Postgres performance

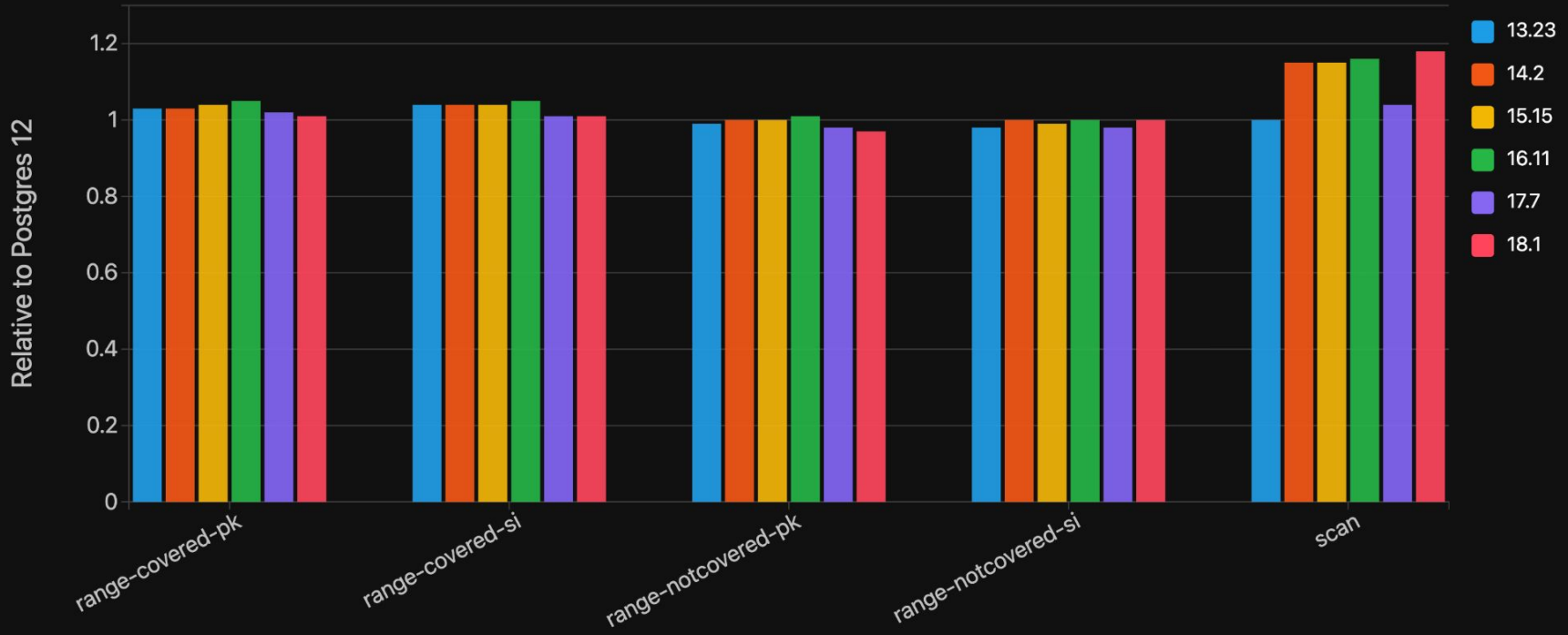
Who interacts with the database regularly?

Axes of database usability

1. Reliability
2. Scalability
3. Ergonomics
4. Performance

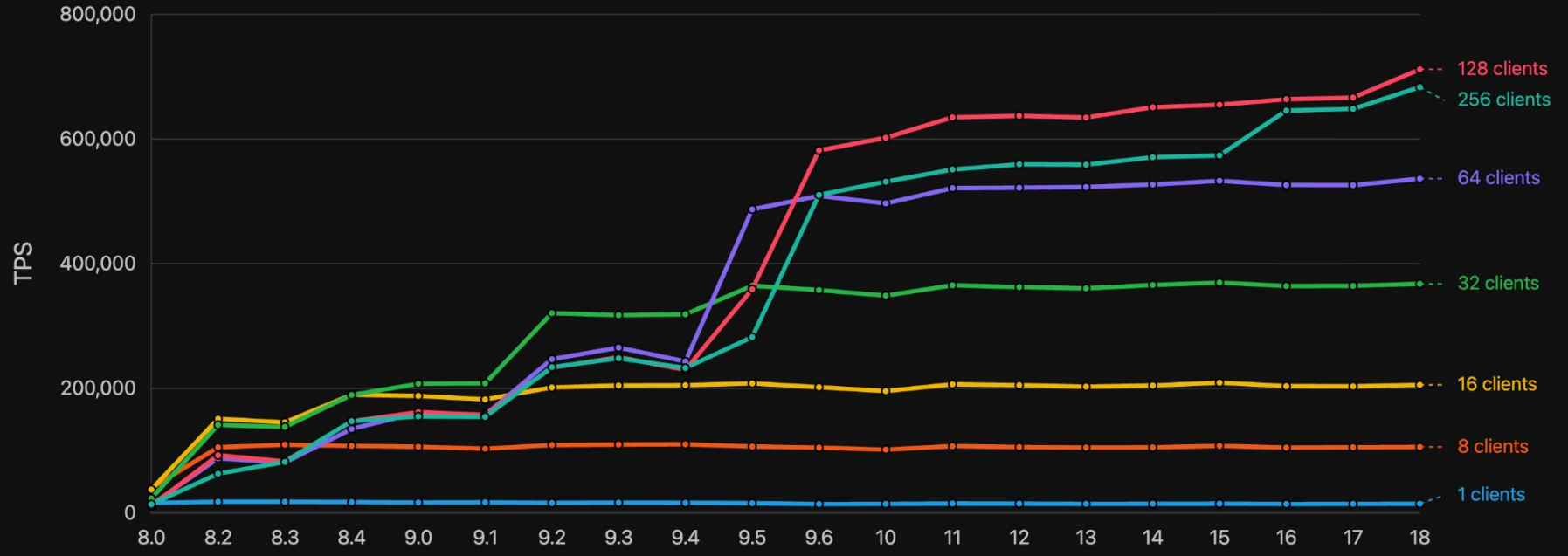
Performance through the years

range-queries no aggregations *(relative to PG 12)*



https://smalldatum.blogspot.com/2025/11/using-sysbench-to-measure-how-postgres.html

