SharePlex® 11.2

Release Notes

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About SharePlex **7**
Join our community 7
About this release 8

Revision History **9**

What's New in this Release **10**

Resolved Issues in this release **11**

Deprecated Platforms and Operating Systems **12**

Basic System Requirements **13**
System 13
Communications Protocols 13
SSL/TLS 13
Internet protocol 14
Interoperability Between Versions 15
SharePlex Features Interoperable with Versions 11.0, 11.1, and 11.2 16

Source and Target System Requirements and Data Types **18**
Supported Source and Target Combinations 18
System Requirements and Conditions of Support When Replicating from Oracle 19
Oracle source basics 19
Supported operating systems 19
Supported versions 20
Supported cloud platforms 20
Oracle source basic conditions of support 21

Oracle to Azure Event Hubs replication 28
Supported target operating systems 28
Supported Azure Event Hubs target 28
Supported file types 28
Supported operations and objects for DML replication 28
Supported operations and objects for DDL replication 28
Oracle to File Output replication 29
Supported target operating systems 29
Supported file types 29
Supported operations and objects for DML replication 32
Supported operations and objects for DDL replication 32
Oracle to HANA replication 33
Supported Hana targets 33
Supported data types 33
Supported operations and objects for DML replication 34
Supported operations and objects for DDL replication 34
Oracle to JMS Message Queues replication 35
Supported target operating systems 35
Supported JMS Message Queues 35
Supported file types 35
Supported operations and objects for DML replication 35
Supported operations and objects for DDL replication 35
Oracle to Kafka replication 36
Supported target operating systems 36
Supported Kafka targets 36
Supported formats 36
Supported operations and objects for DML replication 37
Supported operations and objects for DDL replication 37
Oracle to MySQL replication 38
Supported target operating systems 38
Supported target versions and ODBC requirements 38
Supported target cloud platforms 38
Supported data types 39
Supported operations and objects for DML replication 39
Supported operations and objects for DDL replication 40
Oracle to Oracle replication 41

Supported target operating systems 41
Supported target versions 42
Supported target cloud platforms 42
Supported data types 43
Supported operations and objects for DDL replication 46
Supported operations and objects for DML replication 51
Oracle to PostgreSQL replication 52
Supported target operating systems 52
Supported target versions and ODBC requirements 52
Supported target cloud platforms 52
Supported data types 53
Supported operations and objects for DML replication 54
Supported operations and objects for DDL replication 54
Oracle to Snowflake replication 55
Supported operating systems 55
Supported target versions and ODBC requirements 55
Supported target cloud platforms 55
Supported data types 55
Supported operations and objects for DML replication 57
Supported operations and objects for DDL replication 57
Oracle to SQL Server replication 58
Supported target operating systems 58
Supported target versions and ODBC requirements 58
Supported target cloud platforms 58
Supported data types 59
Supported operations and objects for DML replication 60
Supported operations and objects for DDL replication 60
System Requirements and Conditions of Support When Replicating from PostgreSQL 61
PostgreSQL source basics 61
Supported operating systems 61
Supported versions and ODBC requirements 61
Supported cloud platforms 61
PostgreSQL source basic conditions of support 62
Supported and non-supported key features for physical and logical slots 63
PostgreSQL to Kafka replication 64
Supported operating systems 64

Supported Kafka targets 64
Supported formats 64
Supported DML operations 65
Supported operations and objects for DDL replication 65
PostgreSQL to Oracle replication 66
Supported target operating systems 66
Supported target database versions 66
Supported target cloud platforms 67
Supported characterset 67
Supported data types 67
Supported DML operations 68
Supported operations and objects for DDL replication 69
PostgreSQL to PostgreSQL replication 70
Supported target operating systems 70
Supported target versions and ODBC requirements 70
Supported target cloud platforms 70
Supported characterset 71
Supported data types 71
Supported DML operations 71
Supported operations and objects for DDL replication 72
PostgreSQL to Snowflake replication 73
Supported operating systems 73
Supported target versions and ODBC requirements 73
Supported target cloud platforms 73
Supported data types 74
Supported operations and objects for DML replication 76
Supported operations and objects for DDL replication 76
PostgreSQL to SQL Server replication 77
Supported target operating systems 77
Supported target versions and ODBC requirements 77
Supported target cloud platforms 77
Supported data types 77
Supported DML operations 78
Supported operations and objects for DDL replication 78
System Requirements and Conditions of Support When Replicating from PostgreSQL Database as a Service 79

PostgreSQL Database as a Service as source and target basics 79
Supported operating systems 79
Supported cloud platforms 79
Supported PostgreSQL versions 80
Supported data types 80
Supported DML operations 80
Supported operations and objects for DDL replication 81
PostgreSQL Database as a Service to Kafka replication 82
Supported operating systems 82
Supported Kafka targets 82
Supported formats 82
Supported DML operations 83
Supported operations and objects for DDL replication 83
PostgreSQL Database as a Service to Oracle replication 84
Supported target operating systems 84
Supported target database versions 84
Supported target cloud platforms 85
Supported characterset 85
Supported data types 85
Supported DML operations 87
Supported operations and objects for DDL replication 87
PostgreSQL Database as a Service to PostgreSQL replication 88
Supported target operating systems 88
Supported target versions and ODBC requirements 88
Supported target cloud platforms 88
Supported characterset 89
Supported data types 89
Supported DML operations 89
Supported operations and objects for DDL replication 90
PostgreSQL Database as a Service to Snowflake replication 91
Supported operating systems 91
Supported target versions and ODBC requirements 91
Supported target cloud platforms 91
Supported data types 92
Supported operations and objects for DML replication 94
Supported operations and objects for DDL replication 94

PostgreSQL Database as a Service to SQL Server replication 95
Supported target operating systems 95
Supported target versions and ODBC requirements 95
Supported target cloud platforms 95
Supported data types 96
Supported DML operations 96
Supported operations and objects for DDL replication 97

Known Issues in this Release 98
Third-party known issues 100

Licensing 102

Third Party Contributions in this Release 103

About us 109
Contacting Quest 109
Technical support resources 109

About SharePlex

For over two decades, SharePlex has provided high speed database replication for mission critical database environments.

SharePlex supports a wide variety of configurations to meet different and complex data availability needs. A primary class of use cases revolves around database scaling and availability.

- SharePlex supports reliable Oracle and PostgreSQL high-availability and disaster recovery configurations where replication maintains a duplicate database in a different location that is ready for fast, seamless fail-over and failback in planned or unplanned mode.
- SharePlex also supports bi-directional, active/active configurations with conflict resolution for PostgreSQL to PostgreSQL and Oracle to Oracle to support horizontal scaling and strategic placement of databases near regional users.
- SharePlex can support cross platform (Oracle ← → PostgreSQL) bi-directional, active-active replication with conflict resolution to de-risk Oracle to PostgreSQL migrations in complex Oracle environments.
- SharePlex can improve scaling by offloading Oracle or PostgreSQL reporting workloads.

Another class of use cases involves (generally) cross-platform data movement to support application integration, database interoperability and data lake population. Examples include:

- PostgreSQL and/or Oracle replication to Snowflake to support data warehouse/data lake pipelines
- PostgreSQL and/or Oracle replication to Kafka for real-time streaming analytic applications
- PostgreSQL to Oracle (or) Oracle to PostgreSQL replication to provide interoperability between systems to support database refactoring or migration from Oracle to PostgreSQL.

You can also use SharePlex to replicate data from Oracle source to maintain a change history database in an Oracle target. Rather than updating or deleting target rows based on the source change, SharePlex inserts a new row on the target for every source change. The result is an archive that reflects the chronological history of every change made to the source database.

SharePlex's value and versatility continue to grow with the requirements and requests of our customers. Although SharePlex is a reliable, relatively low-maintenance solution, our top-rated support team is ready around the clock to help with any trouble you may have. To get you started with your deployment, our professional services team is highly experienced and readily available.

Join our community

For expert advice and the latest news about SharePlex, join the SharePlex Community at https://www.quest.com/community/products/shareplex. Take advantage of our forums, blogs, videos, and more from our own experts, as well as input from our customers and partners.

About this release

In this release, SharePlex supports the latest versions of PostgreSQL DB at the source and target, as well as SQL Server database as a target. The release also includes support for PostgreSQL Database as a service on Google Cloud Platform.

Revision History

Document Version	Date	Change History
2	18th September 2023	• Added the Supported target cloud platforms information for Snowflake database. • Added the SPO-24752 issue in the Resolved Issues in this Release section.
3	3rd October 2023	• Added the BOOLEAN, TIME, and BYTEA data types in the Supported data types section for various targets . • Added the list of supported data types for replication from PostgreSQL or PostgreSQL Database as a Service to Oracle when conflict resolution is configured.
4	19th November 2023	Removed information related to the support for Oracle 23c. As per Oracle's announcement, the Oracle-supported release of 23c Database On-premises, Exadata, and Exadata Database Service should be available in FY'24. SharePlex support for OCI Oracle Base Database Service is planned in a future release.
5	4th December 2023	• Added a note regarding platform support for TLS 1.3 in the Communication Protocols section. • Added the BLOB to BYTEA data type mapping information in the Oracle to PostgreSQL replication section.
6	28th February 2024	Updated the licensing related information in the Licensing section.
7	5th March 2024	Added an important note regarding OLS policy configuration in the Conditions of Support - OLS section.
8	6th May 2024	• Added a condition of support for the BINARY DOUBLE and BINARY FLOAT data types. • Removed support information for Solaris x86 11.3 version.
9	17th May 2024	Added Oracle 21c as a supported database for OLTP compressed data.
10	5th August 2024	Added a limitation regarding the replication of data containing the ALTER statement during DDL operations.

What's New in this Release

Database support

- This release includes support for PostgreSQL 15.x as a source and target.
- This release includes support for SQL Server 2022 as a target.

Google Cloud platform support

This release includes support for PostgreSQL Database versions 14.x and 15.x as a service on Google Cloud Platform.

Resolved Issues in this release

The following is a list of issues addressed in this release of SharePlex.

Issue ID	Known Issues	Source and Target	Component/ Feature
SPO-24752	The SharePlex Poster process stops with the 'ORA-04016' error while replicating a sequence from Oracle to Oracle.	Oracle to Oracle	Poster

Deprecated Platforms and Operating Systems

Platforms or operating systems that have been deprecated in SharePlex 11.2 version:

SQL Server versions 2008, 2008 R2

> **NOTE:** While SharePlex 11.x only supports installation on Unix and Linux platforms, a version that supports Windows will be provided in the future. As such, the Windows platform is not considered deprecated. In most cases, replication for systems running on Windows is supported through remote replication. Please see Source and Target System Requirements and Data Types for details.

Planned platform deprecation in future releases:

No platforms are anticipated to be deprecated at this time.

Basic System Requirements

This chapter contains the basic system requirements for SharePlex. See also: Source and Target System Requirements and Data Types

System

Before installing SharePlex, ensure that your system meets the minimum hardware and software requirements.

- SharePlex processes are all 64-bit and can exceed 4 GB.
- Per process memory of greater than or equal to 256 MB is required. Depending on how you configure SharePlex, there can be one or more of the following processes on a system :
    - Capture
    - Read
    - Export
    - Import
    - Post
- See the Preinstallation Checklist in the SharePlex Installation Guide for additional system and/or database requirements.

Communications Protocols

SSL/TLS

For TLS connections, SharePlex supports TLS 1.2 or 1.3 only.

NOTE: TLS 1.3 is supported only on the Linux platform.

Internet protocol

SharePlex supports IPv4 and IPv6 internet protocols. The following table shows the operating systems for which SharePlex was tested with IPv6.

Operating System	Source	Target	SharePlex versions	On-premises	Cloud
Linux RHEL 7	Link-Local IPV6	Link-Local IPV6	11.0 and 11.1	√	√
Linux RHEL 8	Link-Local IPV6	Link-Local IPV6	11.0 and 11.1	√	√
HP UA	Link-Local IPV6	Link-Local IPV6	11.0 and 11.1	√	√
HP IA	Link-Local IPV6	Link-Local IPV6	11.0 and 11.1	√	√
SUN Sparc	Link-Local IPV6	Link-Local IPV6	11.0 and 11.1	√	√
SUN Solaris	Link-Local IPV6	Link-Local IPV6	11.0 and 11.1	√	√
AIX	Link-Local IPV6	Link-Local IPV6	11.0 and 11.1	√	√

Interoperability Between Versions

Refer to the following guidelines if the system where you are installing SharePlex is in a configuration where one or more other systems will continue to use an older version of SharePlex. An example is when installing or upgrading SharePlex on a target, but the source will continue to use SharePlex 9.4.x/10.x.

