Zero impact database migration

How to avoid the most common pitfalls of migrating from Oracle to SQL Server.

ABSTRACT

Migrating data from one platform to another requires a lot of planning. Some traditional migration methods are easy to use, but they only work for migrations on the same platform. Quest® SharePlex® can replicate data across platforms, from Oracle to SQL Server, with next to no downtime, offering a flexible, low-cost alternative.

The SharePlex architecture is composed of a series of queues and processes running on the database servers that move data rapidly from the source database to the target database, without using Oracle's processes or memory structures. This architecture facilitates the fault tolerance capability in SharePlex, which avoids data loss if there is a break in the replication stream.

Businesses can count on high availability, migrate data with zero organizational risk and integrate data in near real-time for reporting and insights.

INTRODUCTION

Most database migrations have many moving parts — lots of different teams, systems and individual users. Beware of these common pitfalls:

- Poor planning
- Underestimating user and business impact
- Inconsistent or lack of a migration strategy
- Inadequate data protection
- Failure to focus on management

Don't underestimate how much a database migration is going to impact your users and your business overall. Poor planning can have dramatic effects. Before launching a project, migration teams should consider which users will be affected. If the migration involves data for one application, perhaps it's only a small portion of the business. On the other hand, if the project is for a company's ERP system, the entire organization will likely be affected.

> Develop a strategy — not just from an IT perspective, but one that looks at all aspects of the business.

Collaborate with the teams involved to mitigate their direct business impacts and also consider how your entire computing environment might respond to the migration. Develop a strategy — not just from an IT perspective, but one that looks at all aspects of the business and has contingencies for supporting all users and teams.

Downtime is one of the most significant ways that users — and your business — can be affected during a database migration. Consider whether you need to set up a coexisting system to run in parallel while your main systems are down. Another huge pitfall is inadequate data protection. The last thing you want is corrupted or lost data. Be prepared with a plan for recovering your data in case something happens during the process.

Once your strategy is in place, keep managing the migration process at every stage. Check back in with users and teams to understand how they are being affected. Adjust your plan along the way as needed.

Regardless of the method or tools you use for a database migration project, strategizing before you begin is key.

TRADITIONAL MIGRATION METHODS

The following traditional migration methods can address some of these common pitfalls:

- Oracle's Export/Import or Data Pump
- Database upgrade wizards
- Manual scripts or transportable tablespaces
- Cold copy
- Mirror, RMAN and Data Guard

However, all of these methods require some amount of system downtime, which inherently increases risk. Data loss is likely. And these methods only work for migrations on the same platform. What if you want to migrate data from Oracle to SQL Server?

SHAREPLEX: AN ALTERNATIVE MIGRATION METHOD

SharePlex increases scalability, maximizes availability and provides near real-time data integration during Oracle to SQL Server migrations. This simple-to-use solution ensures business continuity while meeting an organization's database operational goals. And this highly reliable, high-performance and low-impact technology offers a low-cost alternative to other replication tools.

Perhaps the biggest plus is that SharePlex dramatically reduces downtime during an Oracle to SQL Server migration. In fact, the only downtime is in moving users onto the new platform. In addition, using SharePlex returns control of the maintenance schedule to IT professionals by no longer requiring migration projects to adhere to technology runtimes.

SharePlex helps organizations achieve cost-effective scalability by isolating and removing the operational reporting and data warehousing loads from an Oracle production instance to a near real-time SQL Server copy of the data. The near real-time copy of production data used to offload reporting and analysis allows improved performance of online transaction processing (OLTP) production source. SharePlex also supports more economical storage because it can replicate to a lower-cost database such as SQL Server where analytics can be processed on a separate SQL Server instance. Business intelligence and analytics projects can continue uninterrupted with near real-time data integration.

