

Meeting Your Data-Sharing Needs Now that Oracle® Streams is Deprecated

Switch to SharePlex®

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ABSTRACT

Now that Oracle® has formally announced the deprecation of Oracle Streams, Oracle Database Advanced Replication, and Change Data Capture in Oracle Database 12c, what's the best alternative? Quest SharePlex.

This technical brief details why SharePlex® is the best and most comprehensive solution for all your future data-sharing needs.

INTRODUCTION

Oracle Streams is a data-movement technology that is packaged with the Oracle Enterprise Edition license. As an embedded technology, Streams adds significant value over manual information-sharing methods. However, it falls short in critical areas such as maximizing continuous performance and availability in production environments. Moreover, with Oracle's deprecation of Oracle Streams, the solution will have no future releases, enhancements or support. What's the best alternative for your organization?

You can install SharePlex on a source and a target database and configure it to replicate a single table in less than an hour.

WHAT YOU GAIN WITH SHAREPLEX

SharePlex is a market-leading solution for high-performance, high-integrity data replication. This advanced technology enables high-demand Oracle environments to achieve outcomes far beyond what the platform vendor can deliver. SharePlex goes beyond the basic capabilities of Streams in several critical areas:

Independence

SharePlex operates externally from the production database. Collection, management and transmission of the data to the target instance have minimal impact on the performance or availability of the production instance.

In contrast, Oracle Streams is embedded in the production database, which increases risk, including risk related to a single point of failure and exposure to an outage. In addition, it consumes in-database resources, competing with production transactions.

Reliability

SharePlex automatically manages and recovers from interruptions that may be caused by network or system outages. Oracle Streams, on the other hand, maintains queues within the database, which places a heavy dependence on the performance and availability of the production instance and the Oracle services that Streams shares with other transactions (SQL*Net). If the Listener drops, Streams stops. If the database becomes inaccessible, Streams is unable to release the contents of the queues, which results in a substantial increase in the latency between source and target systems.

Flexibility

SharePlex has no dependencies on the operating system, database version, or Oracle edition. It can run on Windows, Linux, Unix® and Exadata platforms, as well as Oracle Enterprise Edition, Oracle Standard Edition One, and Oracle Standard Edition databases, Oracle 9i, 10g, 11g and 12c versions. This allows you to independently upgrade your source and

target systems, thereby allowing you to use SharePlex to perform migrations and upgrades with minimal to zero risk.

Oracle Streams has dependencies on specific Oracle versions when it comes to interoperability, restricting its operation for upgrades.

Productivity

SharePlex is easy to install and configure — in fact, you can install SharePlex on a source and a target database and configure it to replicate a single table in less than an hour. Moreover, once implemented, SharePlex requires very little ongoing administration, and you can easily monitor and manage all aspects of your replication environment from a single web-based management console.

Low data latency

SharePlex extracts transaction data directly from the redo logs before the transaction has been committed. In other words, replication does not wait for the commit, which can significantly improve your recovery point objective (RPO). In addition, SharePlex transmits the data directly to the target server using TCP/IP, which minimizes data latency and results in near real-time data on the target.

In contrast, Oracle Streams begins moving data after the data has been committed, which causes delays that are compounded when batch inserts, updates and deletes occur. Plus, for the network transport, Oracle Streams uses SQL*Net, which is far slower than RPC.

Negligible performance overhead

SharePlex processes data using operating system resources, such as CPU and memory, that are independent of the Oracle database, thereby minimizing the impact on the database workload. Oracle Streams, however, spawns additional database processes and uses Oracle SQLNet for processing and transmitting data, which significantly impacts the database workload.

A DEEPER LOOK AT THE BENEFITS OF SHAREPLEX

Summary

Table 1 summarizes the key functionality you gain with SharePlex. Each feature is described in further detail below.

Feature	Supported in SharePlex?
Support for a wide variety of replication configurations	✓
Log-based capture and real-time data capture	✓
Transformations	✓
Conflict resolution	✓
Automated compare and synchronize	✓
Change data capture	✓
Flexible replication options	✓
Comprehensive data type support	✓
Support for multiple versions of Oracle	✓
Support for multiple platforms	✓
Replication between different hardware platforms and operating system versions	✓
Scalable architecture	✓
Replication between different Oracle versions	✓
Fault-tolerant design	✓
Java Message Service (JMS) support	✓
Replication of: <ul style="list-style-type: none"> • Regular tables • Partitioned tables • Sub-partitioned tables • Index organized tables • Replicate to and from any of the above types • Materialized view to regular table • Sequences 	✓
Data Definition Language (DDL) support	✓
Encryption: <ul style="list-style-type: none"> • Tables encrypted by Oracle Obfuscation Toolkit • Transparent Data Encryption (TDE) • Encrypted tablespaces 	✓
Support for Oracle compression	✓
Flexible repository data storage	✓
No-downtime features during maintenance	✓
Active live configuration changes	✓

Table 1. The key functionality you gain with SharePlex

SharePlex's real-time, log-based capture provides efficient access to both file-based and ASM-based redo logs.