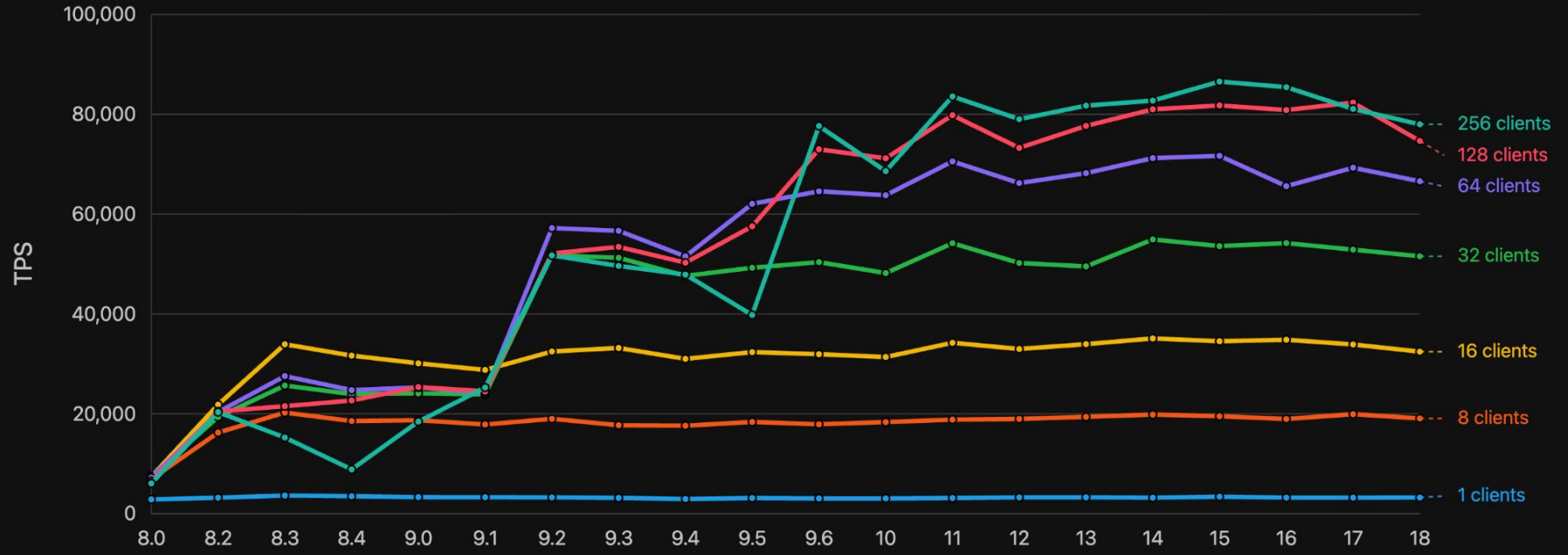
pgbench smaller-than-RAM read-only



https://vondra.me/posts/postgres-performance-archaeology-oltp

https://benjdd.com/pg-oltp

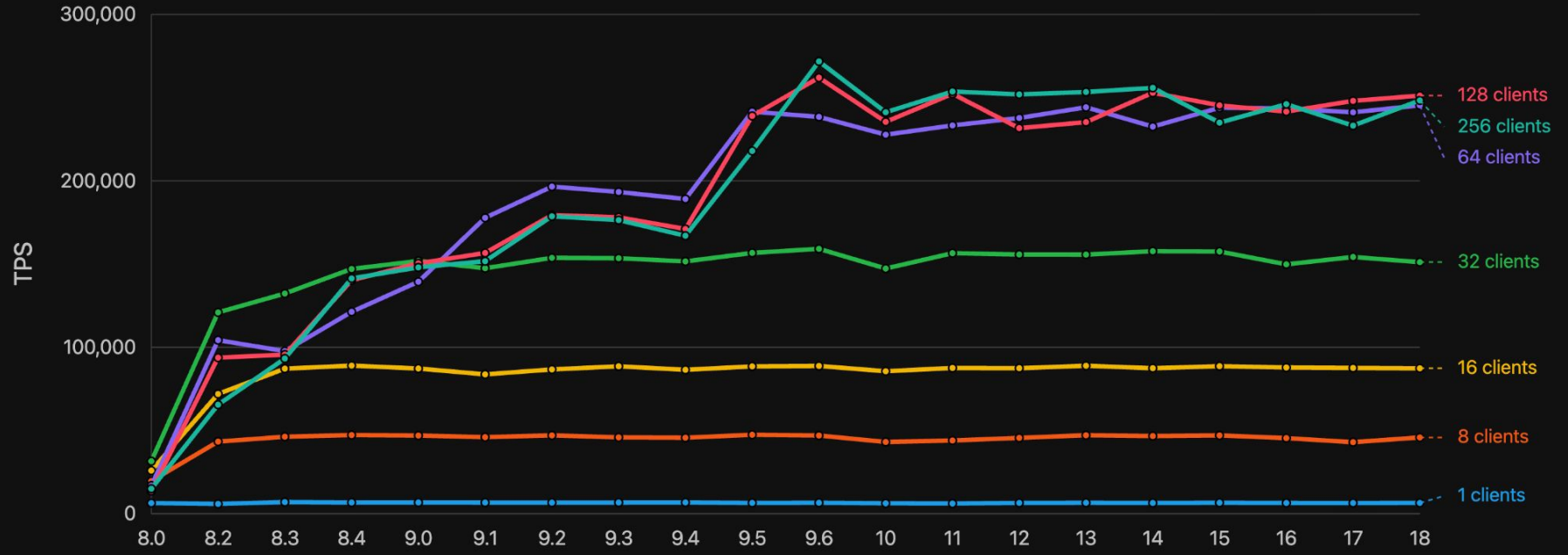
pgbench smaller-than-RAM read-write



https://vondra.me/posts/postgres-performance-archaeology-oltp

https://benjdd.com/pg-oltp

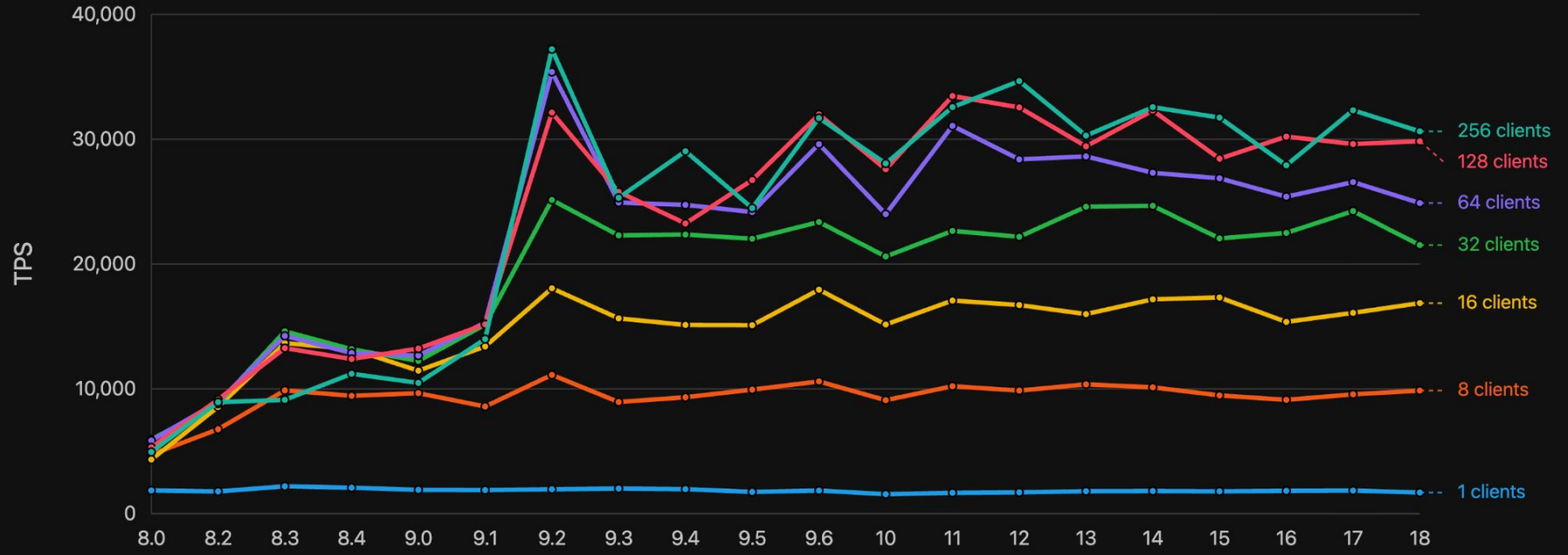
pgbench larger-than-RAM read-only



https://vondra.me/posts/postgres-performance-archaeology-oltp

https://benjdd.com/pg-oltp

pgbench larger-than-RAM read-write



https://vondra.me/posts/postgres-performance-archaeology-oltp

https://benjdd.com/pg-oltp

Are benchmarks useful?

Don’t tell the whole story

1. Some improvements only show up in specific cases

2. Some help background work or have indirect impact

9	→	10	Logical replication + parallel exec
10	→	11	JIT + parallel index create
11	→	12	B-tree optimization + better partitions
12	→	13	Parallel index vacuum
13	→	14	MVCC snapshot perf *(high-concurrency)*
14	→	15	Sorting improvements, WAL compress
15	→	16	Up to 300% faster **COPY**
16	→	17	VACUUM improvements, streaming I/O
17	→	18	Asynchronous i/o *(+ more to come in 19!)*

9	→	10	Logical replication + parallel exec
10	→	11	JIT + parallel index create
11	→	12	B-tree optimization + better partitions
12	→	13	Parallel index vacuum
13	→	14	MVCC snapshot perf *(high-concurrency)*
14	→	15	Sorting improvements, WAL compress
15	→	16	Up to 300% faster **COPY**
16	→	17	VACUUM improvements, streaming I/O
17	→	18	Asynchronous i/o *(+ more to come in 19!)*

350+ config options in Postgres 18!

350+ config options in Postgres 18!

→

what really matters?