Versions with interoperability for Oracle database as a source

The following SharePlex versions are interoperable for Oracle database as a source, including the Compare/Repair feature:

- 9.4.x
- 10.0.x
- 10.1.x
- 10.2

NOTES:

- SharePlex 10.2, as a source, and above versions are not interoperable with older versions than 10.2 as a target when using Extended Data Types and TLS 1.3.
- For the supported features of SharePlex 11.0 and 11.1, including its version interoperability, see SharePlex Features Interoperable with Versions 11.0, 11.1, and 11.2.

To support replication from a higher to a lower version, set the SP_SYS_TARGET_COMPATIBILITY parameter on the **source** system to the *lower* SharePlex version. If Capture is running, restart it.

IMPORTANT: Downgrading from a higher to a lower version of SharePlex is not supported.

NOTES:

- The older version of the SP_SYS_TARGET_COMPATIBILITY parameter, SP_OCT_TARGET_COMPATIBILITY, was deprecated in version 9.0. If your source SharePlex is currently replicating to a lower SharePlex version on the target and you have SP_OCT_TARGET_COMPATIBILITY set to the lower version, SharePlex will continue to use that value after you upgrade to the current version.
- If you upgrade the target to the current release at a future time, issue a reset for SP_OCT_TARGET_COMPATIBILITY on the source system to remove it from the SharePlex environment. Going forward, SharePlex will use the setting of the new SP_SYS_TARGET_COMPATIBILITY parameter, which defaults to the current version.

To reset SP_OCT_TARGET_COMPATIBILITY:

1. Stop Capture.
   `sp_ctrl>` **stop capture**
2. In **sp_ctrl** on the source system, issue the following command:
   `sp_ctrl>`**reset param SP_OCT_TARGET_COMPATIBILITY**
3. Restart Capture.
   `sp_ctrl>`**start capture**

SharePlex Features Interoperable with Versions 11.0, 11.1, and 11.2

The below table provides a list of features with their SharePlex version compatibility details with supported source and target databases.

SharePlex feature	Supported source database	Supported target database	SharePlex source version	SharePlex target version
Ability to replicate PostgreSQL timestamp to Oracle Date Unidirectional replication	PostgreSQL	Oracle	SharePlex 11.0 and above	SharePlex 11.1 and above
Ability to replicate PostgreSQL timestamp to Oracle Date replication with BDR support	PostgreSQL	Oracle and PostgreSQL	SharePlex 11.1 and above	SharePlex 11.1 and above
Activate config with LSN using user provided LSN	PostgreSQL*	PostgreSQL, Oracle, SQL Server, Kafka, Snowflake	SharePlex 11.1 and above	SharePlex 11.1 and above
SharePlex PostgreSQL - show_ last_posted utility - P2P	PostgreSQL*	PostgreSQL	SharePlex 11.1 and above	SharePlex 11.1 and above
Support for High Availability cluster environment with CrunchyData	PostgreSQL*	PostgreSQL	SharePlex 11.1 and above	SharePlex 11.0 and above
PG2O-O2PG BDR - SharePlex prepared routines - !MostRecentRecord, !LeastRecentRecord, !UpdateUsingKeyOnly, !HostPriority, !UpdateUsingKeyOnly	PostgreSQL	Oracle and PostgreSQL	SharePlex 11.0 & Above	SharePlex 11.0 & Above
Case sensitive column names	PostgreSQL	Oracle	SharePlex 11.1 & Above	SharePlex 11.1 and above
PostgreSQL Database as a Service as source	PostgreSQL	PostgreSQL, Oracle, SQL Server, Kafka, Snowflake	SharePlex 11.1 and above	SharePlex 11.0 & Above
Trigger scripts	PostgreSQL	PostgreSQL	SharePlex 11.1 and above	SharePlex 11.1 and above
SharePlex PostgreSQL - config.sql and build_config.sql scripts	PostgreSQL	Not target dependent	SharePlex 11.1 and above	SharePlex 11.1 and above
Implementation of the BOOLEAN data type	PostgreSQL	PostgreSQL, Oracle, Kafka, Snowflake	SharePlex 11.1 & Above	SharePlex 11.1 & Above

SharePlex feature	Supported source database	Supported target database	SharePlex source version	SharePlex target version
Implementation of the TIME data type	PostgreSQL	PostgreSQL, Kafka, Snowflake	SharePlex 11.1 & Above	SharePlex 11.1 & Above
Implementation of the BYTEA data type	PostgreSQL	PostgreSQL, Kafka, Oracle	SharePlex 11.1 & Above	SharePlex 11.1 & Above
Support for column name > 30 characters	PostgreSQL, Oracle	PostgreSQL, Oracle, SQL Server, Kafka, Snowflake	SharePlex 11.1 and above	SharePlex 11.1 and above
Support for Kafka Partition key	Oracle	Kafka	SharePlex 11.1 and above	SharePlex 11.1 and above
Long table name	Oracle	PostgreSQL, Oracle, SQL Server, Kafka, Snowflake	SharePlex 11.0 and above	SharePlex 11.1 and above

* These features are available only with PostgreSQL physical replication and not with PostgreSQL Database as a Service.

Source and Target System Requirements and Data Types

This chapter contains the requirements when capturing from various source databases and replicating to supported target databases.

Supported Source and Target Combinations

The following table provides information about the supported source and target database combinations.

Target databases	Oracle (Source)	PostgreSQL (Source)	PostgreSQL Database as a Service (Source)
Oracle	√	√	√
PostgreSQL	√	√	√
SQL Server	√	√	√
JMS	√	X	X
Azure Event Hub	√	X	X
Hana	√	X	X
MySQL	√	X	X
Kafka	√	√	√
File Output	√	X	X
Snowflake	√	√	√
PostgreSQL Database as a Service	√	√	√

System Requirements and Conditions of Support When Replicating from Oracle

This chapter contains the requirements when capturing from an Oracle database and replicating to supported target databases.

PREREQUISITE: At least the minimum level of supplemental logging must be enabled. Some SharePlex features may require PK/UK supplemental logging to be enabled.

Oracle source basics

This section contains the requirements for an Oracle database as a source when capturing from an Oracle database and replicating to supported target databases.

Supported operating systems

The following operating systems are supported for capture from a supported Oracle database and replication to an Oracle target database. For a list of supported source and target databases for Oracle capture, see Supported Source and Target Combinations.

SharePlex supports only the 64-bit version of the listed operating systems.

Supported operating systems via native installation:

NOTE: SharePlex supports the following operating systems and only where the version matches the Oracle certified platforms. For example, Oracle 19c supports Linux 7 and later, therefore installation of SharePlex on a system with Oracle 19c is supported only on Linux 7 and later.

- AIX 7.1, 7.2, and 7.3
- CentOS Linux 7.x and 8.x
- HP-UX 11.31 Itanium
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- Oracle Solaris SPARC 11.4
- Oracle Solaris x86 11.4
- RHEL 7.x and 8.x
- SuSE SLES 12.x and 15.x

Supported operating systems via remote replication:

All platforms listed above, plus Windows Server 2016 and 2019, are supported via remote replication.

IMPORTANT! SharePlex 11.0 can only be installed on Unix and Linux platforms.
A SharePlex version that can be installed on Windows will be supported in a future version. Customers with database platforms that run on Windows should consult the **Installation and Setup for Remote Capture** and **Run database setup for Oracle remote capture** sections from the Installation and Setup Guide for an Oracle Source for the Capture process and the **Replicate to a remote target system** section from the SharePlex Admin Guide for the Poster process that describe support for remote replication scenarios that may address your particular platform requirements.

Supported versions

SharePlex supports the Standard and Enterprise Editions of Oracle 12cR1, 12cR2, 18c, 19c, and 21c.

NOTES:

- Unless specified, Oracle, RAC, and ASM are supported for the same versions.
- SharePlex supports only the 64-bit version of Oracle Database
- In addition to the Supported Operating Systems for Oracle and the Supported Cloud Platforms for Oracle, the Oracle versions listed above are also supported when running on an Oracle Exadata Database Machine.
- Amazon RDS for Oracle 12cR1 (supported 12cR1 versions are 12.1.0.2.v7 or later) and 19c. Support for Oracle features on Amazon RDS is limited to the default option groups: default:oracle-ee-12-1, default:oracle-ee-19, and default:oracle-se2-19.

Supported cloud platforms

Oracle Cloud Infrastructure

- Oracle Exadata Cloud Service (ExaCS)
- Oracle Exadata Cloud@Customer (ExaCC)[1]
- Oracle Database Cloud Service (DBCS)[2]
- Oracle Compute (IaaS) Virtual Machines and Bare Metal

Amazon Web Services

- Amazon RDS for Oracle [3]
- Amazon EC2 (IaaS) Virtual Machine

Microsoft Azure: Azure Virtual Machine (IaaS)

Conditions of support

1. **Oracle Exadata Cloud@Customer (ExaCC):** Issues on Oracle Exadata Cloud@Customer will be tested against Oracle Exadata Cloud Service for reproduction purposes.
2. **Oracle Database Cloud Service (DBCS):** SharePlex only supports Transparent Data Encryption (TDE) feature on DBCS EE-HP, DBCS EE-EP, and ExaCS/CC.
3. **Amazon RDS for Oracle:** Please see Supported Oracle Source and Target Versions for additional clarification on version compatibility.

Oracle source basic conditions of support

Non-supported Oracle features

This is a list of commonly used Oracle features which SharePlex does not replicate and are not listed elsewhere in this document. Since both Oracle and SharePlex continually change and improve, this list of exclusions cannot be considered complete. Unless an item is stated here as being supported, assume that SharePlex does not replicate it.

Object/operation/feature	Not supported
Oracle operations	Operations that do not appear in the redo logs. This includes any DML or DDL not in the redo logs, and also PL/SQL packages which do not write results to the redo logs, for example, **dbms_shared_pool.keep** and related packages.
dbms_scheduler.create_job	This object is not supported.
Flashback	SharePlex does not support the Oracle Flashback Table feature. If the SP_REPLICATE_ALL_DDL parameter is enabled (value of 1), SharePlex may try to replicate the flashback DDL, which will return an error. To perform Flashback Table on a table that is in replication, use the following procedures in the SharePlex Administrator Guide to work around this issue: 1. Remove source objects from replication 2. Perform the flashback 3. Add or change objects in an active configuration

Additional information about data types

Notes about open target data type support

- Replication of SecureFile LOBS to non-Oracle databases is supported except if the storage specification includes any level of compression, encryption, and/or deduplication.
- Replication of LOB operations generated by **dbms_lob** are not supported when replicating to non-Oracle targets.
- SharePlex applies replicated Oracle data to the target according to the data type of the target column, rather than mapping to a default data type. Corresponding source and target columns must contain compatible data types to ensure successful DML operations.

- If the precision or size of the target data type is not large enough for the data being replicated, the target database may truncate or round the data when SharePlex applies it.

SharePlex does not support the replication of data from Oracle to open targets for the below Extended Data Types:

- VARCHAR2 (4000-32767 bytes)
- NVARCHAR2 (4000-32767 bytes)
- RAW (2000-32767 bytes)

Supported / non-supported SharePlex features for Oracle to open targets replication

The following table shows whether specific SharePlex features are supported for replication from Oracle to open targets.

