

# Why You Should Migrate From Oracle to PostgreSQL

... and how to do it right



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## It's time to replace Oracle

Exorbitant support costs, sky-high licensing fees, vendor lock-in, and the inability to embrace new systems and opportunities. These are just a few reasons why many companies want to migrate from Oracle to open source databases like PostgreSQL.

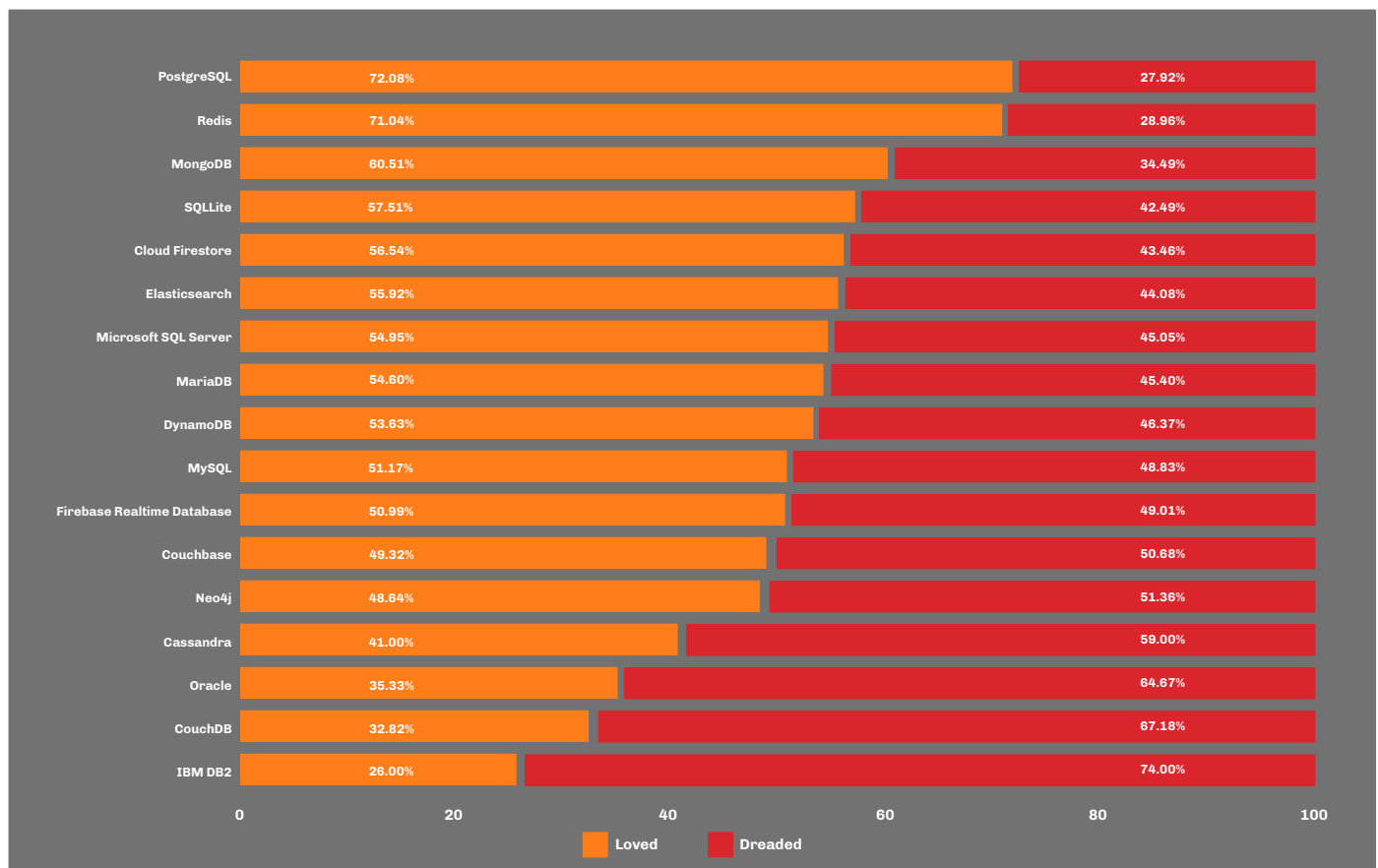
But while the benefits of moving to open source may be compelling — lower costs, more agility, greater control — the journey to freedom can seem a lot like an obstacle course fraught with risks. Will my company face downtime? Will I need to rewrite applications to be compatible with Postgres? Where do I go for help if something goes wrong during migration? How can I keep things running smoothly afterward?