In addition, SharePlex addresses the following business use cases:

- Real-time reporting on SQL Server from an Oracle production database — analyzing all or a subset of data by tables or even as granular as by row or column
- Migration of an Oracle database to SQL Server on the same or heterogeneous platforms

- Distribution of data from an Oracle source to multiple SQL Server targets, where each SQL Server target can have all or different subsets of data
- Data consolidation of multiple Oracle databases (all or a subset of data) to a single SQL Server database
- Replication from an Oracle instance on-premises to a SQL Server instance in the cloud: AWS RDS, AWS EC2, Azure Marketplace or SQL Server — for database services only, all SharePlex processes would run on the Oracle database server

Plus, SharePlex requires the lowest capital (CapEx) and operational (OpEx) expenditures of all industry-leading migration solutions.

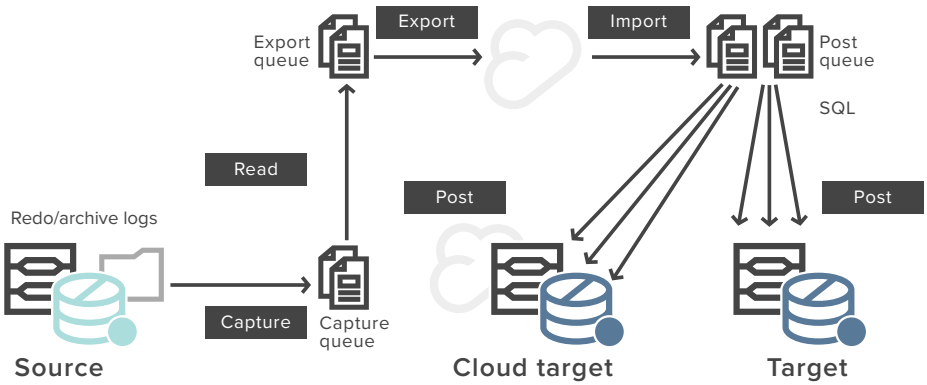
SHAREPLEX ARCHITECTURE

The SharePlex architecture is composed of a series of queues and processes running on the database servers that move data rapidly from the source database to the target database, without using Oracle's processes or memory structures. This architecture facilitates the fault tolerance capability in SharePlex, which avoids data loss if there is a break in the replication stream. For example, if the network goes down, transactions will queue in the SharePlex export queue on the Oracle server until the network issue is resolved. Once the network is re-established, SharePlex automatically begins passing the queued transaction over to the target server to be applied to the target database. Thus, no data is lost while the network is down, and no manual intervention is necessary to re-establish synchronous data. The same is true if the target database were to go down or if SharePlex were to be stopped on the source server while users were still applying transactions to the source database — no data is lost and users experience no downtime on the Oracle database side.

This architecture also enables replicated data to be seen more quickly on the target — in other words, lower latency. The "optimistic commit" in SharePlex means that operations of a transaction will be passed to the target database without waiting for a commit. Thus, the potential delay in the target database's data availability is minimized because only the commit needs to be seen on the target for access to the replicated data.

This type of architecture is quite different from that found in native tools. Because SharePlex does not use Oracle's processes and memory structures to replicate data, there is minimal overhead on the database and on the servers — just 1 percent to 3 percent CPU.

The SharePlex architecture enables replicated data to be seen more quickly on the target.



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Activating the config files starts the queues and process on both the source and target database servers.

SharePlex migration steps from Oracle to SQL Server

1. Install the SharePlex binaries on the source and target database servers.
2. Create the SharePlex database user and the config file that identifies all the tables to be replicated. Activating the config files starts the queues and process on both the source and target database servers with no need for manual configuration.
3. Because the post-process is stopped on the target server, transactions begin queuing up on disk in the post-queue on the SQL Server target.
4. On an intermediate Oracle server, apply a backup from the Oracle production instance generated from a specific SCN or log number, depending on the method of creating the backup (Data Pump, BCV, RMAN, etc.).
5. The Oracle data on the intermediate server can then be moved to the SQL Server instance either using native SQL Server tools or SharePlex. The latter can be accomplished by replicating DDL and data to the target SQL Server database.
6. The SharePlex reconcile command on the post queue deletes the transactions that were already applied by the backup, thus only the new transactions will be applied to the target SQL Server database to synchronize the target data with that of the source. All of these steps are accomplished while users continue to work on the production Oracle database — thus, no downtime.
7. Users can then be moved from the Oracle database to the new SQL Server instance.