SharePlex feature	Supported open targets
reconcile command (target instantiation)	All
compare/compare using and **repair/repair using** commands	Not supported
copy/copy using and **append/append using** commands	Not supported
Hash horizontally partitioned replication	All
Column-based horizontally partitioned replication	All
Vertically partitioned replication	All
Column mapping	All
Key definition	All
Build configuration with scripts	Not supported
Named queues	All
Commit Reduction (feature of Post Enhanced Performance)	All
Dependency Checking (feature of Post Enhanced Performance)	Not supported
Transformation	Not supported
Conflict resolution	PostgreSQL
Peer-to-peer replication (bi-directional)	PostgreSQL
Consolidated replication (many to one)	All
Broadcast replication (one to many)	All
High availability replication (active/passive bi-directional)	PostgreSQL
Change tracking target (CDC)	Not supported
Data encryption	All
Data compression	All

SharePlex feature	Supported open targets
SSH	All
auth_hosts file	All
Monitoring scripts	All
SNMP monitoring	All
Continue posting on error (SP_OPX_CONT_ON_ERR)	All
Suspend on out of sync errors (SP_OPX_OUT_OF_SYNC_SUSPEND)	All
Reduced key (SP_OPX_REDUCED_KEY)	All
Logical Transaction Rollback on out-of-sync transactions	Not supported

System requirements for replication of OLTP compressed data

This chapter contains the requirements when capturing OLTP compressed data from an Oracle source database and replicating it to a supported target database.

Supported operating systems

The following operating systems are supported for capture from a supported Oracle database and replication to a supported target database.

SharePlex supports only the 64-bit version of the listed operating systems.

For OLTP, SharePlex supports the following operating systems only:

- AIX 7.1, 7.2, and 7.3
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- RHEL Linux 7.x and 8.x
- CentOS Linux 7.x
- Oracle Solaris SPARC 11.4
- CentOS Linux 7.x and 8.x
- SuSE SLES 12.x and 15.x
- HP-UX 11.31 Itanium

Supported Oracle database version/s

SharePlex supports the Standard and Enterprise Editions of Oracle 12cR1, 12cR2, 18c, 19c, and 21c for replicating the OLTP compressed data.

Supported objects and operations for DML replication

SharePlex supports DML operations on tables and sequences, with some conditions. DML can be replicated from an Oracle source to an Oracle or an open target.

NOTE: Replication to targets with a different character set is supported, with limitations. When posting to open target databases, XML files and JMS, SharePlex supports only UNICODE and US7ASCII on the target, but conversion can be performed by an Oracle client installed on the target system. For full details, see the Preinstallation Checklist in the SharePlex Installation and Setup Guide.

Tables

SharePlex supports the following DML operations on tables:

- INSERT, UPDATE, DELETE, COMMIT, ROLLBACK
- Direct-path loads (SQL*Loader) (INSERT AND FULL ROLLBACK).

NOTE: Replication of partial rollbacks of DLOADs is **not** supported.

The target table must support the column types that are being replicated from the source Oracle table.

SharePlex supports the following table types for DML operations:

Supported table type*	Conditions of Support
Regular Oracle tables	None
Index-organized tables	SharePlex **does not** support: • Replication to/from index-organized tables that contain LOB or VARRAY columns • Replication from a non-index-organized table to an index-organized table • SharePlex hash-based horizontal partitioning of index-organized tables
Partitioned tables	None
Views	None
Materialized views	SharePlex does not support replication from a materialized view to a materialized view. SharePlex can replicate the underlying table of a materialized view to a regular target table.

SharePlex does not support the following table types:

- Replication to/from nested tables
- Replication to/from clustered tables

***SharePlex does not support the following for any table type:**

- Replication to/from Identity columns.
- Replication of rows changed by 'UPDATE WITH CASE' syntax.
- Replication of rows in which data exceeds 319 KB in size, excluding LOB and LONG columns
- Replication of external tables or tables with external partitions

Sequences

- Transactional changes to Oracle sequences can be replicated only from Oracle to Oracle.
- To replicate transactional changes to sequences, the supplemental logging of primary and unique keys must be enabled at the database level, or you must enable supplemental logging for primary keys on the **sys.seq$** table.

Secured and compressed objects

SharePlex supports DML operations on secured or compressed objects as described in the following table. See "Conditions of support" following this table for additional information.

Secured/Compressed Object	Can be replicated to:
DML on tables encrypted by Oracle Obfuscation Toolkit	All target types
DML on tables with Transparent Data Encryption (TDE)[1]	All target types
DML on Oracle Label Security (OLS)[2]	All target types
DML on compressed objects: Basic, Advanced Row (OLTP) Compression, HCC[3]	All target types
Direct Load (DLOAD) on compressed objects: Basic, Advanced Row (OLTP) Compression, HCC[3]	All target types

Conditions of support

1. Conditions of support - TDE

- SharePlex supports Tablespace Encryption and Column Encryption, both source and target.
- The SharePlex **copy/append** command does not support TDE.
- TDE is not supported for sources on RDS.
- SharePlex only supports the AES and DES encryption algorithms.

2. Conditions of support - OLS

By default, SharePlex cannot process rows that are protected by OLS (Oracle Label Security) because users granted DBA privileges (like SharePlex) do not have enough privileges to access those rows. However, if privilege is granted from the OLSSYS user, SharePlex can support OLS. SharePlex was tested under the following OLS configuration:

- The SharePlex user was granted full privilege to the objects in replication.
- Test tables with OLS security were created.
- Data was replicated using INSERT, UPDATE, DELETE, ROLLBACK, and TRUNCATE operations, and ALTER TABLE to add and drop columns.

NOTE: If the OLS policy data label column is defined as hidden, the data in that column cannot be replicated by SharePlex.

IMPORTANT: Shareplex does not support OLS policy configuration changes on tables during active replication. Users need to apply these configurations before activating the configuration.

3. Conditions of support - compression

For HCC compression: SharePlex does not support query low compression. Supported types of compression are query high, archive low and archive high.

For Advanced Row (OLTP) Compression: Under certain conditions, Oracle does not provide enough information in the redo log for SharePlex to replicate a DML operation on a OLTP compressed object. Testing of OLTP compressed objects is advised.

Oracle to open targets DDL support

SharePlex provides default and optional DDL support.

NOTES: ALTER TABLE to ADD COLUMN and ALTER TABLE to DROP COLUMN are supported on Basic, Advanced Row (OLTP) Compression, and HCC compressed Oracle objects for replication to all Oracle and open targets.

SharePlex does not support:

- ANALYZE TABLE and ANALYZE INDEX
- DDL to ALTER TABLE ADD OVERFLOW to an IOT in replication
- DDL operations issued by the SharePlex database user
- DDL to ALTER INDEX to an IOT in replication

SharePlex provides limited DDL support for replication from Oracle to open targets. The involved objects must be listed in the active configuration file explicitly or with a wildcard. There is no optional DDL support for replication from Oracle to cross platforms.

The default Oracle to open target configuration is represented by the following parameter setting:

SP_OCT_REPLICATE_DDL=3

See "Table Notes" following this table for additional information.

Supported object	Supported Operation
Table and IOT	Truncate[1]
	Alter table add column[2]
	Alter table drop column

TABLE NOTES:

- TRUNCATE TABLE is not supported from Oracle compressed objects to open targets.
- The default mappings of Oracle data types to their open target counterpart for replicated ALTER TABLE ADD COLUMN DDL are shown in the "Supported Data type" section of the respective target. When adds the column, it defines it with the default data type. This mapping applies to the entire configuration (not per table).

Oracle to Azure Event Hubs replication

SharePlex supports replication from Oracle to Azure Event Hubs, according to the details below.

Supported target operating systems

SharePlex replicates remotely to the Azure Event Hubs service. Remote replication from the following operating systems is supported:

- CentOS Linux 7.x and 8.x
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- RHEL 7.x, and 8.x
- SuSE SLES 12.x and 15.x

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported Azure Event Hubs target

Supported platform as a service: Azure Event Hubs

Supported file types

- XML file
  For XML supported data type information, see XML Supported Data Types.
- JSON file
  For JSON supported data type information, see JSON Supported Data Types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables and sequences, with some conditions. DML can be replicated from an Oracle source to an Azure Event Hubs target. For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

SharePlex supports DDL operations on tables and sequences, with some conditions. DDL can be replicated from an Oracle source to an Azure Event Hubs target. For additional information, see Oracle to open target DDL support.

Oracle to File Output replication

SharePlex supports replication from Oracle to File Output, according to the details below.

Supported target operating systems

Supported operating systems via native installation:

- AIX 7.1, 7.2, and 7.3
- CentOS Linux 7.x and 8.x
- HP-UX 11.31 Itanium
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- Oracle Solaris SPARC 11.4
- Oracle Solaris x86 11.4
- RHEL 7.x and 8.x
- SuSE SLES 12.x and 15.x

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported file types

- XML file
- SQL file
- JSON file

XML format supported open targets

This mapping applies to all targets that receive messages as XML:

- File in XML format
- JMS
- Kafka
- Azure/Kafka Event Hubs

Oracle	XML
BINARY_DOUBLE	decimal
BINARY_FLOAT	decimal
BLOB	base64Binary
CHAR	string
CLOB	string
DATE	dateTime
INTERVAL DAY TO SECOND	dayTimeDuration
INTERVAL YEAR TO MONTH	yearMonthDuration
LONG	string
NCHAR	string
NCLOB	string
NUMBER	decimal
NVARCHAR2	string
RAW	base64Binary
ROWID	string
TIMESTAMP	dateTime
TIMESTAMP WITH LOCAL TIME ZONE	dateTimeStamp
TIMESTAMP WITH TIME ZONE	dateTimeStamp
VARCHAR2	string
VARRAY	Post maps the data types in the source VARRAY to the appropriate XML data types. Only certain data types in a VARRAY are supported. See the conditions of support.

Conditions of support

Only the following data types in a VARRAY are supported by SharePlex when replicating to XML output:

- BINARY_FLOAT
- VARCHAR2
- BINARY_DOUBLE

- NUMBER
- TIMESTAMP (This is converted to a DATE data type without microseconds in XML output)
- DATE
- UDT (only if it contains one of the data types in this list)

See Conditions of support for the additional conditions of support for the above-mentioned supported data types.

JSON format supported open targets

This mapping applies to all targets that receive messages as JSON:

- File in XML format
- JMS
- Kafka
- Azure/Kafka Event Hubs

Oracle	JSON
BINARY_DOUBLE	Number
BINARY_FLOAT	Number
BLOB	String containing base64 encoded data
CHAR	String
CLOB	String
DATE	String containing date
INTERVAL DAY TO SECOND	String containing interval
INTERVAL YEAR TO MONTH	String containing interval
LONG	String
NCHAR	String
NCLOB	String
NUMBER	Number
NVARCHAR2	String
RAW	String containing hex encoded data
ROWID	String
TIMESTAMP	String containing timestamp
TIMESTAMP WITH LOCAL TIME ZONE	String containing timestamp
TIMESTAMP WITH TIME ZONE	String containing timestamp
VARCHAR2	String

Conditions of support: See Conditions of support for the conditions of support for the above-mentioned supported data types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables and sequences, with some conditions. DML can be replicated from an Oracle source to a File Output target. For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

SharePlex supports DDL operations on tables and sequences, with some conditions. DDL can be replicated from an Oracle source to a File Output target. For additional information, see Oracle to open target DDL support.

Oracle to HANA replication

SharePlex for Hana is in limited support effective February 1, 2022. SharePlex supports replication from Oracle to HANA, according to the details below.

Supported Hana targets

SAP HANA 1.0 SPS 11

Supported data types

SharePlex supports the following data types for replication from Oracle to Hana:

Oracle	HANA
BINARY_DOUBLE	DOUBLE
BINARY_FLOAT	DOUBLE
BLOB	BLOB
CHAR (n)	CHAR (n)
CLOB	CLOB
DATE	TIMESTAMP
LONG	CLOB
LONGRAW	BLOB
NCHAR (n)	NCHAR (n)
NCLOB	NCLOB
NUMBER	DECIMAL
NUMBER (p,0:)	DECIMAL (p,s)
NUMBER (p,s)	DECIMAL
NVARCHAR2 (n)	NVARCHAR (n)
RAW (n)	VARBINARY (n)
TIMESTAMP (p)	TIMESTAMP
VARCHAR2 (n)	VARCHAR (n)

Conditions of support: See Conditions of support for the conditions of support for the above-mentioned supported data types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables and sequences, with some conditions. DML can be replicated from an Oracle source to a Hana target. For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

SharePlex supports DDL operations on tables and sequences, with some conditions. DDL can be replicated from an Oracle source to a Hana target. For additional information, see Oracle to open target DDL support.

