

PostgreSQL Performance Tuning

Module 1 : Introduction to PostgreSQL Server

- I. Introduction to PostgreSQL server
- II. Features of PostgreSQL server

Module 2 : Postgres Client Server Architecture

- I. Client Server Architecture
- II. Utility Processes
- III. Shared Memory

Module 3 : Installation of PostgreSQL Server

- I. Install the PostgreSQL Server
- II. Setting Environment Variables
- III. Creating a Cluster
- IV. Running Server

Module 4 : PostgreSQL client

- I. Introduction To PSQL
- II. Meta Commands, SQL queries and Parameters
- III. Using graphical administration tool – pgAdmin

Module 5: Remote client connection

- I. Postgres hosed based access configuration
- II. Remote client connection using pgAdmin

Module 6 : Vacuuming

- I. Introduction to vacuum
- II. Finding bloated tables / dead tuples
 - a. Using pg_stat_user_tables
 - b. Using pgstattuple extension
- III. Vacuuming to solve bloating issues
- IV. Autovacuum feature

Module 7 : Indexing

- I. Creating an index
- II. Checking performance with and without indexes
- III. Checking performance using index only scans
- IV. Indexing foreign keys
- V. Partial Indexes
- VI. Checking index bloating using pgstatindex
- VII. Reindexing to address index bloating
- VIII. Fill factor of the table

Module 8: Making use of Statistics

- I. Knowing the statistics information using Pg_stat_activity, pg_stat_database, pg_stat_user_tables

- II. Checking active user connections
- III. Knowing active and blocked sessions
- IV. Listing blocking PIDs
- V. Handling blocking PIDs
 - a. Waiting for session to complete
 - b. Killing a PID to release locks
- VI. Pg_stat_statements extension

Module 9: pgBouncer

- I. Introduction to connection Pooling
- II. Building pgBouncer setup
- III. Installing and configuring pgBouncer
- IV. Connecting to pgBouncer
- V. Advanced settings for performance

Module 10: Tips for performance improvement

- I. Setting min and max time limit for query execution
- II. Finding slow running queries
- III. Logging statements
- IV. Setting shared_buffers
- V. Parallel Queries
- VI. Handling Joins, order by and distinct clauses
- VII. Reducing number of SQL statements