

Boldly Migrate to PostgreSQL with credativ-pg-migrator

Meet our new Open Source Migration Tool

Josef Machytka <josef.machytka@credativ.de>

2025-09-11 PostgreSQL NL User group MeetUp lightning talk

- Founded in 1999, Jülich, Germany
- Strong engagement in Open Source communities
- 40+ experts in Linux, databases, and infrastructure
- Consulting, development, training, and 24x7 support
- Specialists in Linux, Kubernetes, and Proxmox
- PostgreSQL and Open Source database solutions
- DevSecOps with Ansible, Puppet, Terraform, and more
- Independent (again), owner-managed since 2025



- Professional Service Consultant – PostgreSQL specialist at credativ GmbH
 - 30+ years experience with relational and NoSQL databases
 - PostgreSQL (13y), BigQuery (7y), Oracle (15y), MySQL (12y), Elasticsearch (5y), MS SQL (5y)
 - Data Ingestion pipelines, Data Analysis, Data Lake and Data Warehouse (10+ years)
 - Practical experience with LLMs/AI architectures and integration (2+ years)
 - Based in Berlin, originally from Czechia
-
- **LinkedIn:** linkedin.com/in/josef-machytka
 - **ResearchGate:** researchgate.net/profile/Josef-Machytka
 - **Academia.edu:** academia.edu/JosefMachytka
 - **Medium:** medium.com/@josef.machytka
 - **Sessionize:** sessionize.com/josefmachytka

Main Reasons for Migration

- Escalating licensing costs for proprietary databases
- Limited support and updates for legacy systems
- No roadmap for future development of some DBs
- Diminishing pool of skilled administrators
- Legacy DBs often require outdated hardware or OS



Images created by the author
using DeepDreamGenerator
and ChatGPT Dall-E AI tools

Different Migration Tools Exist

- Multiple migration tools are available
- Both open source and commercial solutions exist
- Some tools support Change Data Capture (CDC)
- CDC enables near-zero downtime migrations
- Others require planned downtime and offline migration
- Our tool supports offline migration



Open Source Migration Tools

- Numerous open source migration tools exist for PostgreSQL
- Some projects are no longer actively maintained or updated
- Open source tool development can be slow or sporadic
- Feature gaps and compatibility issues are common
- We created credativ-pg-migrator to rapidly address needs of our clients



Meet credativ-pg-migrator

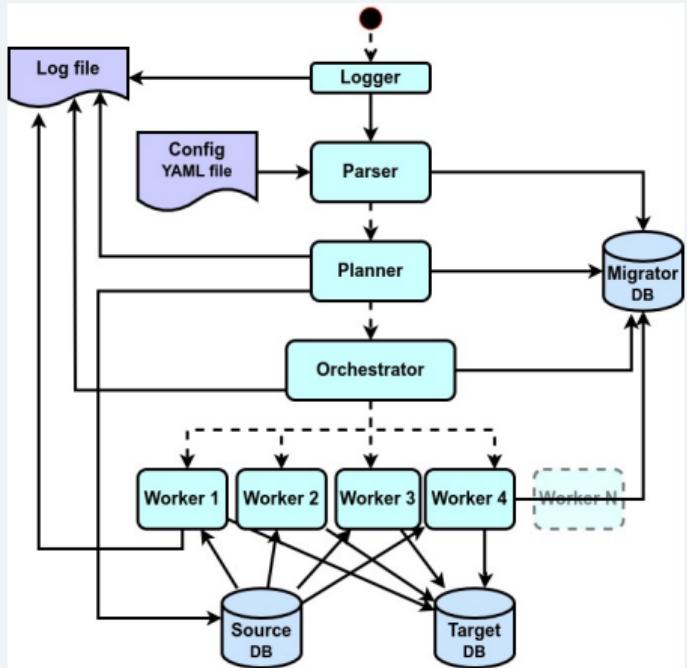


- Inspired by pgloader by Dimitri Fontaine
- Designed for offline migrations; speed is hardware-bound
- Implemented in Python due the best DB compatibility
- Supports JDBC, ODBC, and native Python DB drivers
- Dynamic, class-based architecture with pluggable connectors
- Configuration via YAML; logs output to text files
- Protocol tables track all migrated objects and statuses



credativ-pg-migrator - Architecture

- Modular design: Parser, Planner, Orchestrator, Workers
- Batch SELECT-INSERT is the default migration mode
- Parallelism: dedicated reader and writer per table
- Migration speed limited by hardware and source DB
- Legacy DBs may restrict parallel processing
- Informix: migrator supports import of UNL dump files
- Planned: dump file support for other databases



credativ-pg-migrator - Features



- Target database: always PostgreSQL
- Supports 8 major source databases
- Informix, Oracle, Sybase ASE, SQL Anywhere
- IBM DB2 LUW, MS SQL Server, MySQL/MariaDB
- PostgreSQL-to-PostgreSQL for special scenarios
- Migrates full data model: tables, indexes, constraints
- Transfers data in batches or via CSV files



credativ-pg-migrator - Customizations



- Configurable migration scope: schema, data, or both
- Fine-grained include/exclude: tables, views, functions, triggers
- Custom data type mapping (like NUMERIC PKs to BIGINT)
- Custom default value mapping (like SQL function names)
- Cross-database reference substitution (like db1@tab1)
- Data migration filters (like created_at >=, ID ranges)



- Converts Informix Functions, Procedures, and Triggers
- Code conversion success rate: 80–90%
- Most errors: missing tables or renamed objects/columns
- Minor manual adjustments may be required post-migration
- Version for Sybase ASE currently in development
- Code conversion for other DBs can be added on demand



Future plans for credativ-pg-migrator



- Ongoing: pre-migration analysis of source databases
- Automated detection of table partitioning and data volumes
- Configurable partitioning strategies for target tables
- Migration support for materialized views where applicable
- On-demand conversion of procedures, functions, triggers
- Extensible to additional source databases as needed



Open Source Version 0.9.1



GitHub repository - github.com/credativ/credativ-pg-migrator

Released under the GNU General Public License, version 3 (or any later version)

Available also on PyPi - pypi.org/project/credativ-pg-migrator/

I created this tool and many thanks to my colleague Michael Banck
for all the hard work with open sourcing & publishing it!