Oracle to JMS Message Queues replication

SharePlex supports replication from Oracle to JMS Message Queues, according to the details below.

Supported target operating systems

Native SharePlex installation is supported on the below operating systems:

- AIX 7.1 and 7.2
- CentOS Linux 7.x and 8.x
- HP-UX 11.31 Itanium
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- Oracle Solaris SPARC 11.4
- Oracle Solaris x86 11.4
- RHEL 7.x, and 8.x
- SuSE SLES 12.x and 15.x

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported JMS Message Queues

- JMS - Apache ActiveMQ 5.8
- JMS - IBM MQ 8

Supported file types

- XML file
  For XML supported data type information, see XML Supported Data Types.
- JSON file
  For JSON supported data type information, see JSON Supported Data Types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables and sequences, with some conditions. DML can be replicated from an Oracle source to a JMS Message Queues target. For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

SharePlex supports DDL operations on tables and sequences, with some conditions. DDL can be replicated from an Oracle source to a JMS Message Queue target. For additional information, see Oracle to open target DDL support.

Oracle to Kafka replication

SharePlex supports replication from Oracle to Kafka, according to the details below.

Supported target operating systems

Supported operating systems via native installation:

- CentOS Linux 7.x and 8.x
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- RHEL 7.x, and 8.x
- SuSE SLES 12.x and 15.x

Remote replication from the following operating systems is supported:

- CentOS Linux 7.x and 8.x
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- RHEL 7.x, and 8.x
- SuSE SLES 12.x and 15.x

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported Kafka targets

Apache Kafka 0.8.x, 0.9.x, 0.10.x, 0.11.x, 1.0.x, 1.1.x, 2.0.x, 2.1.0, 2.3.1, 2.5.0, and 3.0

We test and reproduce issues against:

- Apache Kafka
- Confluent Kafka

NOTE: If you would like to use a different vendor who provides their own Kafka distribution or provides a Kafka compliant interface, you are welcome to do so. From a support perspective, our support and development teams will share any Kafka broker errors that SharePlex receives and also ensure SharePlex itself is working properly to capture data, the target configuration formats in SharePlex are correct, and the SharePlex poster is posting or attempting to post according to the Kafka versions under support. If there are SharePlex issues with Kafka support that can be reproduced on Apache Kafka or otherwise demonstrated to be definitely associated with SharePlex, our team will address those as standard Kafka issues.

Supported formats

- XML format
  For XML supported data type information, see XML Format Supported Data Types.

- JSON format
  For JSON supported data type information, see JSON Format Supported Data Types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables and sequences, with some conditions. DML can be replicated from an Oracle source to a Kafka target. For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

SharePlex supports DDL operations on tables and sequences, with some conditions. DDL can be replicated from an Oracle source to a Kafka target. For additional information, see Oracle to open target DDL support.

Oracle to MySQL replication

SharePlex supports replication from Oracle to MySQL, according to the details below.

Supported target operating systems

Supported operating systems via native installation:

RHEL 7.x and 8.x

Remote replication from the following operating systems is supported:

RHEL 7.x and 8.x

Supported target operating systems via remote replication:

- AIX 7.1, 7.2, and 7.3
- CentOS Linux 7.x and 8.x
- HP-UX 11.31 Itanium
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- Oracle Solaris SPARC 11.4
- Oracle Solaris x86 11.4
- RHEL 7.x and 8.x
- SuSE SLES 12.x and 15.x
- Windows Server 2016 and 2019

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported target versions and ODBC requirements

MySQL 5.5, 5.6, 5.7, and 8.0.26

ODBC driver requirement:

- ODBC 8.0.26 for Linux
- ODBC 5.3.14

Supported target cloud platforms

Amazon Web Services

- Amazon RDS for MySQL
- Amazon Aurora

Microsoft Azure

- Azure Virtual Machine (IaaS)
- MySQL Azure database (PaaS)

Supported data types

SharePlex supports the following data types for replication from Oracle to MySQL:

Oracle	MySQL
BINARY_DOUBLE [1]	DOUBLE
BINARY_FLOAT	DOUBLE
BLOB	LONGBLOB
CHAR (n)	CHAR (n)
CLOB	LONGTEXT
DATE	DATETIME (0)
LONG	LONGTEXT
LONGRAW	LONGBLOB
NUMBER	DOUBLE
NUMBER (p,0:)	NUMERIC (p,s)
NUMBER (p,s)	DOUBLE
RAW (n)	VARBINARY (n)
TIMESTAMP (7:9) [2]	DATETIME (6)
TIMESTAMP (p) [2]	DATETIME (p)
VARCHAR2 (n)	VARCHAR (n)

Conditions of support

1. Because Oracle and MySQL handle this data type differently, there may be a very small difference in precision between the value of the source and the value of the target row. You may see the difference when viewing the data from SQL*Plus or other utility, but SharePlex will not report this difference as an out-of-sync condition.
2. If the MySQL target database is earlier than version 5.6.4, the fractional seconds will be truncated. Earlier versions did not support fractional seconds.

See Conditions of support for the additional conditions of support for the above-mentioned supported data types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables and sequences, with some conditions. DML can be replicated from an Oracle source to a MySQL target. For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

SharePlex supports DDL operations on tables and sequences, with some conditions. DDL can be replicated from an Oracle source to a MySQL target. For additional information, see Oracle to open target DDL support.

Oracle to Oracle replication

SharePlex supports replication from Oracle to Oracle, according to the details below.

Supported target operating systems

Supported operating systems via native installation:

- AIX 7.1, 7.2, and 7.3
- CentOS Linux 7.x and 8.x
- HP-UX 11.31 Itanium
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- Oracle Solaris SPARC 11.4
- Oracle Solaris x86 11.4
- RHEL 7.x and 8.x
- SuSE SLES 12.x and 15.x

Remote replication from the following operating systems is supported:

- AIX 7.1, 7.2, and 7.3
- CentOS Linux 7.x and 8.x
- HP-UX 11.31 Itanium
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- Oracle Solaris SPARC 11.4
- Oracle Solaris x86 11.4
- RHEL 7.x and 8.x
- SuSE SLES 12.x and 15.x

Supported target operating systems via remote replication:

All platforms listed above, plus Windows Server 2016 and 2019, are supported via remote replication.

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported target versions

SharePlex supports the Standard and Enterprise Editions of Oracle 12cR1, 12cR2, 18c, 19c, and 21c.

NOTES:

- Unless specified, Oracle, RAC, and ASM are supported for the same versions.
- SharePlex supports only the 64-bit version of Oracle Database
- In addition to the Supported Operating Systems for Oracle and the Supported Cloud Platforms for Oracle, the Oracle versions listed above are also supported when running on an Oracle Exadata Database Machine.
- Amazon RDS for Oracle 12cR1 (supported 12cR1 versions are 12.1.0.2.v7 or later) and 19c. Support for Oracle features on Amazon RDS is limited to the default option groups: default:oracle-ee-12-1, default:oracle-ee-19, and default:oracle-se2-19.

Supported target cloud platforms

Oracle Cloud Infrastructure

- Oracle Exadata Cloud Service (ExaCS)
- Oracle Exadata Cloud@Customer (ExaCC)[1]
- Oracle Database Cloud Service (DBCS)[2]
- Oracle Compute (IaaS) Virtual Machines and Bare Metal

Amazon Web Services

- Amazon RDS for Oracle [3]
- Amazon EC2 (IaaS) Virtual Machine

Microsoft Azure

Azure Virtual Machine (IaaS)

Conditions of support

1. **Oracle Exadata Cloud@Customer (ExaCC):** Issues on Oracle Exadata Cloud@Customer will be tested against Oracle Exadata Cloud Service for reproduction purposes.
2. **Oracle Database Cloud Service (DBCS):** SharePlex only supports Transparent Data Encryption (TDE) feature on DBCS EE-HP, DBCS EE-EP, and ExaCS/CC.
3. **Amazon RDS for Oracle:** Please see Supported Oracle Source and Target Versions for additional clarification on version compatibility.

Supported data types

SharePlex supports the following Oracle data types for replication to Oracle targets. See the Conditions of support for additional information.

- ANYDATA [1]
- B-FILE
- BINARY DOUBLE
- BINARY FLOAT
- BLOB [2]
- CHAR
- CLOB [2]
- DATE
- INTERVAL
- LONG RAW[2]
- LONG [2]
- NCHAR
- NCLOB [3]
- NUMBER
- NVARCHAR2 [8]
- RAW [8]
- ROWID
- SDO_GEOMETRY
- TIMESTAMP
- TIMESTAMP WITH LOCAL TIME ZONE
- TIMESTAMP WITH TIME ZONE
- UDT (User Defined Type)[5]
- UROWID
- VARCHAR
- VARCHAR2 [8]
- VARRAY collectors
- XMLTYPE [4]

NOTE: SharePlex supports columns that are defined as INVISIBLE.

Conditions of support

1. ANYDATA

- Replication of ANYDATA is supported, except when it contains a UDT or the storage is defined as SecureFile LOB with compression. SecureFile LOB without compression is supported. Only the following data types within ANYDATA are supported by SharePlex:
    - CHAR
    - DATE
    - NUMBER
    - RAW
    - VARCHAR
    - VARCHAR2
    - TIMESTAMP
- A data type within an ANYDATA type must be in-row (inside the column data). Oracle encapsulates the ANYDATA type as an in-row secure file LOB. If the encapsulated data is longer than the length allowed for an in-row LOB, that data appears as out-of-row LOB data. SharePlex assumes that the encapsulated data always appears as in-row LOB.

2. LONG and LOB (BLOB, CLOB)

- Any table that contains a LOB or LONG should have a primary key or unique key defined on it. If a table does not have a key, SharePlex builds its own key from all of the columns except LONGs or LOBs. If a LOB or LONG is the only difference between two rows that otherwise satisfy the Post WHERE clause, SharePlex cannot guarantee that the correct row will be updated.
- SharePlex supports SecureFiles LOBs as follows:
    - Logging must be enabled.
    - SharePlex supports uncompressed SecureFiles LOBS and SecureFiles LOBS with high or medium compression
    - SecureFiles LOBS are not supported when the storage specification includes encryption and/or deduplication.
- SharePlex does not support LONG and LONG_RAW data types in a configuration where transformation or conflict resolution are performed.

3. NCLOB

NCLOBs are not supported by Compare/Repair if the source and target have different character sets.

4. XMLTYPE

SharePlex supports the replication of XMLTYPE stored as CLOB and BINARY. SharePlex does not support XMLTYPE stored as OBJECT RELATIONAL. Additionally, the following applies:

- XMLTYPE stored as BINARY is not supported when the storage is defined as SecureFile LOB with compression. SecureFile LOB without compression is supported.

- Binary XMLTypes are not supported by Compare/Repair when the source and target character sets are different and require character set conversion.
- Compare/Repair does not support comparison of XMLTYPE when the source and target have different storage clauses. Compare/Repair only supports compare/repair when source and target are both stored as BINARY or both are stored as CLOB.

5. User-defined types

SharePlex does not support abstract data types and VARRAYs in a configuration where the SharePlex conflict resolution feature is performed.

NOTE: SharePlex replicates tables with the UDT fields in the base type ONLY. In case of columns containing multiple subtypes, replication is applicable only for base type fields.

6. General

If the precision or size of the target data type is not large enough for the data being replicated, the data may be truncated or rounded by the database when applied.

7. BINARY DOUBLE and BINARY FLOAT

The BINARY DOUBLE and the BINARY FLOAT data types are not supported for the **copy** command.

8. Extended Data Types

- Extended Data Types are not supported for the **copy** command.
- Extended Data Types are not supported on a key column. The keys that do not support the Extended Data Types include:
    - Primary key on the Oracle table
    - Unique key on the Oracle table
- Horizontal partitioning is not supported by tables containing the Extended Data Type columns.
- SharePlex does not replicate data with Extended Data Type when target type is JMS Message Queues, File output (XML, JSON, SQL), Event Hubs, or Kafka.

Supported operations and objects for DDL replication

SharePlex provides default and optional DDL support.