Support for a wide variety of replication configurations

SharePlex supports all of the following replication configurations:

- One source to many targets (distribution)
- Many sources to a single target (consolidation)
- Bi-directional (master to master)
- Multi-tiered (cascading)

Multiple replication streams support multiple databases on the same machine.

Log-based capture

SharePlex's real-time, log-based capture provides efficient access to both file-based and ASM-based redo logs. SharePlex reads directly from the online redo logs and archive logs, and supports both RAC and non-RAC databases.

Transformations

SharePlex enables you to do data transformation before posting using Oracle stored procedures written in PL/SQL or Java.

Conflict resolution

Built-in conflict resolution handles the most common scenarios, including time stamp and trusted source.

It is also possible to create customized conflict resolution routines using Oracle stored procedures in PL/SQL or Java.

Automated compare, repair and synchronize

SharePlex's Compare and Repair utility compares the source and target tables quickly and efficiently, and can fix any out-of-sync issues on the fly without the need for any user intervention. Compare and Repair can be used on live tables. During the repair stage, SharePlex locks the table; when the repair is finished, it will automatically release the lock and resume the posting of data.

SharePlex also includes a Synchronize feature that allows a target table (or a group of target tables) to be automatically resynchronized via a logical database copy from the source to the target. Optionally, table data can be appended to existing target tables instead of truncating the target tables first. This feature can

be employed while tables are live and undergoing change, and it will not cause any downtime to the source system during the copy/append operation.

Scalable architecture

To ensure scalability, SharePlex offers:

- Multiple Post processes\
- Multiple Export/Import processes (network)
- Multiple capture and replication streams from same data source
- Built-in poster optimization that automatically boosts performance

Flexible replication options

With SharePlex, you can replicate to:

- A column with a different name
- A table with a different schema
- A different schema name

Moreover, you can replicate just a subset of the data, such as:

- A subset of the columns
- A subset of the rows

Comprehensive data type support

All Oracle data types are supported, with minor caveats for some data types, as detailed in the release notes.

Support for multiple versions of Oracle

SharePlex supports the following Oracle versions:

- Oracle 9i
- Oracle 10g
- Oracle 11g
- Oracle 12c

Support for multiple platforms

SharePlex also offers broad platform support:

- Linux x64 (see the release notes for specific Linux builds and versions)
- Oracle Solaris 9,10,11 (x64, Sparc)
- Windows® 2003, 2008 (x64)
- HP/UX (11i v2 and v3) (PA-RISC, Itanium)
- AIX 5.3, 6.1, 7.1
- Oracle Exadata x2,x3,x4

Replication between different hardware platforms and operating system versions

SharePlex can replicate data between any two platforms that SharePlex supports.

Change data capture

SharePlex offers built-in change data capture, which allows the replication of change data records instead of requiring the use of data manipulation language (DML) operations. Columns and metadata are configurable.

Replication between different SharePlex versions

SharePlex can usually replicate to one SharePlex major version lower and at least one SharePlex major version higher.

Fault-tolerant design

Fault tolerance is built into SharePlex. Here's how SharePlex handles common issues:

- **Network outage** — Data will queue up until network becomes available and then will automatically resume replication.
- **Server is down** — Upon reboot, SharePlex will start up all replication processes and continue where it left off.
- **Failed replication process** — Processes are automatically restarted.
- **Database down** — SharePlex will wait for database to come back up. If Oracle Transparent failover is set up, it can connect to an alternate database.

Cluster fail over support

Replication can be configured to failover to another node in a cluster if the node that is running SharePlex goes down. RAC Cluster Services is the most common clustering choice, but other clustering systems are supported as well.

Exadata support

Oracle Exadata provides a scalable, industry-standard infrastructure known for extreme performance for data warehousing and online transaction processing. SharePlex supports Exadata environments.

JMS support

SharePlex replicates DML records to a JMS for external processing. DML records are in XML format.

A wide range of replication sources and targets

SharePlex replicates to and from any of the following objects:

- Regular tables
- Partitioned tables
- Sub-partitioned tables
- Index organized tables

SharePlex can also replicate:

- From a materialized view to regular table
- Sequences

DDL support

SharePlex supports most DDL on logical objects; see the release notes for a complete list of supported DDL.

Different levels of DDL support can be configured.

Encryption

- Tables encrypted by Oracle Obfuscation Toolkit
- Transparent Data Encryption (TDE)
- Encrypted tablespaces

Support for compression

SharePlex supports all the following compression options:

- Tables in partitions stored in compressed tablespaces
- LOB data types stored in compressed tablespaces
- Tables with compressed columns
- Tables with LOBs stored in COMPRESS for OLTP tablespaces
- Direct Loads on tables with LOBs stored in compressed tablespaces
- Operations on tables with compressed columns
- Direct loads on tables with COMPRESS storage clause
- Tables with COMPRESS for OLTP
- Tables with COMPRESS for ALL

Flexible repository data storage

Most of the SharePlex data resides in the native operating file system. However,

SharePlex offers built-in change data capture.