In this eBook, we'll discuss why Postgres is such a powerful alternative to Oracle. We'll cover what it takes to successfully migrate from Oracle to Postgres, how to maximize it for the enterprise, and how to ensure your database environment stays optimized after migration even as you scale.

# Why Postgres is so popular

Postgres is the world's most advanced open source relational database. With over 23 years of active development, Postgres is known for its reliability, robust features, and performance.

Top technology ranking site DB-Engines has named Postgres the Database Management System of the Year three times in the past five years. In the [Stack Overflow 2022 Developer Survey](#), professional developers chose Postgres as the **most popular database**, and the majority of all respondents chose it as most loved and wanted.



# Here is why Postgres continues to grow

## 1 Reduces costs

For many companies, the number one reason they choose to migrate from Oracle to Postgres is cost. With enterprises always on the lookout for ways to reduce costs, eliminating millions of dollars in unnecessary spending on databases is a big win.

*Just how much money are companies spending on Oracle instead of using it for things like staffing and development? A lot.*

Oracle Standard Edition, for example, costs \$17,500 USD per processor. This means that for a production database with eight processors, the overall cost would be \$140,000 USD per year. Add one standby and it will cost you \$280,000 USD per year, plus a yearly support fee of \$3,850 USD.

That's without enterprise features.

In that case, you need Oracle Enterprise Edition at the steep price of \$47,500 USD per processor. A single Oracle database with a standby with eight processors would cost \$760,000 USD per year. For multiple non-production databases that run the same software used in production, licensing fees go even higher, coming in at about a million per year, plus support, which would cost an additional \$10,450 annually.

Unlike Oracle, Postgres comes with zero licensing fees. It also offers a liberal license, giving users the ability to copy, modify, and distribute code freely. In addition, migrating to Postgres is generally less than half the cost of yearly Oracle database license fees.

For example, an Oracle database with 200 tables and minimal business logic may cost around \$100,000 USD to migrate. Even if you add a few complicated stored procedures and packages, the price would still be lower than paying Oracle licensing fees, as the only cost involved would be for an expert to convert the code to Postgres. And because you can quite accurately estimate migration costs based on a thorough pre-migration assessment, you don't have to worry about hidden costs.

## 2 Breaks vendor lock-in

The desire to break free from vendor lock-in is a runner-up to cost in the list of reasons why companies want to move to open source databases like Postgres. Whereas proprietary software requires users to accept their terms and conditions of use, Postgres is unrestricted. It allows companies to choose whatever vendor they like and to switch to a different vendor if they want to without disrupting their software in any way.

This total flexibility in use derives from the community-driven foundation of Postgres. No single vendor owns the software, controls the code, or can ever modify the license. In fact, the PostgreSQL Global Development Group explicitly states on their website that they are "committed to making Postgres available as free and open source software in perpetuity."

### **3** **Increases flexibility**

Postgres frees you from the Oracle ecosystem, allowing you to use the systems of your choice. It's portable, giving you the option to deploy it anywhere and move it at any time. It's highly extensible, supporting different data types and sources (including Oracle), as well as various programming languages, indexing methods, and non-relational workloads. And it offers a strong procedural language and a wide range of special functions, making it easy to expand to fit any environment or need.

### **4** **Handles heavy workloads**

The amount of data enterprises must process continues to grow exponentially. Fortunately, Postgres can scale to support heavy workloads through capabilities like efficient handling of concurrent connections, query parallelism, and logical replication. Through the use of thousands of tools, extensions, connectors, and community-contributed add-ons, Postgres is a popular choice for companies looking to support their most demanding workloads while escaping the costs and restrictions of Oracle.

### **5** **Delivers faster, better innovation**

Postgres is completely community driven. Postgres enthusiasts are spread all over the world, coming from various backgrounds with a passion for the open source project. This gives the community the kind of diversity not seen anywhere else, triggering rapid innovation. As a collaborative group of volunteers, the community values honesty, transparency, and trust for the sake of all members and users.

