

# Using open-source databases to get more from your Oracle data

Use SharePlex® by Quest® to get more out of your Oracle data by replicating to MySQL and PostgreSQL.

By John Pocknell, Sr. Market Strategist, Quest Software

Database developers and database administrators (DBAs) have been using open-source databases such as MySQL and PostgreSQL for many years. The platforms are mature, they offer flexibility with low license costs and they have a huge community following. Plus, they help you reduce your dependence on commercial databases such as Oracle Database.

What's getting in the way of your using them more?

You've already invested so much and gotten so dependent on your Oracle databases that you're reluctant to migrate to an open-source database. You might think that you'll have to continue relegating open-source databases to corner cases like new app development and internal projects. But in fact, there are several other ways of using them to your business advantage.

This technical brief explores ways to use SharePlex® by Quest® to replicate your Oracle data to open-source databases. Data analysts and DBAs will see how SharePlex replicates data from Oracle in nearly real time to platforms like MySQL and PostgreSQL. The replication technology in SharePlex opens up your options for enjoying the maturity, flexibility and low cost of open source in your IT landscape.

## Trend: Open-source databases take hold

As their scalability, security and management tools have matured in recent years, open-source databases have become more appealing to the enterprise. Add to that the numerous cloud-based versions available and it's easy to see how their popularity continues to grow.

The data shown in Figure 1 and Figure 2 make clear the trend toward open-source database management systems such as MySQL and PostgreSQL:

DBMS	Database Model	Score Nov 2021
Oracle +	Relational, Multi-model ⓘ	1272.73
MySQL +	Relational, Multi-model ⓘ	1211.52
Microsoft SQL Server +	Relational, Multi-model ⓘ	954.29
PostgreSQL + 🗨️	Relational, Multi-model ⓘ	597.27
MongoDB +	Document, Multi-model ⓘ	487.35
Redis +	Key-value, Multi-model ⓘ	171.50
IBM Db2	Relational, Multi-model ⓘ	167.52
Elasticsearch	Search engine, Multi-model ⓘ	159.09
SQLite +	Relational	129.80
Cassandra +	Wide column	120.88

Figure 1: DB-Engines ranking of DBMSes according to popularity<sup>1</sup>

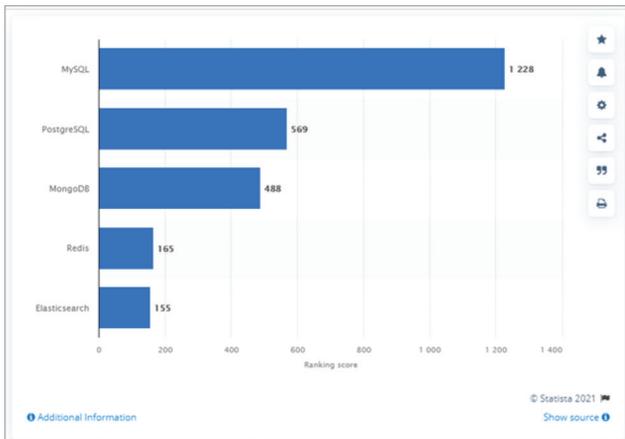


Figure 2: Open-source database management systems worldwide according to popularity<sup>2</sup>

What is behind this trend? Percona recently surveyed 693 companies on the benefits of using open source. They found that 81 percent of respondents cited cost savings, 65 percent wanted to avoid vendor lock-in and 47 percent liked the ease of use.<sup>3</sup>

It's not so much that companies are replacing Oracle with open-source databases. Rather, they are diversifying their database and IT landscapes to suit different workloads and applications, and combining their Oracle database with open-source databases. They are trying to achieve multiple goals at the same time:

- Keep Oracle for their mission-critical systems
- Adopt cloud services to lower their data center costs and allow them greater flexibility
- Derive more value from the data they store in Oracle by analyzing it in cloud platforms with better data warehousing and business intelligence (BI) applications
- Lower their database licensing and maintenance costs by using alternatives to Oracle such as MySQL and PostgreSQL
- Free up their customer-facing Oracle production systems from resource-intensive, back-office workloads like reporting and BI

You might think that those goals are irreconcilable and that any approach to meeting all of them would be prohibitively expensive and maintenance-intensive. But hybrid infrastructure, with open-source databases running in the cloud, is ideally suited to the scenario.

An effective database replication technology enables and maintains the hybrid infrastructure by:

- Synchronizing data between Oracle and open-source databases
- Interoperating between on-premises and cloud platforms
- Replicating in nearly real time so that source and target databases remain continuously up to date
- Maintaining high transactional throughput without affecting database performance

That's where SharePlex comes in.