NOTE: ALTER TABLE to ADD COLUMN and ALTER TABLE to DROP COLUMN are supported on Basic, Advanced Row (OLTP) Compression, and HCC compressed Oracle objects for replication to all Oracle and open targets.

SharePlex does not support:

- ANALYZE TABLE and ANALYZE INDEX
- DDL to ALTER TABLE ADD OVERFLOW to an IOT in replication
- DDL operations issued by the SharePlex database user
- DDL to ALTER INDEX to an IOT in replication
- During DDL replication, data containing the ALTER statement related to Oracle extended statistics— 'Virtual by User'— is not supported. Oracle also does not recommend to use the extended stastistics 'Virtual by User'.

DDL on objects listed in the active configuration file

SharePlex supplies default and optional DDL replication for objects whose **names are listed in the configuration file explicitly or by wildcard**. See "Conditions of support" following this table for additional information.

For details about the controlling parameter, see the SharePlex Reference Guide.

Supported object	Supported DDL Operation	Enabled by default?	Controlling parameter
Table and IOT **(when they exist in the source at the time of configuration activation)**	Truncate Alter to add, drop, modify columns Alter to add, modify, drop, split, coalesce, move, truncate, exchange partition or subpartition[1] Drop Table	**Yes**	SP_OCT_REPLICATE_DDL=3
Table and IOT **(when they are added to the source after configuration activation)**	Create Create as Select[2]	**Yes**	SP_OCT_AUTOADD_ENABLE=1
Table	Alter Table Rename	Yes	SP_OCT_DDL_UPDATE_CONFIG=1
Index	Create Alter Drop	**Yes**	SP_OCT_AUTOADD_ENABLE=1

Supported object	Supported DDL Operation	Enabled by default?	Controlling parameter
Materialized View[3]	Create Drop	No	SP_OCT_AUTOADD_ENABLE=1 and SP_OCT_AUTOADD_MVIEW=1 and SP_SYS_TARGET_COMPATIBILITY=8.6.2 or higher
Sequences[4]	Create, Drop	No	SP_OCT_AUTOADD_ENABLE=1 and SP_OCT_AUTOADD_SEQ=1 and SP_SYS_TARGET_COMPATIBILITY=8.6.3 or higher
Trigger	Create, Drop	No	SP_OCT_REPLICATE_TRIGGER=1
Synonym	Create, Drop	No	SP_OCT_REPLICATE_SYNONYM=1
Grant[5]	Create, Drop	No	SP_OCT_REPLICATE_GRANT=1

Conditions of support

1. ALTER TABLE has the following conditions of support:
    - ALTER TABLE DDL that involves multiple tables, such as EXCHANGE PARTITION between tables, requires all tables involved to be in replication.
    - Default DDL support for ALTER TABLE on partitions/subpartitions applies to user-named interval partitions/subpartitions. For system-named (system generated) interval partitions/subpartitions, SharePlex supports only ALTER TABLE to DROP and TRUNCATE the system-named partitions. To enable support for DROP and TRUNCATE of system-named partitions, set the SP_OCT_TRUNC_PARTITION_BY_ID parameter to 1, and ensure that both source and target are updated to SharePlex version 8.6.4 or later. **NOTE:** This requirement has changed from previous SharePlex releases in that the parameter must now be set regardless of the Oracle version, including for Oracle 12.2 and later.
    - SharePlex does not support TRUNCATE of a system-generated sub-partition if the sub-partition is empty. In such cases, Post stops with error SP-OPO01002. To configure Post to ignore this error, stop Post, set the SP_OPO_CONT_ON_ERR parameter to 1, and add error number SP-OPO01002 to the top of the **oramsglist** file. See the SharePlex Reference Guide for more information about this parameter.
2. For CREATE TABLE AS SELECT, SharePlex supports the following data types: LONG, DATE, RAW, LONG RAW, ROWID, LONG VARCHAR, CHAR, CLOB, BLOB, CFILE, BFILE, TIMESTAMP, INTERVAL YEAR TO MONTH, INTERVAL DAY TO SECOND, VARCHAR2, NUMBER, and ANYDATA.
3. For CREATE MATERIALIZED VIEW the following applies:
    - SharePlex supports the following data types for CREATE MATERIALIZED VIEW: LONG, DATE, RAW, LONG RAW, ROWID, UROWID, LONG VARCHAR, CHAR, CLOB, BLOB, CFILE, BFILE, TIMESTAMP, INTERVAL YEAR TO MONTH, INTERVAL DAY TO SECOND, VARCHAR2, NUMBER, and ANYDATA. SharePlex does not support ALTER MATERIALIZE VIEW.
    - SharePlex converts a CREATE MATERIALIZED VIEW to a CREATE TABLE, applies the CREATE TABLE to the target, and then replicates the DML that populates the view. SharePlex does not replicate materialized views to materialized views.
4. To replicate sequences, the supplemental logging of primary and unique keys must be enabled at the database level, or you must enable supplemental logging for primary keys on the **sys.seq$** table.
5. Amazon RDS restricts DBA users from issuing the GRANT command. Because SharePlex runs as the DBA user, SharePlex cannot replicate GRANT to or from an RDS database.

DDL on objects not listed in the active configuration file

SharePlex provides expanded DDL support for Oracle objects that are not listed in the configuration file. SharePlex replicates the DDL statements for these objects, but does not maintain synchronization of the objects through DML replication. Expanded DDL replication is optional and is enabled with the following parameter setting:

SP_OCT_REPLICATE_ALL_DDL=1

NOTE: Expanded DDL replication supports not only tables and sequences but also a wide range of other objects such as procedures, functions, users, and views, which are not part of replication. Some of these objects may have underlying objects that *are in replication*. In those cases, Expanded DDL replication applies to the underlying objects in replication, as well as to the object that is not in replication.

See "Table Notes" following this table for additional information.

Supported object	Supported Operation
Table and IOT	Create table
	Create table as select
	Alter table add column
	Alter table drop column
	Drop table
	Truncate
	Comment on table
	Comment on columns
	Associate Statistics
	Disassociate Statistics
Cluster	Create cluster
	Crop cluster
Sequence	Create
	Drop
	Alter

Supported object	Supported Operation
Partition/ Subpartition	Add
	Split
	Merge
	Drop
	Modify
	Coalesce
	Exchange
	Move
	Truncate
	Rename
	Set
Index	Create
	Alter
	Drop
View	Create
	Alter
	Drop
	Comment on view
Synonym	Create
	Drop
Directory[1]	Create
	Drop
User-defined type	Create type
	Alter type
	Drop type
	Create type body
	Drop type body
Stored procedure	Create
	Alter
	Drop
Stored function	Create
	Alter
	Drop

Supported object	Supported Operation
Package	Create package
	Create package body
	Alter package
	Alter package body
	Drop package
	Drop package body
User	Create user
	Alter user
	Drop user
	Grant[1]
	Revoke
Role	Create role
	Alter role
	Drop role
	Grant[1]
	Revoke

TABLE NOTES:
Amazon RDS restricts DBA users from issuing certain commands on an Amazon RDS database instance. Because SharePlex runs as the DBA user, SharePlex cannot replicate the following commands to or from an RDS database:

- CREATE or DROP DIRECTORY
- GRANT

Supported operations and objects for DML replication

SharePlex supports DML operations on tables and sequences, with some conditions. DML can be replicated from an Oracle source to an Oracle target. For additional information, see Supported Operations and Objects for DML Replication.

Oracle to PostgreSQL replication

SharePlex supports replication from Oracle to PostgreSQL, according to the details below.

Supported target operating systems

Supported operating systems via native installation:

RHEL 7.x and 8.x

Remote replication from the following operating systems is supported:

RHEL 7.x and 8.x

Supported target operating systems via remote replication:

All platforms listed above, plus Windows Server 2016 and 2019, are supported via remote replication.

> **NOTE:** SharePlex supports only the 64-bit version of the listed operating systems.

Supported target versions and ODBC requirements

PostgreSQL 9.4, 9.5, 9.6, 10, 13.4, 13.6, 14.1, and 15.x

ODBC driver requirement: postgresql13-odbc-13.02.0000 and postgresql14-odbc-13.02.0000

Supported target cloud platforms

Oracle Cloud Infrastructure

Oracle Compute (IaaS) Virtual Machines and Bare Metal

Amazon Web Services

- Amazon RDS for PostgreSQL
- Amazon Aurora
- Amazon EC2 (IaaS) Virtual Machine

Microsoft Azure

- Azure Virtual Machine (IaaS)
- Azure DBaaS

Google Cloud Platform

Google Cloud SQL for PostgreSQL

Supported data types

SharePlex supports the following data types for replication from Oracle to PostgreSQL:

Oracle	PostgreSQL
BINARY_DOUBLE	DOUBLE PRECISION
BINARY_FLOAT	REAL
CHAR (n)	CHAR (n)
CHAR (n CHAR)	CHAR (n)
CLOB	TEXT
DATE	DATE
DATE	TIMESTAMP (0)
LONG	TEXT
NCHAR (n)	CHAR (n)
NCLOB	TEXT
NUMBER	NUMERIC
NUMBER (p,0:)	NUMERIC (p,s)
NUMBER (p,s)	NUMERIC
NVARCHAR2 (n)	VARCHAR (n)
TIMESTAMP (7:9)	TIMESTAMP (6)
TIMESTAMP (p)	TIMESTAMP (p)
TIMESTAMP (7:9) WITH TIME ZONE	TIMESTAMP (6) WITH TIME ZONE
TIMESTAMP (p) WITH TIME ZONE	TIMESTAMP (p) WITH TIME ZONE
TIMESTAMP (7:9) WITH LOCAL TIME ZONE	TIMESTAMP (6)
TIMESTAMP (p) WITH LOCAL TIME ZONE	TIMESTAMP (p)
VARCHAR2 (n)	VARCHAR (n)
VARCHAR2 (n CHAR)	VARCHAR (n)
BLOB	BYTEA

Conditions of support: See Conditions of support for the conditions of support for the above-mentioned supported data types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables and sequences, with some conditions. DML can be replicated from an Oracle source to a PostgreSQL target. For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

SharePlex supports DDL operations on tables and sequences, with some conditions. DDL can be replicated from an Oracle source to a PostgreSQL target. For additional information, see Oracle to open target DDL support.

Oracle to Snowflake replication

SharePlex supports replication from Oracle to Snowflake, according to the details below.

Supported operating systems

SharePlex replicates remotely to Snowflake. Remote replication from the following operating systems is supported:

Red Hat Linux version 7.x, 8.x

NOTE: SharePlex Snowflake supports only the 64-bit version of the listed operating systems.

Supported target versions and ODBC requirements

Snowflake 6.31 Enterprise, Community version

ODBC driver requirement: Snowflake 2.25.10

NOTE: If you cannot use ODBC 2.25.10, use the ODBC 2.24.2 version instead.

LIMITATIONS:
The following ODBC driver related limitations are observed while replicating data from Oracle to Snowflake:

- The following technical issues are identified with the Snowflake driver. Hence, we recommend you use the Snowflake ODBC Driver version 2.24.2.
    - Connection timeout issue with Snowflake ODBC Driver v2.24.3 and above
    - With Batch transactions, Snowflake can display `Schema Not Found` error with Snowflake ODBC Driver v. 2.25.4 and above.
- Do not use any version between 2.24.2 and 2.25.10, as those versions contain bugs that need to be fixed. For further information, please refer to the links below:

  https://docs.snowflake.com/en/release-notes/client-change-log-odbc

  https://community.snowflake.com/s/article/ODBC-Driver-Release-Notes

Supported target cloud platforms

Microsoft Azure

Supported data types

SharePlex supports the following data types for replication from Oracle to Snowflake:

Oracle	Snowflake
CLOB	TEXT
NUMBER	INT, INTEGER, NUMBER
CHAR(n)	VARCHAR(n)
CLOB	VARCHAR(n)
NCHAR	CHAR(n)
VARCHAR2(n)	VARCHAR(n)
NCLOB	TEXT
LONG	TEXT
BLOB	BINARY, VARBINARY
RAW(n)	VARBINARY
LONGRAW	VARBINARY
BINARY_FLOAT	REAL
NUMBER	SMALLINT
NUMBER	BIGINT
NUMBER	NUMERIC, DECIMAL
DATE	DATE
BINARY_DOUBLE	DOUBLE PRECISION
TIMESTAMP	TIMESTAMP
TIMESTAMP_TZ	TIMESTAMP_TZ

NOTE: It is anticipated that the Snowflake DB's default "HEX" format for binary type will be maintained for Oracle binary to Snowflake binary data type replication. Since source Oracle DB binary data is stored only in "HEX" format, Shareplex does not guarantee data integrity for any other format.