You can start replication without any downtime on the source.

SharePlex does maintain a schema that has about a dozen tables. Tablespace assignments are part of the install.

SharePlex can be installed and its variable data stored on a local file system, SAN, NAS or NFS. Oracle's ACFS and DBFS ASM based file systems can also be used.

Little or no downtime on the source

SharePlex ensures little or no downtime on the source:

- You can start replication without any downtime on the source.
- A built-in Copy command allows a live table in replication to be copied, with no down time on the source.
- You can create a target database with no downtime on the source via export/import or through various physical copy methods, including the use of a standby database, physical RMAN copy or hardware mirroring technology.
- A built-in Compare/Repair utility can compare live tables on the source and target and optionally repair any out of syncs automatically, with no downtime on the source.
- Tables can be added to replication or removed from replication without affecting other tables in replication.
- A new target can be added to replication without downtime on the source.

Active live configuration changes

SharePlex supports the following active live configuration changes:

- An auto-add feature allows new tables to automatically be put into replication when they are created (provided they match the user-defined naming pattern).
- Tables can be added and dropped without affecting the existing replication.
- New targets (including new host name or new Oracle SID) can be added to an existing table without affecting the existing replication.

MIGRATING FROM ORACLE STREAMS TO SHAREPLEX

You can quickly and confidently migrate from Oracle Streams to SharePlex using the following proven method:

1. Install SharePlex on both the source and target systems as follows:
 - a. Install and configure SharePlex (ora_setup).
 - b. Start the SharePlex COP process (sp_cop) on both the source and target.
 - c. Create a SharePlex configuration on the source system.
(For one-way replication, use the SharePlex Streams Configuration utility to create a SharePlex configuration based on the existing Oracle Streams replication rules.)
2. Make any necessary adjustments to the SharePlex configuration file, such as adding named queues to increase posting performance.
3. On the target system and in sp_ctrl, issue the **stop post** command
4. On the source system and in sp_ctrl, activate the SharePlex configuration file by issuing the **activate config config_name noload** command. This will start replication for SharePlex. At this time, you will be replicating data with Streams and SharePlex concurrently.
5. Once SharePlex replication has been verified to be replicating data to the target system, go to the source and check for any long-running transactions.
6. Once no long-running transactions are found, stop the Oracle Streams apply processes on the target:
 - a. On the target, find the last-applied SCN from Oracle Streams replication.
 - b. Go into the SharePlex sp_ctrl process on the target and issue a reconcile command for each SharePlex post queue. Since the **reconcile** command always subtracts 1 from the SCN number provided as input, add 1 to the SCN and use the result in the reconcile command. For example, if the last Streams SCN posted was 10000, use the number 10001 in the reconcile command.
 - c. After the reconcile command completes for each queue, run the supplied SharePlex utility **sp_add_trigger.sql**, which disables

triggers on the target when it is the SharePlex user that is posting the data.

7. Disable any foreign key constraints with the delete cascade option.
8. Go to SharePlex sp_ctrl on the target system and issue the **start post** command.
9. Monitor SharePlex as time permits. If everything is running fine and there are no out-of-sync events, then it is safe to shut down the Oracle Streams processes — drop all of the Streams processes and queues. If any problem arises during the SharePlex cutover, revert back to Oracle Streams processing until the problem is resolved. SharePlex includes monitoring capabilities from email alerts, SNMP and GUI at no extra cost.

Also standard in SharePlex is the Compare and Repair utility, which can provide pre and post audit and verification of cutover from Streams to SharePlex.

CUSTOMER AND PRODUCT SUPPORT

Because data replication is typically used for high availability and critical application availability needs, uptime and turnaround time are important to you. And depending on the nuances of your environment, you may require a higher level of support to get answers quickly and reduce downtime.

SharePlex has consistently earned a 92 percent or higher customer-satisfaction rating in Quest's internal post-support surveys. Customer service is provided by highly skilled support engineers with years of SharePlex experience, so customer issues are often resolved during the first support call — saving you time. Please visit the support website to read customer testimonials and learn about Quest's 2014 Conformat ACE (Achievement in Customer Excellence) Award, which recognizes Quest's long-term commitment to providing unmatched customer service to its global customer base.

In short, we're committed to providing continued support and future releases of SharePlex. Our strategic direction, as always, is to deliver the best data replication technology on the market.

CONCLUSION

With Oracle's strategic direction to deprecate Streams in Oracle Database 12c, now is the perfect time to switch to SharePlex. Not only will you get a solution that is actively supported and enhanced, you will get more independence, better flexibility, reliability, performance and productivity — all in one affordable and comprehensive solution. Learn more about how SharePlex can help you meet more of your key business objectives today and in the future — and download your free trial — at www.quest.com/products/shareplex.

ABOUT THE AUTHOR

Jim Collings is a senior product architect for SharePlex who has been with Quest for more than 17 years. He has been working with Oracle databases for 25 years, including 23 years in the development of software tools for Oracle databases.

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