1. Table bloat
2. Connections
3. IO performance

1. Table bloat
2. Connections
3. IO performance

Table bloat aggressive vs lax config

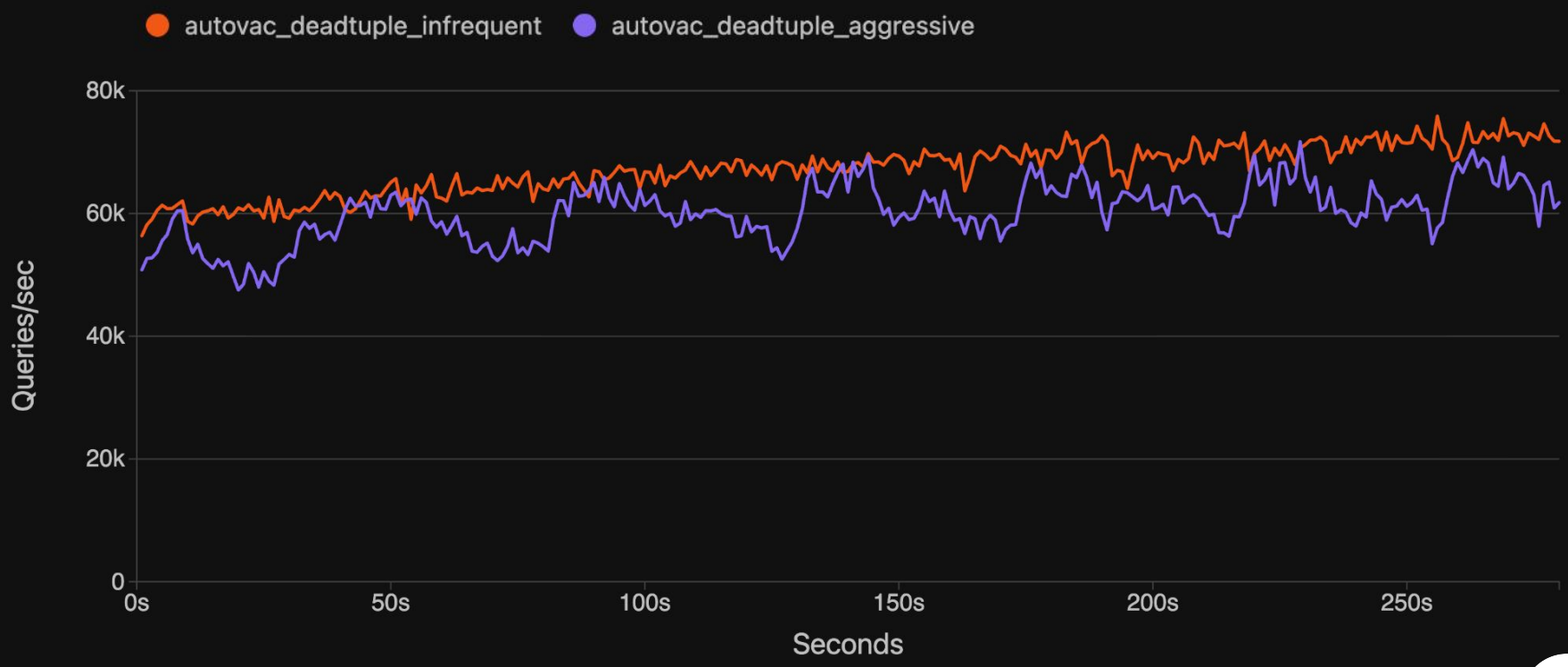


Table bloat DB size

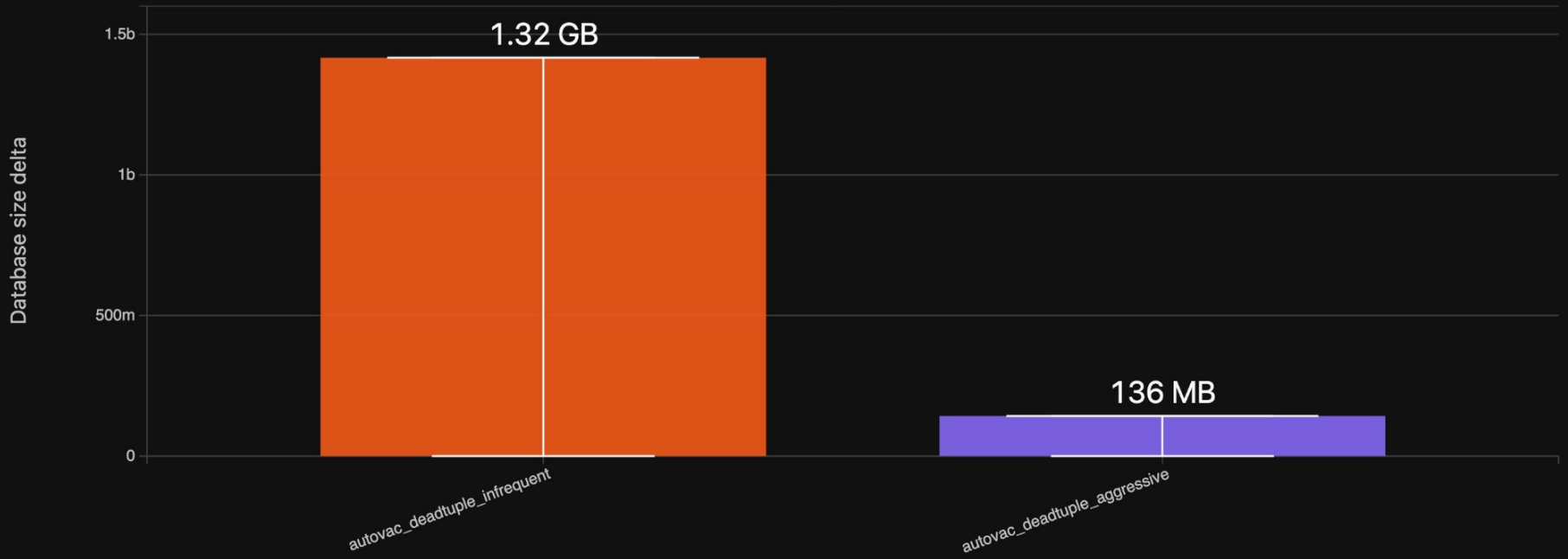
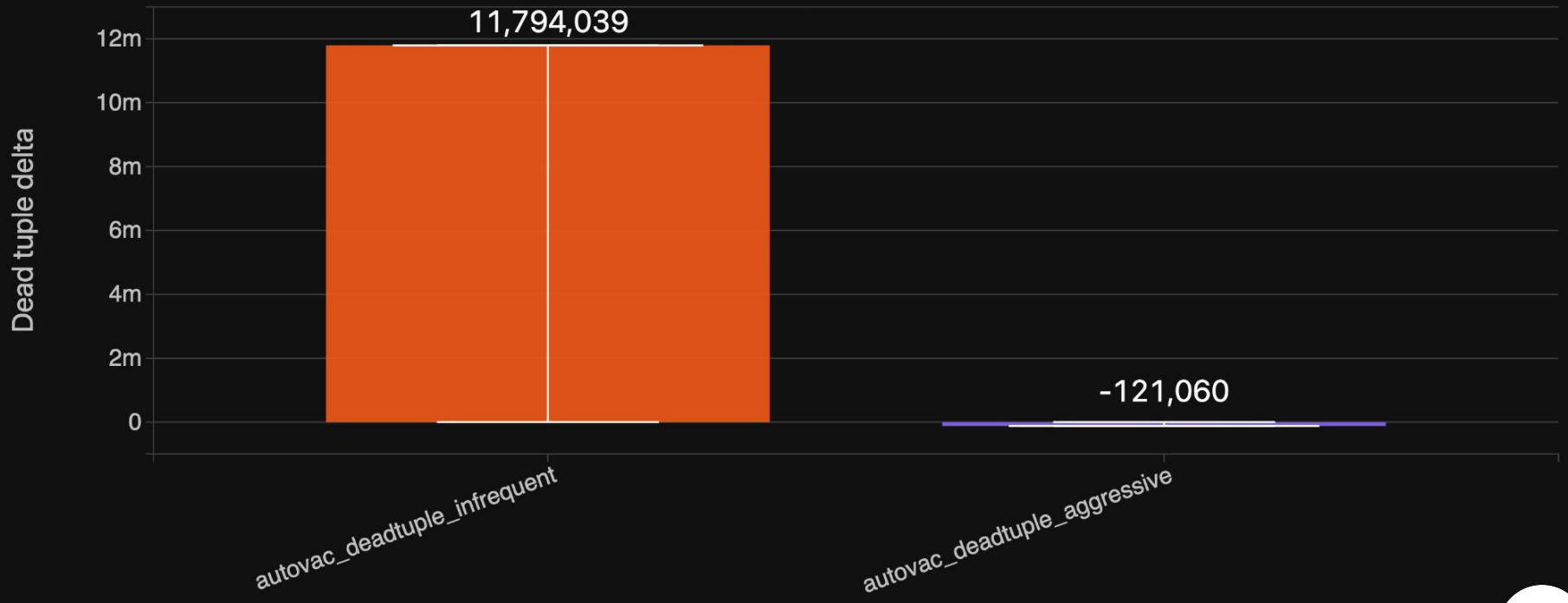


