AMBIENT-IT

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PostgreSQL 17 Advanced Training: Optimization

2 days (14 hours)

Presentation

Have you attended our PostgreSQL 17 training course, and would you like to expand your skills? Do you have a large amount of data to manage, and are having difficulty using it? This training course will enable you to learn the program's advanced concepts and become a PostgreSQL expert.

In this training course, we'll look at all the techniques for improving your use of PostgreSQL by optimizing its configuration and components, measuring and analyzing your operations and knowing how to manage your queries and sessions in the best possible way.

At the end of this course, you'll have the knowledge of an expert user of this famous database system. We'll teach you concepts such as tuning and how to optimize your architecture efficiently. You'll also learn how to secure your data, an increasingly important issue in the business world.

As with all our training courses, PostgreSQL 17 Advanced will introduce you to the latest stable release and its new features: PostgreSQL 17.

Objectives

- How to optimize your hardware for PostgreSQL 17
- Measure and analyze performance
- Manage sessions
- Understanding query processing

Target audience

Architects, Project managers, Developers, Database managers

Prerequisites

Fundamental knowledge of PostgreSQL, or completion of our PostgreSQL training course 14 or our PostgreSQL 14 Administration training course.

Hardware requirements

- A Linux system preferably with administrator access and Internet access (2 vCPUs minimum, but 4 recommended)
- SSH client or console access for file transfers
- PostgreSQL installed

PostgreSQL 17 Advanced: Optimization training program

Performance monitoring and analysis

- Monitoring and tuning
- Tracking slow requests
- Parameter settings
- Comparative analysis
- Test bench
- Internal statistics
- Extensions

Optimization: Tuning

- Optimizing your hardware & system
- Operating systems
- File systems
- Configuration
- Applications
- Database updates
- PostgreSQL version
- Upgrade plan

Database security and session management

- Access control
- Line safety
- Data encryption with pgcrypto
- Customer APIs
- Connection pools
- Competitive access and transactions

Query processing

- Query processing phases
- Algorithms
- Data organization
- Configuration
- Internal maintenance

Complementary module (+1 day) : High availability and fault response

Replication and archiving

- Different strategies for guaranteeing high availability
- Synchronous vs. asynchronous replication
- How do you manage replication?
- Log archiving
- Reacting in the event of a claim

Failover clusters

- Clustering architecture overview
- Introducing PgPool-II and Patroni
- Configuring clusters
- Ensure the continuity of your applications
- How do you monitor your clusters?

Disaster recovery

- Best practices for anticipating failure
- Advanced backup methods

Load sharing

- Overview of load distribution
- Good handling practices
- Distribute requests across multiple nodes
- Use PgBouncer to optimize query management

Further information

Companies concerned

This course is aimed at both individuals and companies, large or small,

wishing to train its teams in a new advanced IT technology, or to acquire specific business knowledge or modern methods.

Positioning on entry to training

Positioning at the start of training complies with Qualiopi quality criteria. As soon as registration is finalized, the learner receives a self-assessment questionnaire which enables us to assess his or her estimated level of proficiency in different types of technology, as well as his or her expectations and personal objectives for the training to come, within the limits imposed by the selected format. This questionnaire also enables us to anticipate any connection or security difficulties within the company (intra-company or virtual classroom) which could be problematic for the follow-up and smooth running of the training session.

Teaching methods

Practical course: 60% Practical, 40% Theory. Training material distributed in digital format to all participants.

Organization

The course alternates theoretical input from the trainer, supported by examples, brainstorming sessions and group work.

Validation

At the end of the session, a multiple-choice questionnaire verifies the correct acquisition of skills.

Sanction

A certificate will be issued to each trainee who completes the course.