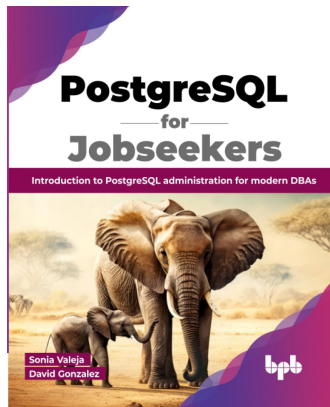# Database Administration
Lecture 07: Backup and Restore.

Valeja and Gonzales.

9 de marzo de 2025

Database Administration: Backup and Restore.

Content has been extracted from *PostgreSQL for Jobseekers (Chapter 7)*, by Sonia Valeja and David Gonzales, 2023. Visit https://bpbonline.com/products/postgresql-for-jobseekers.

Introduction

- ▶ Regular backups are crucial for database administration.
- ▶ Backups enable recovery from accidental changes.
- ▶ PostgreSQL provides multiple backup and restore tools.

Types of Backups

- **Physical Backup**: Copies entire data directory.
- **Logical Backup**: Exports data in human-readable format.

Physical Backup

- Uses filesystem-level copying.
- Steps:
    1. Create a checkpoint.
    2. Copy data directory (e.g., using `tar` or `rsync`).
    3. Stop backup process.
- Example tool: `pg_basebackup`.

Logical Backup

- Exports data in SQL format.
- Allows individual table or database backups.
- Example tools:
  - `pg_dump` for single database.
  - `pg_dumpall` for full cluster backup.

Restore Methods

- ▶ `psql`: Restores backups in plain SQL format.
- ▶ `pg_restore`: Restores backups from compressed/custom format.

Advanced Backup Tools

pgBackRest

- ▶ Supports full, incremental, and differential backups.
- ▶ Uses parallelism for faster operations.
- ▶ Supports cloud storage.

Barman

- Used for remote backups.
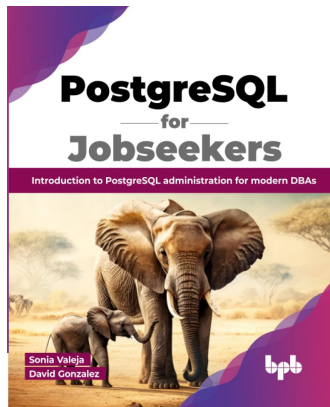- Provides incremental backup and deduplication.
- Maintains a backup catalog.

pg_probackup

- ▶ Provides incremental restore to save time.
- ▶ Supports backup merging and deduplication.
- ▶ Offers parallelism and remote operations.

Conclusion

- ▶ PostgreSQL supports both physical and logical backups.
- ▶ Several tools exist to manage and automate backups.
- ▶ Choosing the right backup strategy depends on the use case.

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