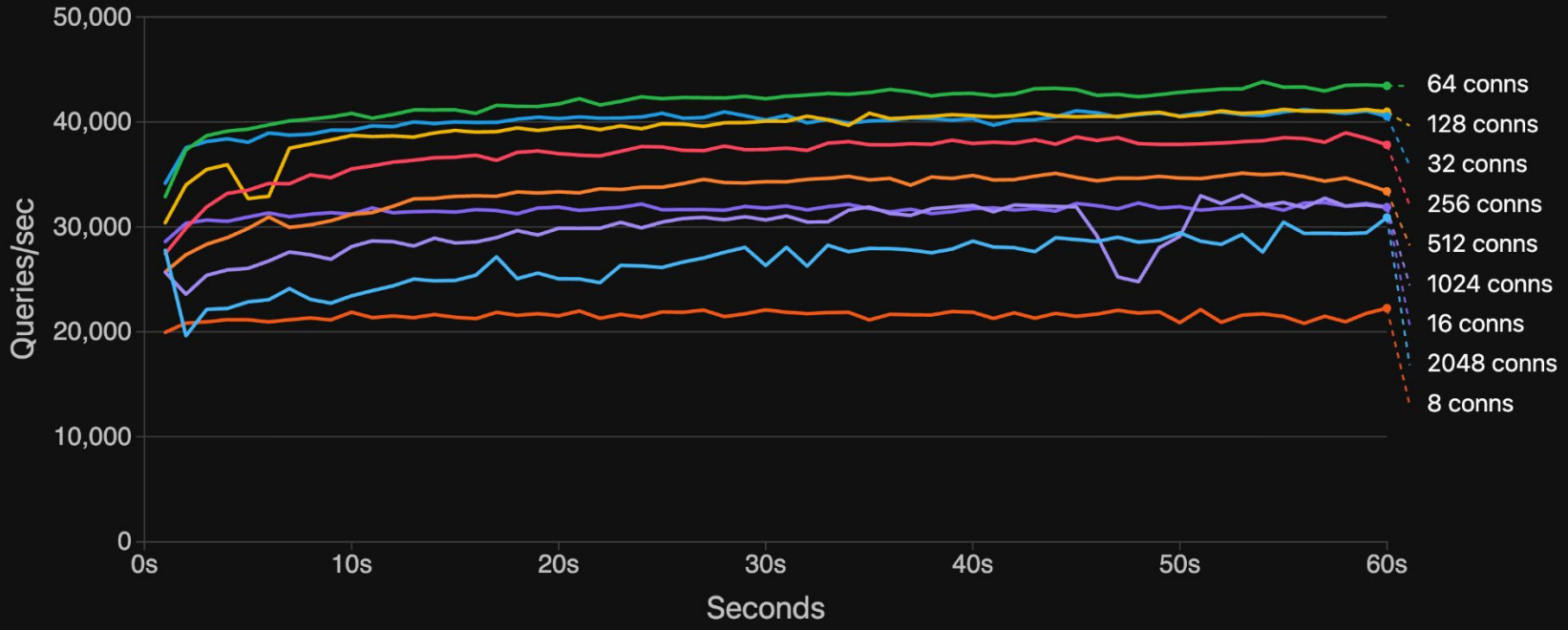
Table bloat PG dead tuples



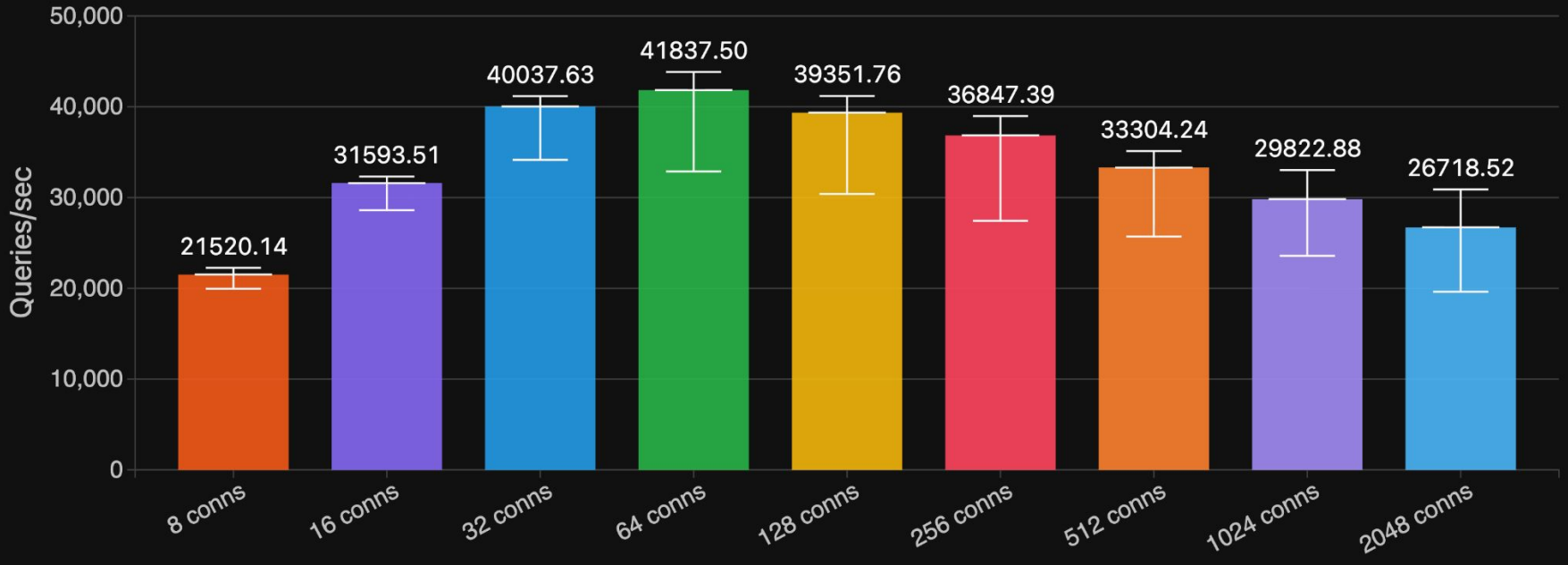
