`RESUME;`
Continue after PAUSE or KILL

`PAUSE <db>;`
Pause a single database

`RESUME <db>;`
Resume a single database

`RECONNECT <db>;`
Recycle server connections once released
Gradual switchover after changing a host

`KILL_CLIENT <id>;`
Kill one client (id from SHOW CLIENTS)

`SET <key> = <value>;`
Change a runtime setting
Console only; on other databases SET goes to PostgreSQL

`SHUTDOWN WAIT_FOR_CLIENTS;`
Exit after all clients leave
For zero-downtime rolling restarts

PGBOUNCER.INI: POOLING

`pool_mode = transaction`
Release server conn after each transaction
Default is session; statement forbids multi-statement transactions

PGBOUNCER.INI: POOLING (cont.)

`max_client_conn = <n>`
Max client connections (default 100)

`default_pool_size = <n>`
Server conns per user/db pair (default 20)

`server_reset_query = DISCARD ALL`
Clean session state on release
Default; not run in transaction mode unless server_reset_query_always is set

`ignore_startup_parameters = <p>`
Ignore these client startup params
e.g. extra_float_digits, options; stops startup errors

`max_prepared_statements = <n>`
Track protocol-level prepared statements
Needed for prepared statements in transaction mode (1.21+)

PGBOUNCER.INI: NETWORK AND AUTH

`listen_addr = <addr>`
Bind address, comma list or * (unset: socket only)

`listen_port = 6432`
TCP port to accept clients on

`auth_type = scram-sha-256`
How clients are authenticated (default md5)
Others: cert, plain, trust, any, hba, ldap, pam

`auth_file = <path>`
Users file (userlist.txt) with names and hashes

`auth_user = <user>`
Look up unlisted users with this account

`auth_query = <sql>`
Query used to fetch a user's password

`admin_users = <list>`
Users allowed all console commands

`stats_users = <list>`
Users limited to read-only SHOW

PGBOUNCER.INI: TIMEOUTS AND LOGS

`query_wait_timeout = <sec>`
Drop clients waiting too long (default 120)

`server_idle_timeout = <sec>`
Close idle server conns (default 600)

`logfile = <path>`
Log file location

RECIPES

[databases] section

```
[databases]
appdb = host=10.0.0.5 port=5432
dbname=app pool_size=30
reports = host=10.0.0.6
pool_mode=session
* = host=10.0.0.5
```

Minimal transaction-pooling setup

```
[databases]
appdb = host=127.0.0.1 port=5432
dbname=app

[pgbouncer]
listen_addr = 0.0.0.0
listen_port = 6432
auth_type = scram-sha-256
auth_file = /etc/pgbouncer/
userlist.txt
admin_users = admin
pool_mode = transaction
max_client_conn = 1000
default_pool_size = 20
```

Restart PostgreSQL without dropping clients

```
psql -p 6432 -U admin pgbouncer
-c 'PAUSE;'
# restart or fail over
PostgreSQL here
psql -p 6432 -U admin pgbouncer
-c 'RESUME;'
```

Find why clients are waiting

```
psql -p 6432 -U admin pgbouncer
# cl_waiting > 0 means the pool
is exhausted
SHOW POOLS;
SHOW SERVERS;
SHOW CLIENTS;
```

Roll a config change and check it

```
# edit pgbouncer.ini, then:
psql -p 6432 -U admin pgbouncer
-c 'RELOAD;'
psql -p 6432 -U admin pgbouncer
-c 'SHOW CONFIG;'
```