Faysal Aziz

PostgreSQL in Production

Advanced PostgreSQL Administration — 2 Days

FA-0352 · 2 Days

AI for Leaders & Business · Data & Analytics

Introduction

PostgreSQL has become a serious enterprise database platform, but operating it successfully requires much more than understanding SQL. Administrators must be able to build reliable servers, understand PostgreSQL's internal architecture, establish appropriate configuration and security baselines, protect data, maintain availability, diagnose production problems, and manage the database throughout its operational lifecycle.

This intensive two-day course focuses on the PostgreSQL knowledge that experienced DBAs need when assuming responsibility for production systems. It covers architecture, installation, enterprise configuration, security, backup and recovery, replication, monitoring, troubleshooting, maintenance, and upgrade planning without attempting to turn two days into an exhaustive study of every PostgreSQL feature.

The course is aligned with current PostgreSQL 18 administration practices and emphasizes the operational areas most frequently encountered in enterprise environments. The instructor has over 30 years of industry experience and will deliver real industry-demanded content based on practical production requirements rather than an academic treatment of database administration.

Learning outcomes

- Understand PostgreSQL architecture and key server components
- Install and configure PostgreSQL for production environments
- Establish a practical enterprise configuration baseline
- Administer roles, privileges, authentication, and connection security
- Perform logical and physical backup and recovery
- Understand Point-in-Time Recovery and WAL archiving

- Configure and monitor PostgreSQL replication
- Monitor database activity and troubleshoot common production issues
- Maintain database performance and storage health
- Plan PostgreSQL patching and major-version upgrades

Prerequisites

- Experience administering PostgreSQL, Oracle, SQL Server, or another enterprise RDBMS
- Understanding of SQL, transactions, indexes, users, and backup concepts
- Basic Linux command-line and system administration skills
- Basic knowledge of TCP/IP networking

Target Audience

- PostgreSQL Database Administrators
- Oracle and SQL Server DBAs transitioning to PostgreSQL
- Database Engineers
- Infrastructure and Platform Engineers
- Technical Leads responsible for PostgreSQL operations

Training outline

1. PostgreSQL Architecture and Internals

1. Instance and cluster architecture
2. Backend and background processes
3. Memory architecture
4. Database and storage structure
5. Write-Ahead Logging and checkpoints
6. MVCC fundamentals

2. PostgreSQL Installation and Enterprise Configuration

1. On-premises installation approaches
2. Cluster initialization and service management

3. postgresql.conf
4. Memory and connection configuration
5. WAL and checkpoint configuration
6. Logging and configuration standards

3. Security and Access Management

1. Roles and privileges
2. Object ownership
3. pg_hba.conf
4. SCRAM authentication
5. SSL/TLS connectivity
6. Administrative access controls

4. Backup, Recovery, and PITR

1. Logical and physical backup strategies
2. pg_dump and pg_restore
3. pg_basebackup
4. WAL archiving
5. Point-in-Time Recovery
6. Backup and recovery validation

5. High Availability and Replication

1. Streaming replication architecture
2. Primary and standby configuration
3. Synchronous and asynchronous replication
4. Replication slots
5. Replication monitoring and lag
6. Promotion, failover, and DR considerations
7. Logical replication overview

6. Production Monitoring and Troubleshooting

1. PostgreSQL statistics views
2. pg_stat_activity

3. pg_stat_statements
4. Session and connection monitoring
5. Locking and blocking
6. Long-running transactions
7. Replication and WAL issues
8. Log-based troubleshooting

7. Maintenance and Performance Management

1. VACUUM and autovacuum
2. ANALYZE and statistics
3. Table and index bloat
4. Index maintenance
5. Execution plan fundamentals
6. Memory and workload considerations

8. Patching, Upgrades, and Operational Readiness

1. Minor-version patching
2. Major-version upgrade strategies
3. pg_upgrade
4. Upgrade compatibility considerations
5. Backup and recovery checks
6. Monitoring and maintenance standards
7. Production operational checklist

Disclaimer

This training outline is provided as an indicative framework for the intended scope and structure of the programme. Actual coverage, sequencing, depth, and emphasis may be adjusted by the trainer at his professional discretion without prior notice to reflect participant experience, organizational priorities, available training time, platform availability, technological developments, security requirements, and other considerations relevant to effective course delivery.

© 2026 Faysal Aziz · Kuala Lumpur