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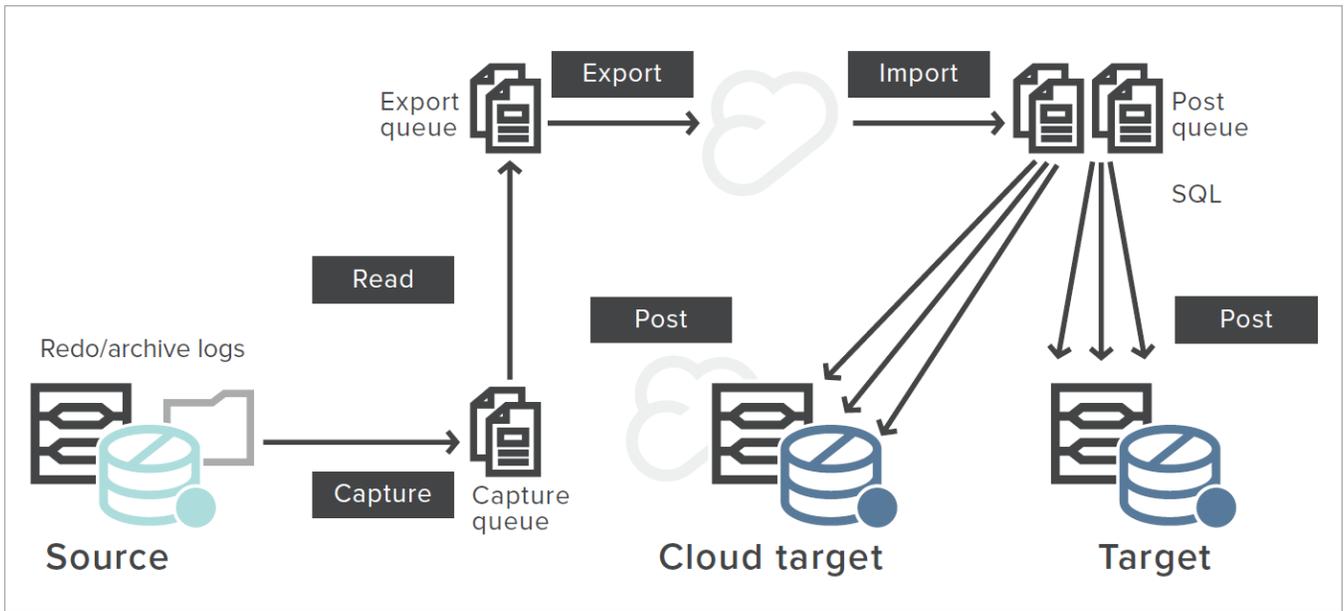


Figure 3: Typical SharePlex architecture

### Using SharePlex to replicate to open-source databases

SharePlex offers reliable data replication in nearly real time between Oracle databases and MySQL/PostgreSQL.

As shown in Figure 3, SharePlex works by capturing changes to the selected objects from the Oracle redo or archive log files in the source database. Using a dependable, high-speed network protocol, it continuously transfers the data changes to remote systems via TCP/IP over local and wide-area networks. It then applies the changes to the target database using standard SQL.

SharePlex is platform-agnostic, so the source and target servers can run different operating systems or Oracle versions. Supported replication targets include Oracle, SQL Server, Azure SQL Database, MySQL and PostgreSQL. SharePlex supports multiple operating system and hardware platforms including AIX, CentOS, Exadata, HP-UX, Linux, Oracle Solaris and Microsoft Windows.

SharePlex replicates Oracle data to platforms such as Azure Database and Azure VM (see Figure 4), and to Amazon Aurora, AWS RDS and AWS EC2 (see Figure 5). It allows you to shift reporting and BI loads from production systems to systems with lower licensing costs while maintaining nearly real-time replicas.



Figure 4: Hybrid cloud – Oracle data replication to MySQL and PostgreSQL targets in Azure



Figure 5: Hybrid cloud – Oracle data replication to MySQL and PostgreSQL targets in AWS

## Using SharePlex replication for reporting and analytics

Big data often brings big overhead with it. The queries that your data analysts run against your production database generate I/O contention, slowing transactions and taking cycles away from paying customers. The best way to allow access to data from your production database without affecting database performance is to replicate it to another server and run reporting and analytics there.

SharePlex replication saves you the cost of purchasing and maintaining expensive Oracle licenses merely for reporting and analytics. It allows you to separate online transaction processing from database reporting by offloading the latter to an open-source database that continuously reflects activity on the Oracle production system. SharePlex can also replicate Oracle data to a PostgreSQL data warehouse so that business users and data scientists can analyze and report on accurate, real-time data without generating I/O contention.

## SharePlex scenarios

Here are some typical scenarios in which SharePlex customers have combined Oracle Database with open-source databases and cloud-based services:

- An industrial company creates new mobile or API-based software applications on PostgreSQL databases that require real-time data from the legacy Oracle system.