Conditions of support

- **Char(n) data type -** In Oracle, Char(n) is a fixed-size data type. If you insert char data with a length less than "n" into the "Char(n)" column, the remaining slots (n - length) are padded with space to occupy the complete "n" memory positions. Snowflake uses VARCHAR(n) for char storage since Snowflake lacks a comparable fixed-length character data type and only saves char data up to its length. Live replication will ensure that char column data is correctly copied. However, if users are manually inserting data into Snowflake for the equivalent of a Char(n) Oracle column, then the user will need to handle padding as well to occupy the full "n" length so that data will be in sync in both the source and target DB.
- **Binary & Text data types -** Snowflake Binary & Text data types have size limitation of 8 MB, so Oracle's advance Data type replication will be restricted to max 8 MB size limit of equivalent counterpart. Refer table below.

Oracle Data type	Max Size	Snowflake Data type	Max Size
LONG	2 GB	TEXT	8 MB of unicode chars
CLOB	4 GB	TEXT	8 MB of unicode chars
LONGRAW	2 GB	BINARY or VARBINARY	8 MB
BLOB	4 GB	BINARY or VARBINARY	8 MB

See Conditions of support for the additional conditions of support for the above-mentioned supported data types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables, with some conditions. DML can be replicated from an Oracle source to a Snowflake target.

Tables

SharePlex supports the following DML operations on tables when replicating data from an Oracle source to the Snowflake target:

- Singular and bulk operation - Insert with key(s)/ non key(s)
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)/ non key(s)

LIMITATIONS:
The following DML operations related limitations are observed while replicating data from Oracle to Snowflake:

- Slowness while performing DML operations
  - **Single Insert:** Frequent commits and rollbacks can cause slowness in replication.
  - **Batch Inserts:** Insert with advance data types [target Snowflake data types: TEXT and BINARY] can cause significant slowness in replication for data with plain text or binary JSON and XML.
  - **Single Update and Delete :** Frequent commits and rollbacks can cause slowness.
  - **Batch Update and Delete:** The Snowflake ODBC driver does not support batching of transactions. It can cause significant slowness in replication.

For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

SharePlex does not support DDL operations and objects when replicating data from an Oracle source to a Snowflake target.

Oracle to SQL Server replication

SharePlex supports replication from Oracle to SQL Server, according to the details below.

Supported target operating systems

The following operating systems are supported for SQL Server database. SharePlex supports only the 64-bit version of the listed operating systems.

Supported operating systems via native installation:

RHEL 7.x and 8.x

Remote replication from the following operating systems is supported:

RHEL 7.x and 8.x

Supported target operating systems via remote replication:

All platforms listed above, plus Windows Server 2016 and 2019, are supported via remote replication.

Supported target versions and ODBC requirements

SQL Server 2012, 2014, 2016, 2017, 2019, and 2022

> **NOTE:** SQL Server 2012, 2014, and 2016 databases hosted on Windows servers are compatible with Windows Server 2016 and above.

ODBC driver requirement: ODBC 17.10.1.1-1

Supported target cloud platforms

Amazon Web Services

Amazon EC2 (IaaS) Virtual Machine

Microsoft Azure

- Azure Virtual Machine (IaaS)
- Azure SQL Database
- Azure SQL Managed Instance

Supported data types

SharePlex supports the following data types for replication from Oracle to SQL Server:

Oracle	SQL Server
ANYDATA	VARIENT
BINARY_DOUBLE	FLOAT (53)
BINARY_FLOAT	FLOAT (24)
BLOB	VARBINARY (MAX)
CHAR (n)	CHAR (n)
CHAR (n CHAR)	CHAR (n)
CLOB	VARCHAR (MAX)
DATE	DATETIME2 (7)
LONG	VARCHAR (MAX)
LONGRAW	VARBINARY (MAX)
NCHAR (n)	NCHAR (n)
NCLOB	NVARCHAR (MAX)
NUMBER	FLOAT (53)
NUMBER (p,0:)	NUMERIC (p,s)
NUMBER (p,s)	FLOAT (53)
NVARCHAR2 (n)	NVARCHAR (n)
RAW (n)	VARBINARY (n)
TIMESTAMP (8:9)	DATETIME2 (7)
TIMESTAMP (p)	DATETIME2 (p)
TIMESTAMP (8:9) WITH TIME ZONE	DATETIMEOFFSET (7)
TIMESTAMP (p) WITH TIME ZONE	DATETIMEOFFSET (p)
VARCHAR2 (n)	VARCHAR (n)
VARCHAR2 (n CHAR)	VARCHAR (n)

Conditions of support: See Conditions of support for the conditions of support for the above-mentioned supported data types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables and sequences, with some conditions. DML can be replicated from an Oracle source to an SQL Server target. For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

SharePlex supports DDL operations on tables and sequences, with some conditions. DDL can be replicated from an Oracle source to an SQL Server target. For additional information, see Oracle to open target DDL support.

System Requirements and Conditions of Support When Replicating from PostgreSQL

This chapter contains the requirements when capturing from a PostgreSQL database and replicating to supported target databases.

PostgreSQL source basics

This section contains the requirements for a PostgreSQL database as a source when capturing from a PostgreSQL database and replicating to supported target databases.

Supported operating systems

The following operating systems are supported for capture from a supported PostgreSQL database and replication to supported target database. For a list of supported source and target databases for PostgreSQL capture, see Supported Source and Target Combinations.

SharePlex supports only the 64-bit version of the listed operating systems.

Supported operating systems via native installation

RHEL 7.x and 8.x

Supported versions and ODBC requirements

PostgreSQL 13.x, 14.x, and 15.x

ODBC driver requirement: postgresql13-odbc-13.02.0000 and postgresql14-odbc-13.02.0000

Supported cloud platforms

Amazon Web Services:

Amazon EC2 (IaaS) Virtual Machine

Microsoft Azure:

Azure Virtual Machine (IaaS)

Google Cloud Platform:

Google Cloud SQL for PostgreSQL

PostgreSQL source basic conditions of support

Supported / non-supported SharePlex features for PostgreSQL to Oracle and open targets replication

The following table shows whether specific SharePlex features are supported for replication from PostgreSQL to Oracle and open targets .

SharePlex feature	Supported targets
reconcile command (target instantiation)	Oracle, PostgreSQL
compare/compare using and **repair/repair using** commands	Not supported
copy/copy using and **append/append using** commands	Not supported
Hash horizontally partitioned replication	PostgreSQL
Column-based horizontally partitioned replication	PostgreSQL
Vertically partitioned replication	PostgreSQL, Oracle
Column mapping	PostgreSQL, Oracle, SQL Server, Kafka, Snowflake
Key definition	PostgreSQL, Oracle
Build configuration with scripts	Not supported
Named queues	PostgreSQL, Oracle, SQL Server, Kafka, Snowflake
Commit Reduction (feature of Post Enhanced Performance)	PostgreSQL, Oracle, SQL Server, Kafka, Snowflake
Dependency Checking (feature of Post Enhanced Performance)	Not supported
Transformation	Not supported
Conflict resolution	PostgreSQL, Oracle
Peer-to-peer replication (bi-directional)	PostgreSQL, Oracle
Consolidated replication (many to one)	PostgreSQL, Oracle, SQL Server, Kafka, Snowflake
Broadcast replication (one to many)	PostgreSQL, Oracle, SQL Server, Kafka, Snowflake
High availability replication (active/passive bi-directional)	Not supported
Change tracking target (CDC)	Not supported
Data encryption	Not supported
Data compression	Not supported
SSH	PostgreSQL, Oracle, SQL Server, Kafka, Snowflake
auth_hosts file	Not supported
Monitoring scripts	Not supported

SharePlex feature	Supported targets
SNMP monitoring	Not supported
Continue posting on error (SP_OPX_CONT_ON_ERR)	PostgreSQL, SQL Server, Kafka, Snowflake
Suspend on out of sync errors (SP_OPX_OUT_OF_ SYNC_SUSPEND)	PostgreSQL, SQL Server, Kafka, Snowflake
Reduced key (SP_OPX_REDUCED_KEY)	PostgreSQL, SQL Server, Kafka, Snowflake
Logical Transaction Rollback on out-of-sync transactions	Not supported

Supported and non-supported key features for physical and logical slots

The table below presents information on the metrics that are supported and not supported for physical and logical slots in on-premises and PostgreSQL Database as a Service environments.

NOTE: SharePlex supports logical replication with pgoutput plugin only.

SharePlex Features	PostgreSQL On-Prem/Cloud VM		PGDB as a Service AWS- RDS and Aurora, Azure Flexi server
	Physical Replication	Logical Replication (pgoutput plugin)	Logical Replication (pgoutput plugin)
Activate with LSN	Supported	Not supported	Not supported
HA Cluster Replication with failover	Applicable with On-prem PostgreSQL database CrunchyData	Not supported	Not supported
Horizontal and Vertical Partitioning	Supported	Supported	Supported
Utilities and Commands	Supported	Supported	Supported
Database level Table Partitioning	Supported	Supported	Supported
Bi-Directional Replication	Supported	Supported	Supported
DDL Support	Not supported	Not supported	Not supported
Compare and Repair	Not supported	Not supported	Not supported
Replication Performance	No Lag	Minimal Lag	Minimal Lag
Insert using PostgreSQL Copy command	Not supported	Not supported	Not supported

PostgreSQL to Kafka replication

SharePlex supports replication from PostgreSQL to Kafka, according to the details below.

Supported operating systems

Supported operating systems via native installation:

RHEL 7.x and 8.x

Remote replication from the following operating systems is supported:

RHEL 7.x and 8.x

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported Kafka targets

Apache Kafka 0.8.x, 0.9.x, 0.10.x, 0.11.x, 1.0.x, 1.1.x, 2.0.x, 2.1.0, 2.3.1, 2.5.0, and 3.0

We test and reproduce issues against:

- Apache Kafka
- Confluent Kafka

NOTE: If you would like to use a different vendor who provides their own Kafka distribution or provides a Kafka compliant interface, you are welcome to do so. From a support perspective, our support and development teams will share any Kafka broker errors that SharePlex receives and also ensure SharePlex itself is working properly to capture data, the target configuration formats in SharePlex are correct, and the SharePlex poster is posting or attempting to post according to the Kafka versions under support. If there are SharePlex issues with Kafka support that can be reproduced on Apache Kafka or otherwise demonstrated to be definitely associated with SharePlex, our team will address those as standard Kafka issues.

Supported formats

- XML format
- JSON format

Supported DML operations

SharePlex supports DML operations on tables. DML can be replicated from a PostgreSQL source to a kafka target.

Tables

SharePlex supports the following DML operations on tables:

- Singular and bulk operation - Insert
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)
- Above operations with rollback/savepoint

Supported operations and objects for DDL replication

Currently, SharePlex does not support DDL operations when replicating data from a PostgreSQL source to a Kafka target. It only supports tables as objects for data replication.

PostgreSQL to Oracle replication

SharePlex supports replication from PostgreSQL to Oracle, according to the details below.

Supported target operating systems

The following operating systems are supported from PostgreSQL to Oracle database. SharePlex supports only the 64-bit version of the listed operating systems.

Native SharePlex installation is supported on the below platforms:

- AIX 7.1, 7.2, and 7.3
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- RHEL Linux 7.x and 8.x
- CentOS Linux 7.x
- Oracle Solaris SPARC 11
- CentOS Linux 7.x and 8.x
- SuSE SLES 12.x and 15.x
- HP-UX 11.31 Itanium

Remote replication from the following operating systems is supported:

- AIX 7.1, 7.2, and 7.3
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- RHEL Linux 7.x and 8.x
- CentOS Linux 7.x
- Oracle Solaris SPARC 11
- CentOS Linux 7.x and 8.x
- SuSE SLES 12.x and 15.x
- HP-UX 11.31 Itanium

Supported target operating systems via remote replication:

All platforms listed above, plus Windows Server 2016 and 2019, are supported via remote replication.

