

The White Papers

Creating an Accurate Reporting Instance to Offload Reporting

By Melanie Kacerek

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Creating an Accurate Reporting Instance to Offload Reporting

By Melanie Kacerek, Director of Oracle Product Management, Quest Software

Database I/O contention is one of the most common problems in today's application environments. You know you have it when:

- You dread the complaints from the user community when you start running a report against their data during the day
- You try to postpone running reports just to avoid negative performance on your production system
- You cringe as OLTP response times grow to unacceptable levels while running ad hoc queries

As organizations grow, system overhead grows with the increased number of users updating databases. To accommodate the increased memory, disk space, and CPU requirements, companies continue to purchase bigger and bigger systems.

Unfortunately, larger systems cannot always provide improved performance, because the company has conflicting processing needs. Users updating the database require quick inserts. Reports use large queries. These different work profiles do not mix well, since they work against each other's disk I/O and caching patterns. The end result is slow throughput for both when OLTP and report processing are on the same system.

This problem is easily identified on a system whose resources are already stressed. To maximize online productivity, most shops try to defer reports, running them during a shrinking batch window to avoid contention. But this impacts the productivity of the report consumer when the information is needed now.

Old data leads to inaccurate reports, which lead to uninformed decisions.

Another source of anxiety exists concerning the contention between OLTP and ad-hoc queries. These unscheduled queries can ruin online transaction performance when several queries are initiated at the same time. Ad-hoc queries cause spikes in performance, possibly piercing service level agreements (SLAs) that guarantee response rates.

A single Oracle instance attempting to be all things to all users ends up disappointing all expectations. If online transactions, reports, and occasional ad-hoc queries are all working against the same instance, each of those processes will be slow.

How do you run reports and ad-hoc queries against the most up to date data without affecting online productivity?

The solution: Split OLTP and report generation onto separate systems. Run reports against a separate Oracle instance which is constantly maintained to reflect the activity on the production system. Many businesses have already begun to implement this strategy, but so far, the drawbacks of many available solutions often outweigh the benefits.

You have many options, but most are unsatisfactory. For example, many solutions create a reporting instance with stale data, hours old. Others create a reporting instance that dramatically slows response time on the production instance due to the overhead of the replication technology implemented.

The SharePlex® Solution

While data replication is the answer, SharePlex® is the solution.

SharePlex for Oracle replicates selected tables and sequences to Oracle databases for reporting and disaster recovery. It begins by retrieving changes to the selected objects from the Oracle redo or archive log files. The captured changes are transferred in memory, or if needed, stored in queues outside the database.

Quest Software's **SharePlex® for Oracle** supports HP-UX, AIX, Sun Solaris, Compaq Tru64, Windows NT and Windows 2000 systems.

A dependable high-speed network protocol continuously transfers the data changes to remote systems via TCP/IP over a LAN or a WAN. At the destination database, SharePlex applies the changes using standard SQL.

Most important to the report offloading strategy, the target database is open and accessible, lending itself to query and reporting purposes. Because SharePlex provides high-speed replication, the reports run against the target data reflect up-to-date data.

Offloading these reporting and inquiry processes from the production system (source) to the destination system will improve performance on the production system, and it will reduce the time required to run reports because they will no longer be contending with online transactions.



SharePlex creates a fully accessible database for ad hoc querying and reporting to reduce contention and improve performance on your production system.

Minimal Overhead

As mentioned earlier, other data replication tools heavily tax the production instance, making users question whether the cure is any better than the initial problem. SharePlex focuses on replicating changes to the data without overloading the source production database. It does not use the Oracle database engine for the capture and propagation of the changes. Rather, it takes advantage of its own Oracle log reading and efficient queuing technologies to capture and transfer the data.

SharePlex provides fast, reliable, non-intrusive fault-tolerant Oracle data replication with minimal impact on production.

