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100+ PostgreSQL DBA Interview Questions and Answers [2025 Guide]

TheDBAdmin Team   •   February 12, 2025

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This comprehensive guide presents 100+ essential PostgreSQL Database Administrator (DBA) interview questions and answers, organized by topic. Whether you're preparing for a junior or senior PostgreSQL DBA interview, studying for PostgreSQL certification, or looking to assess your database administration expertise, these questions cover all key aspects of PostgreSQL administration and management.

Want to master PostgreSQL?
Check out our comprehensive PostgreSQL DBA Course! This course covers everything from basic administration to advanced topics, helping you become a proficient PostgreSQL Database Administrator. Perfect for both beginners and experienced DBAs looking to enhance their skills.

Basic Concepts (1-10)

What is PostgreSQL?

Open-source RDBMS emphasizing extensibility and SQL compliance

Object-relational database supporting both relational and non-relational features

What are the key features of PostgreSQL?

ACID compliance

Multi-Version Concurrency Control (MVCC)

Table inheritance

Custom functions

Table partitioning

Rich indexing options

What is MVCC in PostgreSQL?

Mechanism allowing multiple transactions to access the same data simultaneously

Each transaction sees a snapshot of data from a particular point in time

What are roles in PostgreSQL?

Database objects managing database access permissions

Can be users or groups

Support inheritance of permissions

What is WAL in PostgreSQL?

Write-Ahead Logging

Ensures data integrity by logging changes before they're written to data files

What is the postgresql.conf file?

Main configuration file containing database parameters

Controls memory, connections, replication, etc.

What is the pg_hba.conf file?

Host-Based Authentication configuration file

Controls client authentication methods and access

What are tablespaces in PostgreSQL?

Physical locations where databases store their data

Allow distributing database objects across different storage devices

What is the difference between TRUNCATE and DELETE?

TRUNCATE is faster, removes all rows at once

DELETE removes rows one by one, can use WHERE clause

What is autovacuum in PostgreSQL?

Automated process that removes dead tuples and updates statistics
Essential for maintaining database performance

Backup & Recovery (11-20)

What is pg_dump?

Logical backup tool for single database
Creates SQL script or archive file format

What is pg_basebackup?

Physical backup tool for entire cluster
Creates exact copy of database files

What is Point-in-Time Recovery (PITR)?

Ability to restore database to specific point in time
Uses WAL archives and base backup

What is continuous archiving?

Method of archiving WAL files continuously
Essential for PITR capability

How do you take a hot backup?

Use pg_basebackup while database is running
Ensure archive_mode is enabled

What is recovery.conf?

In PostgreSQL <12: Recovery configuration file
In PostgreSQL ≥12: Uses recovery.signal and standby.signal

What is archive_command?

Configuration parameter specifying WAL archiving method
Example: 'cp %p /archive/%f'

What is restore_command?

Specifies how to retrieve archived WAL files during recovery
Example: 'cp /archive/%f %p'

What is recovery_target_time?

Parameter specifying point-in-time for recovery
Format: 'YYYY-MM-DD HH:MM:SS'

What is pg_dumpall?
Backs up entire PostgreSQL cluster
Includes roles and tablespace definitions

Performance Tuning (21-30)

What is EXPLAIN ANALYZE?
Shows query execution plan with actual timings
Helps identify performance bottlenecks

What are statistics in PostgreSQL?
Data about tables and columns
Used by query planner to create efficient plans

What is shared_buffers?
Memory parameter for shared data cache
Typically 25% of total RAM

What is work_mem?
Memory for sort operations and hash tables
Set per operation, not total

What is effective_cache_size?
Estimate of disk cache available
Influences query planner decisions

What is vacuum?
Reclaims storage from dead tuples
Updates statistics for query planner

What is analyze?
Updates statistics about table contents
Improves query planner estimates

What are index types in PostgreSQL?
B-tree (default)
Hash
GiST
SP-GiST
GIN
BRIN

What is table partitioning?

Splitting large tables into smaller pieces

Improves query performance and manageability

What is parallel query?

Multiple workers executing parts of query

Controlled by max_parallel_workers parameter

High Availability (31-40)

What is streaming replication?

Real-time WAL shipping to standby servers

Provides high availability

What is synchronous replication?

Ensures transaction commit waits for standby

Provides stronger consistency guarantees

What is Patroni?

HA solution for PostgreSQL

Manages failover and replication

What is pg_rewind?

Tool to re-synchronize primary and standby

Used after failback scenarios

What is replication slot?

Prevents removal of needed WAL files

Ensures standby doesn't fall behind

What is hot_standby?

Allows queries on standby server

May impact replication performance

What is promote_trigger_file?

File triggering standby promotion

Used in manual failover

What is primary_conninfo?

