

# PostgreSQL DBA

## 1) Introduction and Architectural Overview

- History of PostgreSQL
- Architectural Overview
- General Database Limits
- Common Database Object Name

## 2) PostgreSQL System Architecture

- Architectural Summary
- Process & Memory Architecture
- Utility Processes
- Connection Request-Response
- Disk Read Buffering Disk
- Write Buffering
- Background Writer Cleaning Scan
- Commit & Checkpoint
- Statement Processing
- Physical Database Architecture
- Data Directory Layout
- Installation Directory Layout
- Page Layout

## 3) Installation

- OS User & Permissions
- Installation Options
- Installation of PostgreSQL
- Setting Environmental Variables

## 4) Database Clusters

- Database Cluster
- Creating a Database Cluster
- Starting and Stopping the Server (pg\_ctl)
- Connect to the Server Using psql

## 5) User Tools: Command Line Interfaces

- Introduction to PSQL and EDB-PSQL
- Conventions • Connecting to Database
- PSQL Command Line Parameters
- Entering PSQL Commands
- PSQL Meta-Commands
- PSQL SET Parameters
- Information Commands

## **6) Configuration**

- Setting PostgreSQL Parameters
- Access Control
- Connection Settings
- Security and Authentication Settings
- Memory Settings
- Query Planner Settings
- WAL Settings

## **7) Log Management**

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## **8) Creating and Managing Databases**

- Object Hierarchy
- Creating Databases
- Users • Access Control
- Creating Schemas
- Schema Search Path

## **9) GUI Tools • Intro to PGADMIN**

- Introduction to PEM Client
- Registering a server
- Viewing and Editing Data
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- Databases
- Languages
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- Database Objects
- Maintenance
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## **10) Security**

- Authentication and Authorization
- Levels of Security
- pg\_hba.conf File
- Object Ownership
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- Table Partitioning
- Partitioning
- Partitioning Methods
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- Partitioning Setup
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- Partitioning and Constraint Exclusion
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- SQL Dump Backups
- SQL Dump Options
- Handling Large Databases
- Restoring SQL Dumps
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- Offline Backups
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## **13) Backups**

- Online Directory Backups
- Continuous Archiving
- Backup with Low level API
- How to use pg\_basebackup for Online Backups
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- Recovery Example
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- Maintenance Tools
- Optimizer Statistics
- Data Fragmentation
- Routine Vacuuming
- Vacuuming Commands
- Preventing Transaction ID Wraparound Failures
- Vacuum Freeze
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## **14) Data Dictionary**

- The System Catalog Schema
- System Information Tables
- System Information Functions
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- Common Query Performance Issues
- SQL Tuning Goals
- SQL Tuning Steps
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- Review the query execution plan
- Optimizer statistics and behaviour
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- Performance Monitoring using PEM
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- Data Replication in PostgreSQL
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- Setup Streaming Replication
- Prepare the Primary Server
- Synchronous Streaming Replication Setup
- Configure Authentication
- Take a Full Backup of Primary Server
- Setting up the Standby Server
- Adding Cascading Replicated Standby Server
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- pgpool-II – Features
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- pgpool II - Installation and Configuration
- Configuring pcp.conf, pgpool.conf

- Starting/Stopping pgpool-II

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- Need to Upgrade
- Upgrade Plan
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