Minimal Latency

SharePlex minimizes the latency between the source and replica by capturing the modification as soon as it is written to the Oracle log. Even before the commit hits the redo logs, a transaction is replicated to the target where the transaction is completed upon receipt of the commit. If the transaction is cancelled, SharePlex replicates the rollback so that the target instance is an accurate representation of the source database.

Fast and Accurate

SharePlex does not rely on any of the Oracle middleware protocols (i.e. SQL*Net, Net8 or Oracle Net); instead, it uses a fast, streaming, asynchronous network protocol for high-speed transfer of large volumes of data – thousands of transactions for thousands of tables. However, speed is not at the cost of accuracy. SharePlex strictly adheres to the Oracle Read Consistency model, maintaining both operation order and session context all the way to the destination.

Quest Software has provided data replication tools for load balancing, high availability, and disaster recovery for over 10 years.

Only the Data that is Needed

When SharePlex is used for reporting, often only a subset of tables need to be replicated. By replicating only the tables required for reporting, SharePlex can reduce storage costs when compared to simply using a copy of the entire database.

SharePlex also offers horizontal and vertical partitioning. In horizontal partitioning, SharePlex will filter and replicate only rows, which meet pre-defined conditions. Vertical partitioning allows you to limit which columns are replicated. Using this strategy, the resources required to run replication would be even lower as well as increasing throughput. It also saves on storage costs since unnecessary columns and rows are not replicated.

A Complete Solution

SharePlex replication offers a degree of completeness not found in other replication tools. SharePlex supports replication of tables with long columns, tables with referential integrity enabled, tables without a primary key, index organized tables, user defined types, and sequences in the Oracle database. This functionality makes SharePlex the only software product to provide complete replication of objects for use with the Oracle Financials application suite. This degree of completeness allows Oracle Financials reports to be moved and run against the target instance — offloading the report processing from the production instance to the target instance.

Universal Accessibility with Flexible Replication Scenarios

One problem with centralized data is that the data is not easily accessible to remote users. SharePlex solves that problem too, allowing the Oracle instance to be replicated to any number of remote systems.

Rather than remote users logging onto the already taxed production system to perform their queries, the data can be replicated to the remote users who can then perform local queries to obtain the data they desire. By getting the data to the users who need it, SharePlex offloads the query processing and increases the speed with which remote users gain access to critical data.

SharePlex is flexible. Some tables could be replicated to a single target location, while other tables and sequences could be replicated to a list of target systems. SharePlex can support virtually an unlimited number of target systems, located in different cities, states, provinces, and countries.

SharePlex supports replicating some tables in one direction while replicating other tables in the opposite direction. With this replication scenario, a company could distribute departments onto different systems to improve online transactions to the different tables, and replicate each department's tables to a different system for reporting against those selected tables.

SharePlex also supports multiple systems updating the same tables. In this case, SharePlex invokes a user-defined conflict resolution routine when a conflict is detected.

SharePlex is a mature, time tested and industrial strength product with over 400 customers with over 1,000 databases in different replication scenarios. Replication architectures can be complex. SharePlex is the simplest replication technology to configure and manage available today.

Reliable Replication

SharePlex is dependable. Other replication tools for Oracle have a significant failure rate where the updates fail and the target needs to be completely restored and refreshed; but SharePlex is dependable, constantly replicating changes as they occur.

Bottom line: if you can't depend on the target's availability, you can't plan your offloading strategy. If you can't count on your target instance being accurate and viable, what value does it really offer?

Choose SharePlex to satisfy your need for a reporting instance to improve your system's performance.

Need a reporting instance? Data replication is the answer. SharePlex for Oracle is the Solution.

About the Author

Melanie Kacerek has worked with Quest's high availability solutions since 1992. Prior to that, Ms. Kacerek implemented retail management solutions, before the world used "ERP" to describe them. As the Director of Oracle Product Management at Quest Software, she is responsible for all Oracle solutions at Quest.