Bloat management vs perf

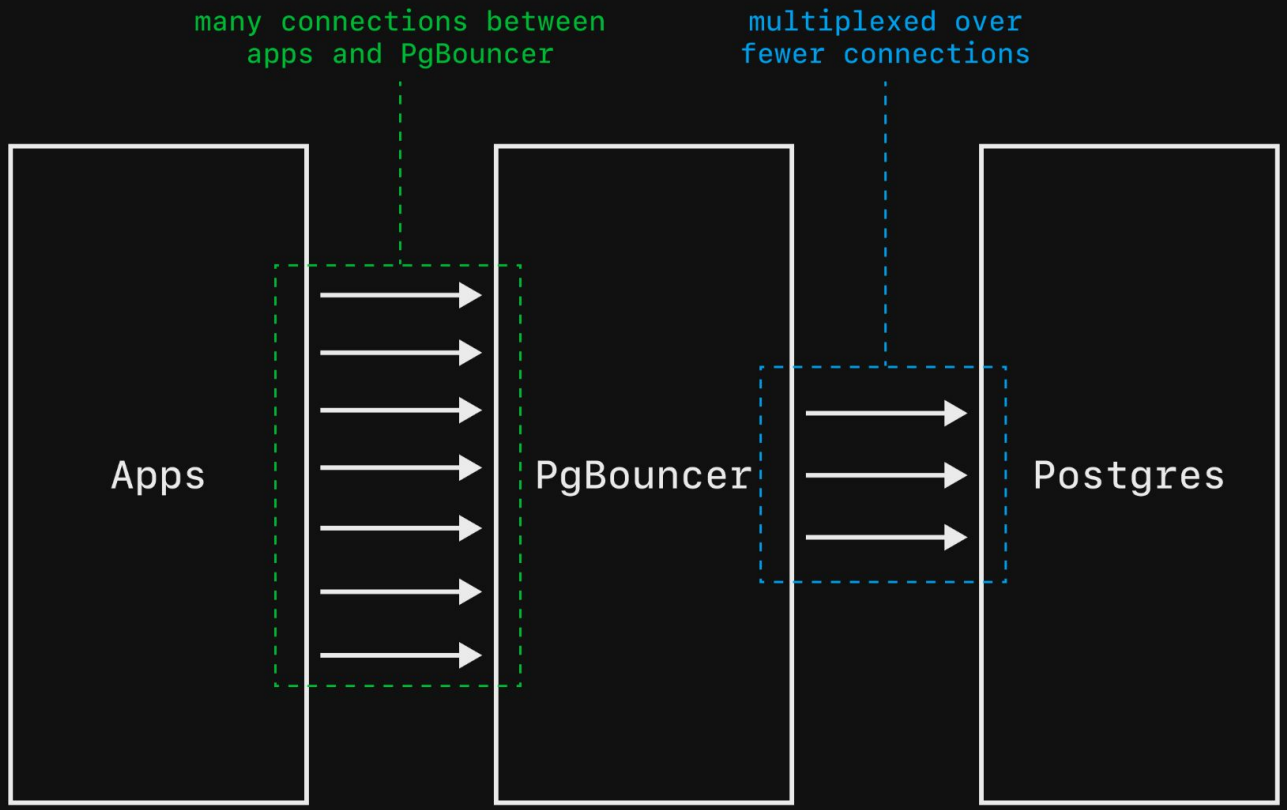
1. Table bloat
2. Connections
3. IO performance