Connection string to primary server

Used by standby for replication

What is application_name in replication?
Identifies standby servers
Used in monitoring and configuration

What is pg_stat_replication?
View showing replication status
Shows lag and connection details

Security (41-50)

What is SSL in PostgreSQL?
Encrypts client/server communications
Configured in postgresql.conf

What is Row-Level Security (RLS)?
Fine-grained access control at row level
Implemented using policies

What are GRANT/REVOKE?
Commands managing permissions
Control access to database objects

What is password encryption?
Passwords stored using SCRAM-SHA-256
Previous methods: MD5, password

What is client authentication?
Methods: trust, password, md5, cert
Configured in pg_hba.conf

What is pgcrypto?
Extension for cryptographic functions
Supports various encryption methods

What are connection limits?
max_connections parameter
Per-role connection limits

What is pg_audit?
Extension for detailed audit logging
Tracks database activities

What is SSL certificate authentication?

Client authentication using certificates

Requires SSL configuration

What are default privileges?

ALTER DEFAULT PRIVILEGES command

Sets permissions for new objects

Monitoring (51-60)

What is pg_stat_activity?

View showing server process activities

Shows current queries and states

What is pg_stat_statements?

Extension tracking query execution statistics

Shows query performance metrics

What are wait events?

Show what processes are waiting for

Help identify bottlenecks

What is log_min_duration_statement?

Logs queries exceeding specified duration

Helps identify slow queries

What is pg_stat_bgwriter?

Shows background writer statistics

Helps tune checkpoints

What is pg_stat_database?

Database-wide statistics

Shows transactions, tuples, cache hits

What is track_io_timing?

Enables I/O timing measurements

Shows detailed I/O statistics

What is log_checkpoints?

Logs checkpoint activity

Helps monitor I/O activity

What is pg_stat_user_tables?

Table access and update statistics
Shows vacuum and analyze activity

What is pg_locks?

Shows current locks
Helps diagnose blocking issues

Cloud & AWS RDS (61-70)

What is RDS for PostgreSQL?

AWS managed PostgreSQL service
Handles maintenance and backups

What are parameter groups in RDS?

Manage database configuration
Some parameters can't be modified

What is Multi-AZ in RDS?

Automatic failover capability
Synchronous replication to standby

What is RDS read replica?

Asynchronous replication copy
Offloads read operations

What is Aurora PostgreSQL?

AWS-optimized PostgreSQL variant
Claims better performance

What is RDS automated backup?

Daily backups and transaction logs
Enables point-in-time recovery

What is RDS encryption?

At-rest encryption using KMS
SSL for in-transit encryption

What is RDS monitoring?

Enhanced monitoring metrics
Performance Insights

What is RDS proxy?

Connection pooling service

Reduces connection management overhead

What is RDS event notification?

SNS notifications for RDS events

Monitors database changes

Azure PostgreSQL (71-80)

What is Azure Database for PostgreSQL?

Microsoft's managed PostgreSQL service

Offers single server and flexible server

What is Flexible Server?

Newer deployment option

More control over configuration

What is Azure high availability?

Zone-redundant HA

Automatic failover

What is Azure backup?

Automated backups

Geo-redundant storage option

What is Azure networking?

Private Link

VNET integration

What is Azure monitoring?

Azure Monitor integration

Query Performance Insight

What is Azure scaling?

Vertical and horizontal scaling

Storage autogrowth

What is Azure maintenance?

Planned maintenance windows

Automatic minor version updates

What is Azure firewall?

Server-level firewall rules
VNET service endpoints

What is Azure PostgreSQL pricing?

Compute + Storage pricing model
Reserved capacity options

Advanced Features (81-90)

What is pgvector?

Vector similarity search extension
Used for AI/ML applications

What is pg_cron?

Job scheduling extension
Runs periodic SQL commands

What is pg_stat_monitor?

Advanced monitoring extension
Provides detailed query statistics

What is logical replication?

Replication at object level
Supports selective replication

What is pg_partman?

Partition management extension
Automates partition creation

What is pg_bouncer?

Connection pooler
Reduces connection overhead

What is Foreign Data Wrapper?

Connects to external data sources
Supports various data formats

What is pg_upgrade?

Upgrades PostgreSQL version
Supports fast and link modes

What is event trigger?
Triggers on database events
DDL operation notifications

What is table sampling?
TABLESAMPLE clause
Quick data sampling methods

Troubleshooting (91-100)

How to handle connection issues?
Check pg_hba.conf
Verify network connectivity
Check max_connections

How to identify slow queries?
Use pg_stat_statements
Check log_min_duration_statement
EXPLAIN ANALYZE

How to handle disk full?
VACUUM FULL
Remove unused indexes
Archive old data

How to fix high CPU usage?
Check for missing indexes
Optimize queries
Adjust work_mem

How to handle replication lag?
Monitor pg_stat_replication
Check network bandwidth
Adjust wal_keep_segments

How to fix database bloat?
Regular VACUUM
Adjust autovacuum settings
Monitor table/index bloat

How to handle connection pooling?
Use pg_bouncer

Adjust pool_size
Monitor pool statistics

How to fix lock contention?

Monitor pg_locks
Optimize transaction duration
Adjust lock timeout

How to handle index corruption?

REINDEX command
Check system logs
Verify disk health

How to improve checkpoint performance?

Adjust checkpoint_timeout
Set checkpoint_completion_target
Monitor checkpoint timing

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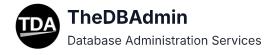
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