Whereas commercial companies are driven by product roadmaps and maximizing shareholder profits, the goal of the Postgres community is to maximize quality. Innovation is highly valued and happens quickly, as different groups can simultaneously work on different projects, developing features for things like availability, performance, and scalability along multiple paths. This freedom, along with the diversity and dedication of the Postgres community, enables an environment where excellence and innovation can flourish.

### **6** **Meets security standards**

Database security is evaluated within the Authentication, Authorization, and Accounting (AAA) framework. To meet this standard, a database needs comprehensive features for authenticating users, for authorizing what they can do with the database, and for auditing (accounting for) what they did while using it. Postgres is a highly secure database that provides robust AAA capabilities, such as authentication based on users and roles and encryption at multiple levels, from passwords to specific data columns to file systems, along with a comprehensive audit logging system.

# Ease migration from Oracle to Postgres

According to Gartner, one of the biggest mistakes companies make with respect to data migration is underestimating how difficult and time consuming it is. Many don't develop a thorough plan and instead struggle through the process, leading to undesirable results.

Exacerbating this lack of planning is a dearth of internal technical skills and an unclear understanding of business requirements and project scope. Then there are other considerations, such as dealing with unpredictable downtime, preventing data loss, handling syntax and programming language differences, and mapping different data types.

A successful, cost-effective migration demands a solid strategy and deep expertise to assure that you can move your critical workloads to Postgres with minimal disruption and surprises. Developing a strong migration strategy requires assessing your existing Oracle environment to identify whether the target platform is appropriate and to analyze the level of complexity and potential obstacles. More specifically it involves:

- **Identifying changes that must be made to your applications.** It's important to understand the complexities of your applications before migrating them. Knowing whether or how you need to change your applications helps ensure portability to Postgres. It's also important to estimate the time it may take to convert the embedded Oracle standard SQL code to Postgres syntax.
- **Identifying incompatible features.** Incompatibilities can create the need for application rewrites, which increases development time. Addressing incompatibilities in advance allows you to identify, apply, and document patches to existing Postgres extensions so you can avoid delays.
- **Listing objects and application code to be converted.** Listing your database schema(s) for complex objects and application code enables you to rank their complexity and convert them ahead of time.
- **Determining whether new Postgres extensions are needed.** Discovering whether your database has unique features for which there's no compatible solution in Postgres gives you the chance to write and document new extensions prior to the migration.
- **Documenting your findings.** Completing the assessment allows you to document your database schema in detail so you can create a proposed Postgres setup as a guide to a smooth migration.

Before you begin your migration, you'll also need to consider how you'll handle certain tasks during the move, including:

- **enabling parallel development** of applications while the database schema is being migrated from Oracle to Postgres.
- **providing workarounds or designs for complex applications** to your application teams, who may be unfamiliar with Postgres.
- **tuning your system during testing** to resolve any performance degradations.
- **setting up a Postgres production cluster** using the best open source tools to ensure high availability and a good backup strategy.
- **doing multiple dry runs of your implementation strategy** to improve the success of production migration.
- **quickly resolving unforeseen issues** that occur during cutover to production

## Post-migration support

Migrating your Oracle databases to Postgres is a big undertaking that results in enormous cost, performance, and competitive benefits. After your migration is done, you'll need to ensure that your Postgres environment, wherever it is – in the cloud, in a managed Database as a Service (DBaaS), in a hybrid situation, or on-premises – stays agile, available, and highly performant as it grows.

Consider finding a vendor who can provide a comprehensive and cost-effective plan to support you post-migration. You'll need someone who can be available around the clock to help you ensure uptime, efficiently restore service, implement performance improvements, and navigate the complexity of modern deployments using industry best practices. They should be experts when it comes to tuning your complex Postgres database environment for scaling and performance.

## Is Postgres really enterprise-ready?

Even with all the obvious advantages of Postgres, you still may be wondering whether, as a truly open source database, it's ready for the enterprise. Can it replicate the applications you use and meet the performance requirements of your most critical workloads?

The answer is yes, but with one caveat: The community has built many extensions and add-ons to help make Postgres fully enterprise ready, but these often overlap or provide similar functionality, which can lead to confusion and incompatibility when combining tools. It can be challenging to make the best choice and feel sure that the tool or component you choose will integrate well within your existing environment.

To guarantee your tools, add-ons, and extensions are interoperable, easy to deploy, and certified, and to ensure that your applications can be emulated on Postgres, consider getting support from a trusted vendor who offers a Postgres distribution. Here's where Percona can help.