Supported target database versions

Oracle 19c

Supported target cloud platforms

Oracle Cloud Infrastructure

- Oracle Exadata Cloud Service (ExaCS)
- Oracle Exadata Cloud@Customer (ExaCC)
- Oracle Database Cloud Service (DBCS)
- Oracle Compute (IaaS) Virtual Machines and Bare Metal

Amazon Web Services

- Amazon RDS for Oracle
- Amazon EC2 (IaaS) Virtual Machine

Microsoft Azure

Azure Virtual Machine (IaaS)

Google Cloud Platform

Google Cloud SQL for PostgreSQL

Supported characterset

UTF 8

Supported data types

SharePlex supports the following data types for replication from PostgreSQL to Oracle:

PostgreSQL	Oracle
INT	NUMBER / INT
REAL	BINARY_FLOAT / NUMBER
SMALLINT	NUMBER
BIGINT	NUMBER
NUMERIC	NUMBER
DOUBLE PRECISION	BINARY_DOUBLE / NUMBER
CHAR(1:2000)	CHAR(n)
CHAR(2001:)	CLOB
CHAR(1:1000)	NCHAR(n)
VARCHAR(1:4000)	VARCHAR2(n)
VARCHAR(4001:)	CLOB

PostgreSQL	Oracle
VARCHAR	CLOB
VARCHAR(1:2000)	NVARCHAR2(n)
TEXT	CLOB / NCLOB
DATE	DATE
TIMESTAMP(0)	DATE
TIMESTAMP(0)	TIMESTAMP(0)
TIMESTAMP	TIMESTAMP / TIMESTAMP [(fractional_seconds_precision)] WITH LOCAL TIME ZONE
TIMESTAMP WITH TIME ZONE	TIMESTAMP WITH TIME ZONE
BOOLEAN	CHAR (1)*
BYTEA	BLOB

***NOTE:** For PostgreSQL Physical or Logical replication, BOOLEAN values will be replicated as 1/0 in a CHAR(1) column on the Oracle target.

SharePlex supports the following PostgreSQL data types for replication from PostgreSQL to Oracle when conflict resolution is configured:

- VARCHAR
- SMALLINT
- INT
- BIGINT
- NUMERIC
- DATE
- CHAR
- TIMESTAMP(0)
- TIMESTAMP
- TIMESTAMP WITH THE TIME ZONE
- TIME
- TIME WITH TIME ZONE
- BOOLEAN

Supported DML operations

SharePlex supports DML operations on tables. DML can be replicated from a PostgreSQL source to an Oracle target.

Tables

SharePlex supports the following DML operations on tables:

- Singular and bulk operation - Insert
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)
- Above operations with rollback/savepoint

The target table must support the column types that are being replicated from the source PostgreSQL table.

Supported operations and objects for DDL replication

Currently, SharePlex does not support DDL operations when replicating data from a PostgreSQL source to an Oracle target. It only supports tables as objects for data replication.

PostgreSQL to PostgreSQL replication

SharePlex supports replication from PostgreSQL to PostgreSQL , according to the details below.

Supported target operating systems

Native SharePlex installation is supported on the following platforms:

RHEL 7.x and 8.x

Remote replication from the following operating systems is supported:

RHEL 7.x and 8.x

Supported target operating systems via remote replication:

- AIX 7.1, 7.2, and 7.3
- CentOS Linux 7.x and 8.x
- HP-UX 11.31 Itanium
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- Oracle Solaris SPARC 11.4
- Oracle Solaris x86 11.4
- RHEL 7.x and 8.x
- SuSE SLES 12.x and 15.x
- Windows Server 2016 and 2019

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported target versions and ODBC requirements

PostgreSQL 13.x, 14.x, and 15.x

ODBC driver requirement: postgresql13-odbc-13.02.0000 and postgresql14-odbc-13.02.0000

Supported target cloud platforms

Amazon Web Services:

- Amazon EC2 (IaaS) Virtual Machine
- Amazon RDS for PostgreSQL
- Amazon Aurora

Microsoft Azure:

- Azure Virtual Machine (IaaS)
- Azure DBaaS

Google Cloud Platform:

Google Cloud SQL for PostgreSQL

Supported characterset

UTF 8

Supported data types

SharePlex PostgreSQL supports the following data types for replication from PostgreSQL to PostgreSQL:

- CHAR
- VARCHAR
- TEXT
- SMALLINT
- INT
- BIGINT
- NUMERIC
- REAL
- DOUBLE PRECISION
- DATE
- TIMESTAMP (0)
- TIMESTAMP
- TIMESTAMP WITH TIME ZONE
- BOOLEAN
- BYTEA
- TIME
- TIME WITH TIME ZONE

Supported DML operations

SharePlex supports DML operations on tables. DML can be replicated from a PostgreSQL source to a PostgreSQL target.

Tables

SharePlex supports the following DML operations on tables:

- Singular and bulk operation - Insert
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)
- Above operations with rollback/savepoint

The target table must support the column types that are being replicated from the source PostgreSQL table.

Supported operations and objects for DDL replication

Currently, SharePlex does not support DDL operations when replicating data from a PostgreSQL source to a PostgreSQL target. It only supports tables as objects for data replication.

PostgreSQL to Snowflake replication

SharePlex supports replication from PostgreSQL to Snowflake, according to the details below.

Supported operating systems

The following operating systems are supported for capture from a PostgreSQL database and replication to a Snowflake target database. SharePlex Snowflake supports only the 64-bit version of the listed operating systems.

SharePlex replicates remotely to Snowflake. Replication from the following operating systems is supported:

Red Hat Linux version 7.x and 8.x

Supported target versions and ODBC requirements

Snowflake 6.31 Enterprise, Community version

ODBC driver requirement: Snowflake 2.25.10

NOTE: If you cannot use ODBC 2.25.10, use the ODBC 2.24.2 version instead.

LIMITATIONS:
The following ODBC driver related limitations are observed while replicating data from Oracle to Snowflake:

- The following technical issues are identified with the Snowflake driver. Hence, we recommend you use the Snowflake ODBC Driver version 2.24.2.
    - Connection timeout issue with Snowflake ODBC Driver v2.24.3 and above
    - With Batch transactions, Snowflake can display `Schema Not Found` error with Snowflake ODBC Driver v. 2.25.4 and above.
- Do not use any version between 2.24.2 and 2.25.10, as those versions contain bugs that need to be fixed. For further information, please refer to the links below:

  https://docs.snowflake.com/en/release-notes/client-change-log-odbc

  https://community.snowflake.com/s/article/ODBC-Driver-Release-Notes

Supported target cloud platforms

Microsoft Azure

Supported data types

SharePlex supports the following data types for replication from PostgreSQL to Snowflake:

PostgreSQL	Snowflake
TEXT	TEXT
INT	INT,INTEGER,NUMBER
CHAR(1:2000)	VARCHAR(n)
CHAR(2001:)	VARCHAR(n)
CHAR(n)	CHAR(n)
VARCHAR(1:4000)	VARCHAR(n)
VARCHAR(4001:)	VARCHAR(n)
VARCHAR	VARCHAR(n)
REAL	REAL
SMALLINT	SMALLINT
BIGINT	BIGINT
NUMERIC (whole number without fraction)	NUMERIC, DECIMAL
NUMERIC (fractional number)	FLOAT
DATE	DATE
DOUBLE PRECISION	DOUBLE PRECISION
TIMESTAMP	TIMESTAMP
TIMESTAMP_TZ	TIMESTAMP_TZ
BOOLEAN	BOOLEAN
TIME	TIME

Conditions of support

- **Char(n) data type -** In PostgreSQL, Char(n) is a fixed-size data type. If you insert char data with a length less than "n" into the "Char(n)" column, the remaining slots (n - length) are padded with space to occupy the complete "n" memory positions. Snowflake uses VARCHAR(n) for char storage since Snowflake lacks a comparable fixed-length character data type and only saves char data up to its length. Live replication will ensure that char column data is correctly copied. However, if users are manually inserting data into Snowflake for the equivalent of a Char(n) PostgreSQL column, then the user will need to handle padding as well to occupy the full "n" length so that data will be in sync in both the source and target database.
- **Text data types -** Snowflake Text data types have size limitation of 8 MB, so PostgreSQL's TEXT data type replication will be restricted to max 8 MB size limit of equivalent counterpart. Refer table below.

PostgreSQL Data type	Max Size	Snowflake Data type	Max Size
TEXT	unlimited	TEXT	8 MB of unicode chars

See Conditions of support for the additional conditions of support for the above-mentioned supported data types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables, with some conditions. DML can be replicated from an PostgreSQL source to a Snowflake target.

Tables

SharePlex supports the following DML operations on tables when replicating data from an PostgreSQL source to the Snowflake target:

- Singular and bulk operation - Insert with key(s)/ non key(s)
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)/ non key(s)

LIMITATIONS:
The following DML operations related limitations are observed while replicating data from PostgreSQL to Snowflake:

- Slowness while performing DML operations
  - **Single Insert:** Frequent commits and rollbacks can cause slowness in replication.
  - **Batch Inserts:** Insert with advance data types [target Snowflake data types: TEXT and BINARY] can cause significant slowness in replication for data with plain text or binary JSON and XML.
  - **Single Update and Delete :** Frequent commits and rollbacks can cause slowness.
  - **Batch Update and Delete:** The Snowflake ODBC driver does not support batching of transactions. It can cause significant slowness in replication.

For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

Currently, SharePlex does not support DDL operations when replicating data from a PostgreSQL source to a Snowflake target. It only supports tables as objects for data replication.

PostgreSQL to SQL Server replication

SharePlex supports replication from PostgreSQL to SQL Server, according to the details below.

Supported target operating systems

The following operating systems are supported for SQL Server database. SharePlex supports only the 64-bit version of the listed operating systems.

Supported operating systems via native installation:

RHEL 7.x and 8.x

Remote replication from the following operating systems is supported:

RHEL 7.x and 8.x

Supported target operating systems via remote replication:

All platforms listed above, plus Windows Server 2016 and 2019, are supported via remote replication.

Supported target versions and ODBC requirements

SQL Server 2012, 2014, 2016, 2017, 2019, and 2022

> **NOTE:** SQL Server 2012, 2014, and 2016 databases hosted on Windows servers are compatible with Windows Server 2016 and above.

ODBC driver requirement: ODBC 17.10.1.1-1

Supported target cloud platforms

Amazon Web Services

Amazon EC2 (IaaS) Virtual Machine

Microsoft Azure

- Azure Virtual Machine (IaaS)
- Azure SQL Database
- Azure SQL Managed Instance

Google Cloud Platform

Google Cloud SQL for PostgreSQL

Supported data types

SharePlex supports the following data types for replication from PostgreSQL to SQL Server:

PostgreSQL	SQL Server
INT	INT
REAL	REAL
SMALLINT	SMALLINT
BIGINT	BIGINT
NUMERIC / DECIMAL	NUMERIC / DECIMAL
DOUBLE PRECISION	FLOAT
CHAR (1:8000)	CHAR(n)
CHAR (8001:)	VARCHAR (MAX)
CHAR (1:2000)	NCHAR (n)
VARCHAR (1:8000)	VARCHAR (n)
VARCHAR (8001:)	VARCHAR (MAX)
VARCHAR(1:2000)	NVARCHAR (n)
VARCHAR	VARCHAR (MAX) / TEXT
TEXT	TEXT / NTEXT / VARCHAR(MAX)
DATE	DATE
TIMESTAMP (p)	DATETIME2 (p)
TIMESTAMP	DATETIME2
TIMESTAMP WITH TIME ZONE	DATETIMEOFFSET

Supported DML operations

SharePlex supports DML operations on tables. DML can be replicated from a PostgreSQL source to an SQL Server target.

Tables

SharePlex supports the following DML operations on tables:

- Singular and bulk operation - Insert
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)
- Above operations with rollback/savepoint

The target table must support the column types that are being replicated from the source PostgreSQL table.