Concurrent connections OLTP-RO



Concurrent connections OLTP-RO

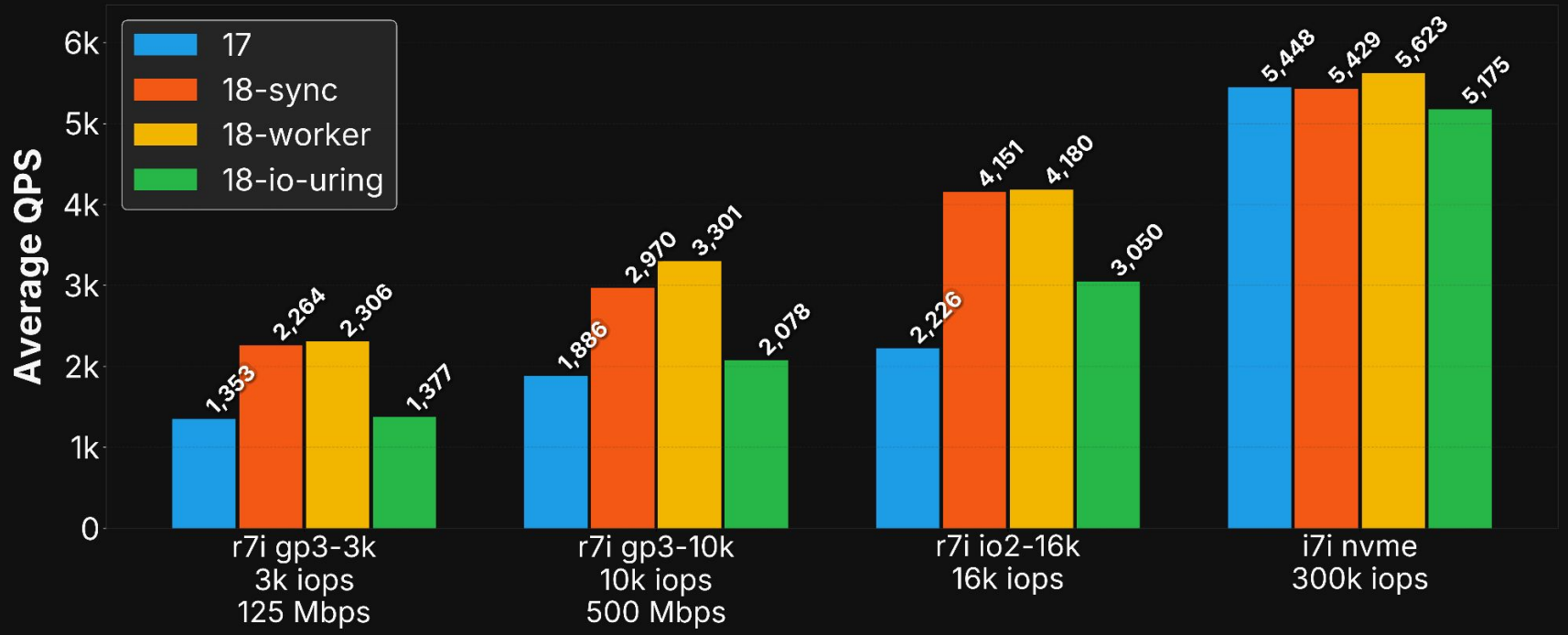




https://planetscale.com/blog/scaling-postgres-connections-with-pgbouncer

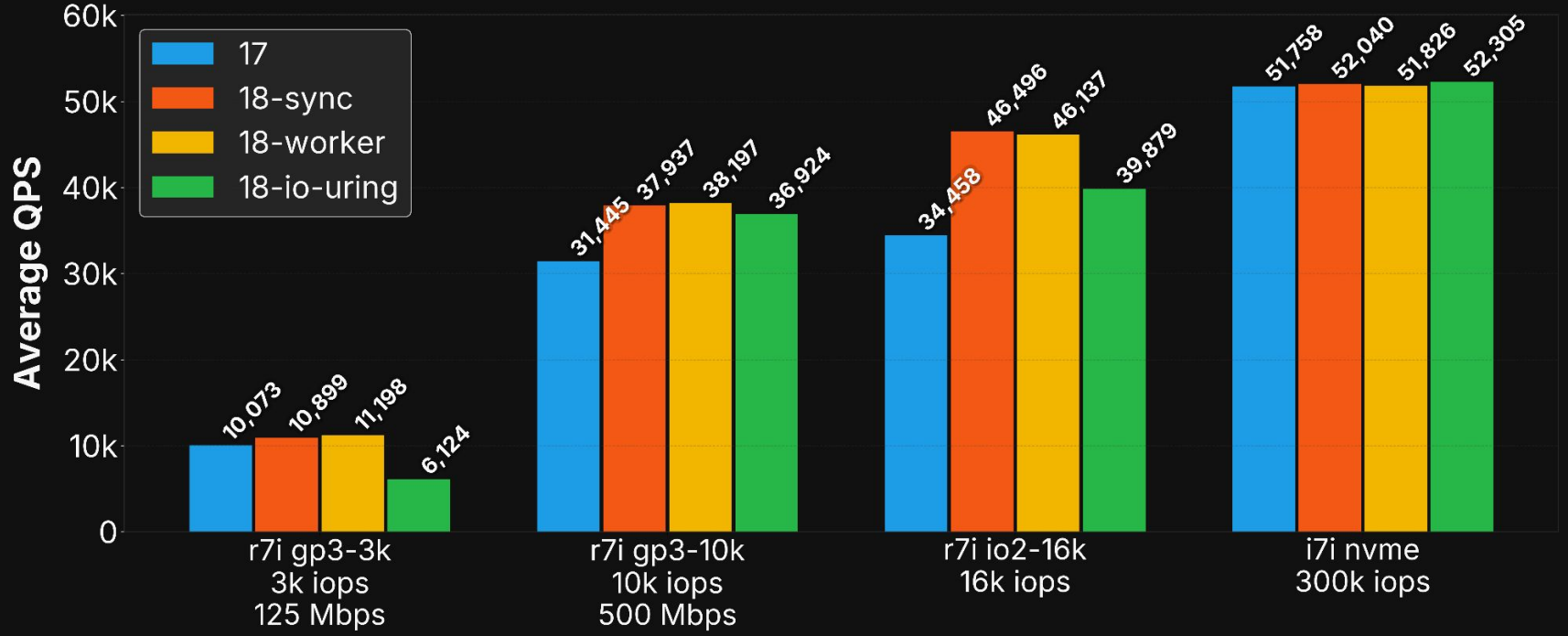
1. Table bloat
2. Connections
3. IO performance

IO Performance OLTP-RO 1 conn



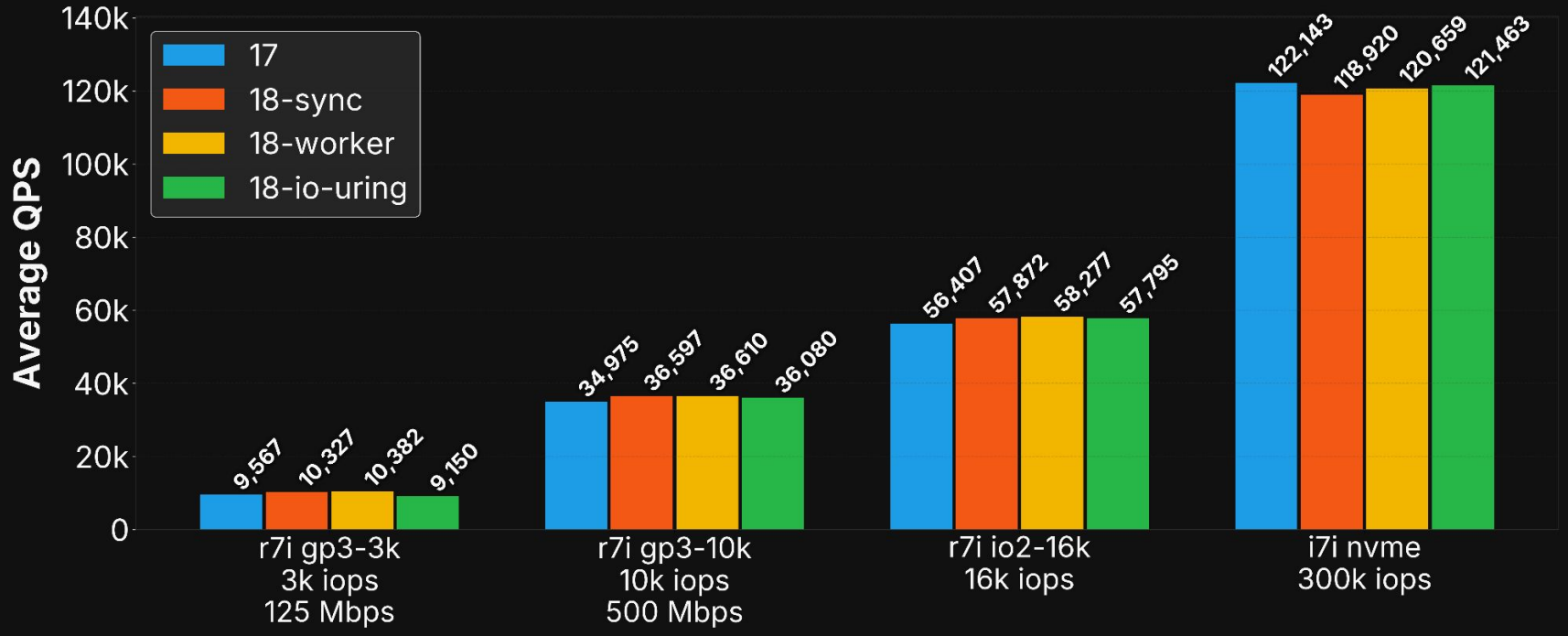
https://planetscale.com/blog/benchmarking-postgres-17-vs-18

IO Performance OLTP-RO 10 conns



https://planetscale.com/blog/benchmarking-postgres-17-vs-18

IO Performance OLTP-RO 50 conns



https://planetscale.com/blog/benchmarking-postgres-17-vs-18

Performance is important

Performance and reliability are related

Tune your database wisely

Thank you