PostgreSQL Administration

Course Summary

Description
This course is designed for PostgreSQL administration and configuration. It will cover specific PostgreSQL configurations and processes. It will address specific PostgreSQL utilities, commands, and security. It is designed for experienced DBA’s and developers.

Topics
- Introduction
- Installation
- Configuration
- PostgreSQL
- Roles and Security
- Managing PostgreSQL Databases
- Postgres Tablespaces
- Moving Data with PostgreSQL
- Routine Tasks
- Monitoring Statistics
- Performance Tuning
- Backup and Recovery
- PostgreSQL Upgrade
- Replication
- Triggers
- Rules
- PL/pgSQL
- Other Procedural Languages

Audience
This course is designed for experienced DBA’s and developers.

Prerequisites
There are no prerequisites for this course.

Duration
Five days
PostgreSQL Administration

Course Outline

I. Introduction
   A. History and Overview
   B. PostgreSQL Major Features
   C. PostgreSQL Limits
   D. PostgreSQL Architecture
   E. Write Ahead Logs
   F. The Background Writer
   G. PostgreSQL Data Types

II. Installation
   A. Overview
   B. Source Installation
   C. Initializing a cluster
   D. Starting and Stopping PostgreSQL
   E. Automatic startup

III. Configuration
   A. Access Control
   B. Connection parameters
   C. Memory parameters
   D. Log Management
   E. Autovacuum settings
   F. Background process settings
   G. Access control settings

IV. PSQL
   A. Intro to PSQL
   B. Meta Commands
   C. Security

V. Roles and Security
   A. Schemas
   B. Tables and Rules
   C. Users, Groups, and Roles
   D. Tables and Sequences
   E. Object Security

VI. Managing PostgreSQL Databases
   A. Clusters
   B. Databases
   C. Tables
   D. Indexes

VII. Postgres Tablespaces
   A. Postgres Tablespace definition and configuration
   B. Partitioning
   C. Transaction and concurrency control

VIII. Moving Data with PostgreSQL
   A. DML
   B. Copy command
   C. pg_dump

IX. Routine Tasks
   A. Log Management
   B. Query Analysis
   C. Routine Vacuuming
   D. Recovering Disk Space

X. Monitoring Statistics
   A. Database Logs
   B. OS Process Monitor
   C. Statistics Views

XI. Performance Tuning
   A. OS Tuning
   B. Database Tuning
   C. Transaction Logs
   D. Query Tuning
   E. Checkpoints

XII. Backup and Recovery
   A. pg_dump
   B. pg_dumpall
   C. pg_restore
   D. Point in Time recovery

XIII. PostgreSQL Upgrade
   A. pg_upgrade
   B. Source upgrades
   C. Replication upgrades

XIV. Replication
   A. Streaming replication
   B. Asynchronous Replication
   C. Failover
   D. Connection Pools
   E. HA Configuration

XV. Triggers
   A. Trigger types
   B. Event Triggers
Course Outline (cont’d)

XVI. Rules
   A. Rules and privileges
   B. Materialized Views

XVII. PL/pgSQL
   A. Structures
   B. Declarations
   C. Expressions
   D. Statements
   E. Cursors
   F. Error and Messages

XVIII. Other Procedural Languages
   A. PL/Perl
   B. PL/Python

XIX. Conclusion
   A. Course Overview