# Percona Distribution for PostgreSQL

[Percona Distribution for PostgreSQL](#) provides the best and most critical enterprise components from the open source community, in a single distribution, designed and tested to work together to help companies improve application reliability, enhance data security and compliance, increase reliability and scalability, improve efficiency, increase flexibility, and reduce complexity.

Plus, it's completely backed by Percona's world-class support and engineering teams and 24x7 support. With Percona Distribution for PostgreSQL, you get an easy yet powerful way to implement an enterprise-grade, fully open source Postgres environment wherever you need it, in the cloud, on-premises, or in a hybrid model.

Percona Distribution for PostgreSQL includes a Postgres alternative for all major Oracle features, including those shown below.

Oracle Feature	Included Postgres Alternative
Advanced Replication	Streaming Replication for High Availability
Oracle Data Guard / Active Data Guard	Replica/Standby in Postgres is also read-only, enabling possibilities for load balancing. Deploying Patroni-like open source tools offers seamless automatic failover.
Online maintenance of objects (OTR)	Postgres supports ONLINE Index rebuilds and Online table maintenance using pg_repack.
Materialized Views	Postgres supports Materialized views and ONLINE refresh of Materialized views.
Parallel Query	Postgres supports parallel query since version 9.6. The latest Postgres version is 14.
Parallel full backups using RMAN for physical backup/restore/recovery and expdp/impdp for logical backup and restore.	Postgres supports pg_dump and pg_restore for parallel logical backup/restore. It also includes pg_basebackup for online physical backups/restore/recovery. pgBackRest, a robust open source tool can be used to enable parallelism and support backups/restore to/from the cloud.
Partitioning	Postgres supports native partitioning with no additional license.
Diagnostic Stack	Postgres offers rich views for looking into a lot of statistics. Log analyzers like pgBadger and extensions like pg_stat_statements give much deeper visibility that is more advanced. <a href="#">Learn more about Percona Distribution for PostgreSQL</a>

# Migrate with confidence

Percona is the leader in open source databases and an expert in Postgres technology. Percona partner MigOps is an expert in migrating Oracle databases. Together, they help you capture all the benefits of Postgres and offer support through every step of your migration from Oracle, from pre-migration assessment and migration assistance by MigOps to 24/7 assistance after the migration from Percona. Percona and MigOps combined deliver an enterprise-ready Postgres distribution, enable a smooth migration from Oracle, and ensure that your database environment remains optimized into the future.

To learn more about how Percona can help you migrate from Oracle to Postgres, please contact us at +1-888-316-9775 (U.S.), +44 203 608 6727 (Europe), or [connect with us online](#).

## **ABOUT PERCONA**

Databases run better with Percona. Percona is the only company that delivers enterprise-class products, support, and services for a range of open source databases – including MySQL®, MariaDB®, MongoDB®, and PostgreSQL – across traditional deployments, cloud-based platforms, and hybrid IT environments. The company is committed to supporting open source as an approach to software licensing, development, and deployment – its database management tools are used by millions of application developers, database administrators, and IT professionals worldwide.

Percona equips businesses with the freedom to choose, the freedom to create, and the freedom to make a difference – helping them scale with speed as they grow. The company supports global brands such as PayPal, Vimeo, RockStar Games, Duolingo, Fiserv, Slack, Cisco Systems, and Rent the Runway, as well as smaller enterprises looking to maximize application performance while streamlining database efficiencies. For more information, visit [percona.com](https://percona.com)

## **ABOUT MIGOPS**

The experts at MigOps have decades of experience in performing migration of complex applications and databases, including the integration of Microsoft Dynamics 365. With expertise on multiple database and application technologies, MigOps is a one-stop-shop for enabling digital transformation.

MigOps believes in Open Source database freedom. Our experts have contributed to the Open Source ecosystem of PostgreSQL to provide solutions that eliminate additional license costs and vendor lock-in while migrating to PostgreSQL. In addition to PostgreSQL, our experts have working experience ranging between 5 to 15 years in deploying critical applications on Oracle, SQL Server, DB2, and many more commercial database technologies. Our expertise in PostgreSQL combined with our experience with commercial databases enables us to talk to you using the terminologies you understand well. For more information, visit [migops.com](https://migops.com).

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