training code: pgSQL-ZW / ENG DL 2d / EN

PostgreSQL: Performance management

Maintaining high database performance requires more than hardware resources—it depends on the ability to identify bottlenecks, analyze workload, and optimize database behavior. This course focuses on practical techniques for monitoring PostgreSQL performance, diagnosing performance issues, tuning SQL queries, and optimizing server configuration. After completing the training, you will be able to identify performance bottlenecks, interpret key performance metrics, and apply proven optimization techniques to improve the efficiency, stability, and scalability of PostgreSQL environments.

Training recipients

The training is addressed both to administrators and developers responsible for diagnosing and troubleshooting SQL query performance in PostgreSQL 16 environment.

Benefits

During the training the participants will acquire knowledge:

- Query Planner functioning,
- interpreting and modifying query execution plans,
- the use of data indexing techniques,
- the use of temporary and partitioned tables,
- the use of materialized views,
- parallel SQL query execution,
- configuring buffer memory,
- generating extended statistics,
- detecting performance problems,

- performance tests automation.

Training program

1. Introduction to Query Planner (functioning, configuring)
2. Analyzing query execution plans
3. Collecting and expanding statistics for Query Planner
4. Index structures (B*-tree, hash, BRIN, GIN, GiST, partial, function-based)
5. Advanced table structures (partitioned, unlogged, temporary, materialized views)
6. Configuring buffer memory (buffer cache, work memory, maintenance work memory)
7. Parallel queries (execution plans, configuration)
8. Diagnosing performance problems (logs, pg_top, auto_explain, pg_stat_statements, cumulative statistics)
9. Using pgBench to implement simple system performance tests
10. Other techniques of performance tuning (prepare/execute, hints, sorting records physically, calculated columns, fillfactor)

Expected preparation of the participant

Knowledge of SQL language, knowledge of PostgreSQL database server architecture.

Training Includes

- 2 days of work with a trainer
- Trainer’s supervision
- Contact with community
- Coursebook
- Lab environment

Training method

- lecture
- workshops

Duration

> 2 days / 14 hours

Language

- Training: English
- Materials: English