PostgreSQL Diagnosis Script Explanation

This document explains what the universal PostgreSQL diagnosis script does when run inside pgAdmin (or any SQL client connected to AWS RDS/Aurora). The script provides multiple result sets that give insights into the server’s health, workload, and potential performance bottlenecks.

# 1. Basic Server Info

Shows PostgreSQL version, server address/port, current database/user, uptime, and whether it is a replica. Useful for verifying you’re connected to the right instance and checking restart history.

# 2. Key Settings

Lists important configuration parameters like work\_mem, shared\_buffers, autovacuum, and parallel worker settings. Also shows AWS-specific (rds.\*) parameters. Helps identify under-provisioned or misconfigured memory/worker settings.

# 3. Database & Workload Stats

From pg\_stat\_database: transaction commits/rollbacks, block reads vs. hits (cache efficiency), tuples read/inserted/updated/deleted, deadlocks, and I/O timings. Highlights whether the workload is CPU, I/O, or rollback heavy.

# 4. Active Queries & Blocking

Lists currently running queries, their wait events, duration, and blocking chains. Helps spot runaway queries or lock contention causing slowness.

# 5. Table Sizes & Dead Tuples

Shows top 50 biggest tables with table size, index size, live vs. dead rows. Dead tuple percentage highlights tables that need vacuuming or may be bloated.

# 6. Index Effectiveness

Shows sequential vs. index scans for each table. Flags potential missing indexes when seq scans dominate. Lists underutilized indexes.

# 7. Autovacuum & Analyze

Displays last vacuum/analyze times, counts, and current progress. Useful to confirm whether autovacuum is keeping up with table changes.

# 8. Background Activity

Reports from pg\_stat\_bgwriter and pg\_stat\_wal, showing checkpoint activity, buffer writes, and WAL generation. Indicates write pressure or checkpoint issues.

# 9. Replication / HA

If using replicas, shows replication lag, sync state, and replication slot details. Useful for high availability diagnostics.

# 10. Extensions

Lists installed extensions (like pg\_stat\_statements). If present, it shows top queries by total execution time and by mean time.

# 11. Cache Efficiency

Displays cache hit ratios per table (how often reads are served from memory vs. disk). Low ratios may suggest adding memory or improving indexing.

# 12. Connections

Compares current vs. max connections to detect overload or leaks.

# Conclusion

When executed, the diagnosis script produces around 20 result sets inside pgAdmin. Each result set covers different aspects of the server: configuration, workload, activity, and potential bottlenecks. The script is entirely read-only and safe to run. It is designed to provide a holistic health snapshot of your AWS-hosted PostgreSQL instance.