Course duration

- 5 days

Course Benefits

- Learn to compile source code.
- Learn about backup and disaster recovery.
- Learn about inheritance, partitioning, and Tablespaces.
- Learn to manage free space.
- Learn about security in PostgreSQL.
- Learn to create high availabilty and high performance solutions.

Course Outline

1. PostgreSQL Introduction & Architecture
    1. Introduction & History
    2. PostgreSQL Major Features
    3. PostgreSQL Architecture Overview
2. PostgreSQL Data Types
3. PostgreSQL Installation
    1. Platforms
    2. Binary Installation
    3. Source Installation
    4. Binary vs. Source – Pros & cons
    5. Initializing a PostgreSQL Cluster
    6. Starting & Stopping a PostgreSQL Cluster
    7. Automatic Startup / Shutdown
    8. Common Issues & Troubleshooting
    9. Installation Lab
4. PostgreSQL Configuration
    1. Access Control
    2. The postgresql.conf file
    3. Common Issues & Troubleshooting
    4. Configuration Lab
5. Introduction to psql
    1. Command line parameters
    2. Meta Commands
    3. SET Commands
    4. psql Security
    5. psql Lab
6. Functions & Operators

7. Managing PostgreSQL Databases
    1. Creating PostgreSQL Databases
    2. Creating Schemas
    3. Creating Tables
    4. Altering Tables
    5. SELECT & Joins
    6. Indexes & Foreign Keys
    7. Lab
8. PostgreSQL Roles and Security
    1. Views
    2. Rules
    3. Users, Groups & Roles
    4. Sequences
    5. Object Security
    6. Lab
9. Moving Data with PostgreSQL
    1. Basic DML
    2. COPY
    3. Other Tools
10. Tablespaces, Inheritance and Data Partitioning
    1. Tablespaces
    2. Inheritance
    3. PostgreSQL Data Partitioning
    4. Lab
11. VACUUM
    1. Routine Vacuuming
    2. Benefits of Vacuuming
    3. Recovering Disk Space
    4. Updating Planner Statistics
    5. Transaction ID Wraparound Failure
    6. Vacuum Lab?
12. Transactions & Concurrency Control
    1. Transactions
    2. Concurrency
13. Routine DBA Tasks and Best Practices
    1. Log Management
    2. Query Analysis
    3. Routine Vacuuming
    4. Recovering Disk Space
    5. Managing Planner Statistics
    6. REINDEX
    7. LAB
14. Monitoring and Statistics
    1. Database Logs
    2. OS Process Monitoring
    3. The PostgreSQL Statistics Collector
    4. Statistics Views

5. Statistics Functions
6. LAB

15. PostgreSQL Tools Overview
    1. PG Badger
    2. PG Bouncer
    3. PG Pool
    4. PGCLUU
    5. PG Admin
    6. PG Modeler
    7. MySQL Workbench
    8. pgbench
    9. Consistent State PTS
16. PostgreSQL Performance Tuning
    1. OS Tuning
    2. HW Configuration
    3. Transaction Logs
    4. Tablespaces & Partitioning
    5. Checkpoint Tuning
    6. Query Tuning
    7. Lab
17. PostgreSQL Backup and Recovery
    1. pg_dump
    2. pg_dumpall
    3. Recovery Options
    4. Restore via a List File
    5. Point In Time Recovery (PITR) Based Backup
    6. PITR Based Recovery
    7. Lab
18. PostgreSQL Upgrade Methods
    1. Minor Version Upgrades
    2. pg_upgrade
    3. RPM Based Upgrade
    4. Source Based Upgrade
    5. SLONY Based Upgrade
    6. Lab
19. PostgreSQL Streaming Replication
    1. Overview
    2. Configuration
    3. Base Backup
    4. Recovery.conf
    5. Initializing Streaming Replication
    6. Standby Conflicts
    7. Monitoring
    8. Standby Promotion
    9. Cascading Replication
    10. WAL Shipping
    11. Replication Slots

    12. Synchronous Replication
    13. Lab
20. SLONY
    1. Overview
    2. Configuration & Setup
    3. Monitoring
    4. Executing DDL
    5. Adding Tables to Replication
    6. Switchover
    7. Failover
    8. Lab
21. PostgreSQL High Availability
    1. Overview
    2. Replication Type Selection
    3. Connection Poolers
    4. Heartbeat Monitoring
    5. Failing Over
    6. Failing Back
    7. Lab
22. PostgreSQL and AWS
23. PostgreSQL RDS Overview
24. PostgreSQL Redshift Overview
25. The PostgreSQL Contribs

Class Materials

Each student will receive a comprehensive set of materials, including course notes and all the class examples.

Class Prerequisites

Experience in the following *is required* for this PostgreSQL class:

- Familiarity with databases.