Key benefits of using SharePlex to migrate from Oracle to SQL Server

Business intelligence support	Integrates directly into SQL Server environments to support your business intelligence initiatives
Impact-free migrations	Enable modernization of IT environments with nearly zero down-time during migrations
User-defined data delivery	Facilitates delivery of Oracle data to SQL Server databases for complete platform migrations, archiving, analytics, data distribution, distributed processing and centralized reporting
SharePlex Manager	Provides a GUI dashboard to easily monitor your SharePlex environment
Superior total cost of ownership	Reduces CapEx with a complete, low-cost solution that includes all the necessary tools for migrations, reporting, data warehousing and application integration without requiring any add-ons Reduces OpEx with a highly coupled solution that provides unrivaled operational and administrative efficiency
World-class support	Provides rapid answers to questions and invaluable guidance from industry experts, consistently earning excellent approval ratings from more than 94 percent of customers; available 24x7 through multiple, localized — not outsourced — support centers
Services	Offers implementation, configuration and migration services from a highly qualified and experienced team with a significant track record of customer satisfaction and success
Superior development	Delivers new features to the marketplace when they're needed, even outside of release cycles

Beyond Oracle to SQL Server migration

In addition to performing data migrations, SharePlex enables you to offload reporting, archiving and data warehousing projects and keep replication going to maintain a near real-time SQL Server instance containing all of your data.

Data can come from multiple Oracle database sources, and SharePlex can pull just a portion or all of the source data and consolidate it in a central location. Data can also be distributed from a single Oracle instance to multiple SQL Server targets.

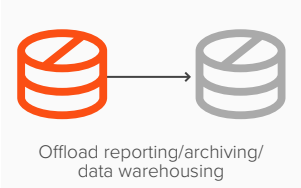
SharePlex empowers a real-time enterprise with 24-hour operations and dynamic business adaptability for Oracle-only environments. Easily ensure high availability, migrate data with zero organizational risk and integrate data in near real-time for reporting and insights.

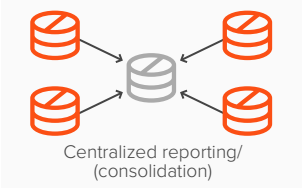
- **Availability** — high-availability disaster recovery; migrations, patches and upgrades; active-active load balancing
- **Scalability** — operational reporting and archiving, data distribution and distributed processing, cascading using intermediary systems
- **Integration** — data integration and data warehousing, change history and metadata repository, centralized reporting and consolidation

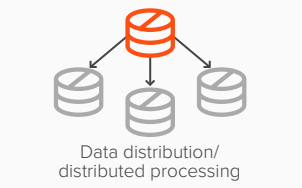
To learn more about the capabilities of SharePlex, visit https://www.quest.com/products/shareplex.

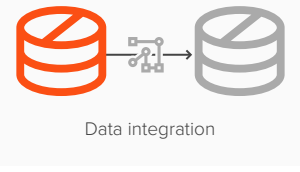
Try SharePlex in your own environment with a 30-day free trial: https://www.quest.com/register/55461.

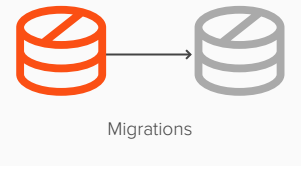
SharePlex supports Oracle database replication to the following platforms:
SAP
SQL Server
SAP HANA
Oracle
Postgres
Teradata


Offload reporting/archiving/ data warehousing


Centralized reporting/ (consolidation)


Data distribution/ distributed processing


Data integration


Migrations

ABOUT QUEST

Quest helps our customers reduce tedious administration tasks so they can focus on the innovation necessary for their businesses to grow. Quest® solutions are scalable, affordable and simple-to-use, and they deliver unmatched efficiency and productivity. Combined with Quest's invitation to the global community to be a part of its innovation, as well as our firm commitment to ensuring customer satisfaction, Quest will continue to accelerate the delivery of the most comprehensive solutions for Azure cloud management, SaaS, security, workforce mobility and data-driven insight.