- A retailer looking to avoid vendor lock-in chooses to replace an internal, read-only reporting instance of Oracle with PostgreSQL.
- A financial services firm replicates market data from Oracle Database to MySQL in the cloud and sells it to financial institutions through Open API.
- For its content-driven website, a sports publisher synchronizes play-by-play data from an Oracle instance into Amazon RDS for MySQL.

In all cases, real-time data replication from Oracle Database to MySQL/PostgreSQL ensures that the reporting instance is always up to date.

SharePlex replication supports other common use cases:

- Centralized reporting – Instead of having users log on to already-taxed production systems to run queries, reports and analytics, you can replicate the data to a central MySQL or PostgreSQL database. This offloads query processing, accelerates data access and enables users to access the data they need through local queries. (See Figure 6.)

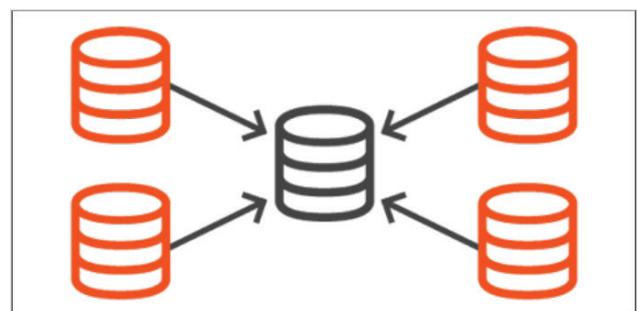


Figure 6: Centralized reporting/consolidation

- Data distribution – Increase flexibility by replicating some tables to a single target location and other tables and sequences to other target systems. As depicted in Figure 7, the scalable approach supports target systems in different locations.

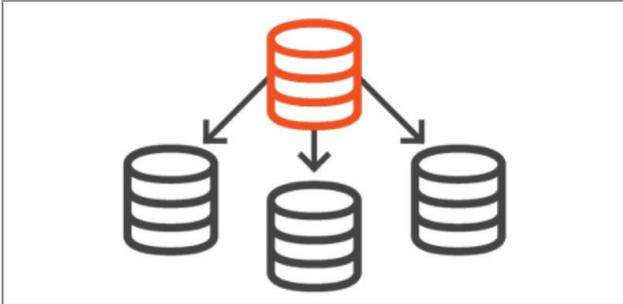


Figure 7: Data distribution/Distributed processing

- Cascading – Use data replication to distribute departments across multiple systems, improving online transaction processing and reporting. The approach, shown in Figure 8, also supports multiple systems updating the same tables. If SharePlex detects a conflict, it invokes a user-defined conflict resolution routine.

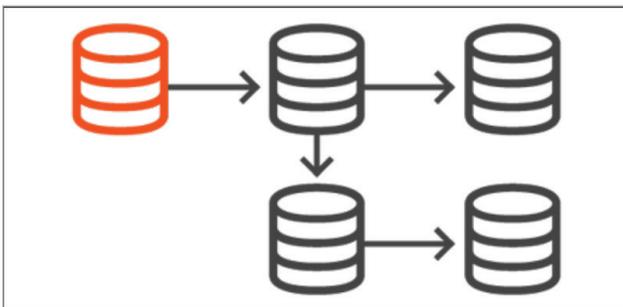


Figure 8: Cascading using intermediary systems

## Conclusion

Many companies want to reduce the amount of money they spend on their Oracle licenses, but few are inclined to wean themselves off Oracle completely. A sound compromise is to adopt alternative databases (including open-source platforms like MySQL and PostgreSQL) for new projects and plan for coexistence with the existing Oracle installation. A common use case is to offload reporting and analytics from Oracle production databases to MySQL and PostgreSQL.

SharePlex offers the nearly real-time replication needed to combine Oracle with open-source databases. With no impact on business-critical applications, it synchronizes transactional data from Oracle databases to MySQL and PostgreSQL in a hybrid cloud environment while keeping the destination databases highly available.

## About the author

John Pocknell is a senior market strategist at Quest Software and a member of the product marketing team. Based in the European headquarters in the U.K., John is responsible for synthesizing analyst data and customer interviews. He creates and evangelizes solutions-based stories and messaging related to major IT initiatives worldwide for Quest's portfolio of database products. He has been with Quest Software since 2000, working on products for database design, development and deployment, and he has spent over 10 years as product manager for Toad. John regularly evangelizes Quest's database solutions at conferences and user groups around the world and through blog posts and technical papers.

1 "DB-Engines Ranking," DB-Engines, November 2021, <https://db-engines.com/en/ranking>

2 "Ranking of the most popular open-source database management systems (DBMS) worldwide," Statista, June 2021, <https://www.statista.com/statistics/1131602/worldwide-popularity-ranking-database-management-systems-open-source/>

3 "2020 Open Source Data Management Software Survey," Percona, 2020, <https://www.percona.com/open-source-data-management-software-survey>

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