Supported operations and objects for DDL replication

Currently, SharePlex does not support DDL operations when replicating data from a PostgreSQL source to an SQL Server target. It only supports tables as objects for data replication.

System Requirements and Conditions of Support When Replicating from PostgreSQL Database as a Service

This chapter contains the requirements when capturing from a PostgreSQL database and replicating to supported target databases.

PostgreSQL Database as a Service as source and target basics

SharePlex supports replication for the PostgreSQL Database as a Service as source, according to the details below.

Supported operating systems

Supported source operating systems via remote capture:

RHEL 7.x and 8.x

Supported target operating systems remote replication:

RHEL 7.x and 8.x

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported cloud platforms

Amazon Web Services:

- Amazon EC2 (IaaS) Virtual Machine
- Amazon RDS for PostgreSQL
- Amazon Aurora

Microsoft Azure:

- Azure Virtual Machine (IaaS)
- Azure Database for PostgreSQL Flexible Server

Google Cloud Platform:

Google Cloud SQL for PostgreSQL

NOTE: PostgreSQL Database as a Service supports only logical replication.

Supported PostgreSQL versions

PostgreSQL 13.x , 14.x, and 15.x

ODBC driver requirement: postgresql13-odbc-13.02.0000 and postgresql14-odbc-13.02.0000

Supported data types

- CHAR
- VARCHAR
- SMALLINT
- INT
- BIGINT
- NUMERIC
- REAL
- DOUBLE PRECISION
- DATE
- TIMESTAMP [p]
- TIMESTAMP
- TIMESTAMP [p] [WITH TIME ZONE]
- TEXT

Supported DML operations

SharePlex supports DML operations on tables. DML can be replicated from a PostgreSQL Database as a Service as source to a PostgreSQL target.

Tables

SharePlex supports the following DML operations on tables:

- Singular and bulk operation - Insert
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)
- Above operations with rollback/savepoint

The target table must support the column types that are being replicated from the source PostgreSQL table.

Supported operations and objects for DDL replication

Currently, SharePlex does not support DDL operations when replicating data from a PostgreSQL Database as a Service as source to a PostgreSQL target. It only supports tables as objects for data replication.

PostgreSQL Database as a Service to Kafka replication

SharePlex supports replication from PostgreSQL Database as a Service to Kafka, according to the details below.

Supported operating systems

Supported source operating systems via remote capture:

RHEL 7.x and 8.x

Remote replication from the following operating systems is supported:

RHEL 7.x and 8.x

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported Kafka targets

Apache Kafka 0.8.x, 0.9.x, 0.10.x, 0.11.x, 1.0.x, 1.1.x, 2.0.x, 2.1.0, 2.3.1, 2.5.0, and 3.0

We test and reproduce issues against:

- Apache Kafka
- Confluent Kafka

NOTE: If you would like to use a different vendor who provides their own Kafka distribution or provides a Kafka compliant interface, you are welcome to do so. From a support perspective, our support and development teams will share any Kafka broker errors that SharePlex receives and also ensure SharePlex itself is working properly to capture data, the target configuration formats in SharePlex are correct, and the SharePlex poster is posting or attempting to post according to the Kafka versions under support. If there are SharePlex issues with Kafka support that can be reproduced on Apache Kafka or otherwise demonstrated to be definitely associated with SharePlex, our team will address those as standard Kafka issues.

Supported formats

- XML format
- JSON format

Supported DML operations

SharePlex supports DML operations on tables. DML can be replicated from a PostgreSQL Database as a Service as source to a Kafka target.

Tables

SharePlex supports the following DML operations on tables:

- Singular and bulk operation - Insert
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)
- Above operations with rollback/savepoint

Supported operations and objects for DDL replication

SharePlex does not support DDL operations and objects when replicating data from a PostgreSQL Database as a Service as source to a Kafka target.

PostgreSQL Database as a Service to Oracle replication

SharePlex supports replication from PostgreSQL Database as a Service to Oracle, according to the details below.

Supported target operating systems

The following operating systems are supported from PostgreSQL Database as a Service to Oracle database. SharePlex supports only the 64-bit version of the listed operating systems.

Native SharePlex installation is supported on the below platforms:

- AIX 7.1, 7.2, and 7.3
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- RHEL Linux 7.x and 8.x
- CentOS Linux 7.x
- Oracle Solaris SPARC 11
- CentOS Linux 7.x and 8.x
- SuSE SLES 12.x and 15.x
- HP-UX 11.31 Itanium

Remote replication from the following operating systems is supported:

- AIX 7.1, 7.2, and 7.3
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- RHEL Linux 7.x and 8.x
- CentOS Linux 7.x
- Oracle Solaris SPARC 11
- CentOS Linux 7.x and 8.x
- SuSE SLES 12.x and 15.x
- HP-UX 11.31 Itanium

Supported target operating systems via remote replication:

All platforms listed above, plus Windows Server 2016 and 2019, are supported via remote replication.

Supported target database versions

Oracle 19c

Supported target cloud platforms

Oracle Cloud Infrastructure

- Oracle Exadata Cloud Service (ExaCS)
- Oracle Exadata Cloud@Customer (ExaCC)
- Oracle Database Cloud Service (DBCS)
- Oracle Compute (IaaS) Virtual Machines and Bare Metal

Amazon Web Services

- Amazon RDS for Oracle
- Amazon EC2 (IaaS) Virtual Machine

Microsoft Azure

Azure Virtual Machine (IaaS)

Google Cloud Platform

Google Cloud SQL for PostgreSQL

Supported characterset

UTF 8

Supported data types

SharePlex supports the following data types for replication from PostgreSQL Database as a Service to Oracle:

PostgreSQL	Oracle
INT	NUMBER / INT
REAL	BINARY_FLOAT / NUMBER
SMALLINT	NUMBER
BIGINT	NUMBER
NUMERIC	NUMBER
DOUBLE PRECISION	BINARY_DOUBLE / NUMBER
CHAR(1:2000)	CHAR(n)
CHAR(2001:)	CLOB
CHAR(1:1000)	NCHAR(n)
VARCHAR(1:4000)	VARCHAR2(n)

PostgreSQL	Oracle
VARCHAR(4001:)	CLOB
VARCHAR	CLOB
VARCHAR(1:2000)	NVARCHAR2(n)
TEXT	CLOB / NCLOB
DATE	DATE
TIMESTAMP(0)	DATE
TIMESTAMP(0)	TIMESTAMP(0)
TIMESTAMP	TIMESTAMP / TIMESTAMP [(fractional_seconds_precision)] WITH LOCAL TIME ZONE
TIMESTAMP WITH TIME ZONE	TIMESTAMP WITH TIME ZONE
BOOLEAN	CHAR (1)*
BYTEA	BLOB

***NOTE:** For PostgreSQL Physical or Logical replication, BOOLEAN values will be replicated as 1/0 in a CHAR(1) column on the Oracle target.

SharePlex supports the following PostgreSQL data types for replication from PostgreSQL Database as a Service to Oracle when conflict resolution is configured:

- VARCHAR
- SMALLINT
- INT
- BIGINT
- NUMERIC
- DATE
- CHAR
- TIMESTAMP(0)
- TIMESTAMP
- TIMESTAMP WITH THE TIME ZONE
- TIME
- TIME WITH TIME ZONE
- BOOLEAN

Supported DML operations

SharePlex supports DML operations on tables. DML can be replicated from a PostgreSQL Database as a Service to an Oracle target.

Tables

SharePlex supports the following DML operations on tables:

- Singular and bulk operation - Insert
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)
- Above operations with rollback/savepoint

The target table must support the column types that are being replicated from the source PostgreSQL table.

Supported operations and objects for DDL replication

Currently, SharePlex does not support DDL operations when replicating data from a PostgreSQL Database as a Service as source to an Oracle target. It only supports tables as objects for data replication.

PostgreSQL Database as a Service to PostgreSQL replication

SharePlex supports replication from PostgreSQL Database as a Service to PostgreSQL, according to the details below.

Supported target operating systems

Native SharePlex installation is supported on the following platforms:

RHEL 7.x and 8.x

Remote replication from the following operating systems is supported:

RHEL 7.x and 8.x

Supported target operating systems via remote replication:

- AIX 7.1, 7.2, and 7.3
- CentOS Linux 7.x and 8.x
- HP-UX 11.31 Itanium
- Oracle Linux (RHCK and UEK) 7.x and 8.x
- Oracle Solaris SPARC 11.4
- Oracle Solaris x86 11.4
- RHEL 7.x and 8.x
- SuSE SLES 12.x and 15.x
- Windows Server 2016 and 2019

NOTE: SharePlex supports only the 64-bit version of the listed operating systems.

Supported target versions and ODBC requirements

PostgreSQL 13.x, 14.x, and 15.x

ODBC driver requirement: postgresql13-odbc-13.02.0000 and postgresql14-odbc-13.02.0000

Supported target cloud platforms

Amazon Web Services:

- Amazon EC2 (IaaS) Virtual Machine
- Amazon RDS for PostgreSQL

- Amazon Aurora

Microsoft Azure:

- Azure Virtual Machine (IaaS)
- Azure DBaaS

Google Cloud Platform:

Google Cloud SQL for PostgreSQL

Supported characterset

UTF 8

Supported data types

SharePlex PostgreSQL supports the following data types for replication from PostgreSQL Database as a Service to PostgreSQL:

- CHAR
- VARCHAR
- TEXT
- SMALLINT
- INT
- BIGINT
- NUMERIC
- REAL
- DOUBLE PRECISION
- DATE
- TIMESTAMP (0)
- TIMESTAMP
- TIMESTAMP WITH TIME ZONE
- BOOLEAN
- BYTEA
- TIME
- TIME WITH TIME ZONE

Supported DML operations

SharePlex supports DML operations on tables. DML can be replicated from a PostgreSQL Database as a Service to a PostgreSQL target.

Tables

SharePlex supports the following DML operations on tables:

- Singular and bulk operation - Insert
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)
- Above operations with rollback/savepoint

The target table must support the column types that are being replicated from the source PostgreSQL table.

Supported operations and objects for DDL replication

Currently, SharePlex does not support DDL operations when replicating data from a PostgreSQL Database as a Service as source to a PostgreSQL target. It only supports tables as objects for data replication.

PostgreSQL Database as a Service to Snowflake replication

SharePlex supports replication from PostgreSQL Database as a Service to Snowflake, according to the details below.

Supported operating systems

The following operating systems are supported for capture from a PostgreSQL Database as a Service and replication to a Snowflake target database. SharePlex Snowflake supports only the 64-bit version of the listed operating systems.

SharePlex replicates remotely to Snowflake. Replication from the following operating systems is supported:

Red Hat Linux version 7.x and 8.x

Supported target versions and ODBC requirements

Snowflake 6.31 Enterprise, Community version

ODBC driver requirement: Snowflake 2.25.10

NOTE: If you cannot use ODBC 2.25.10, use the ODBC 2.24.2 version instead.

LIMITATIONS:
The following ODBC driver related limitations are observed while replicating data from Oracle to Snowflake:

- The following technical issues are identified with the Snowflake driver. Hence, we recommend you use the Snowflake ODBC Driver version 2.24.2.
    - Connection timeout issue with Snowflake ODBC Driver v2.24.3 and above
    - With Batch transactions, Snowflake can display `Schema Not Found` error with Snowflake ODBC Driver v. 2.25.4 and above.
- Do not use any version between 2.24.2 and 2.25.10, as those versions contain bugs that need to be fixed. For further information, please refer to the links below:

  https://docs.snowflake.com/en/release-notes/client-change-log-odbc

  https://community.snowflake.com/s/article/ODBC-Driver-Release-Notes

Supported target cloud platforms

Microsoft Azure

Supported data types

SharePlex supports the following data types for replication from PostgreSQL Database as a Service to Snowflake:

PostgreSQL	Snowflake
TEXT	TEXT
INT	INT,INTEGER,NUMBER
CHAR(1:2000)	VARCHAR(n)
CHAR(2001:)	VARCHAR(n)
CHAR(n)	CHAR(n)
VARCHAR(1:4000)	VARCHAR(n)
VARCHAR(4001:)	VARCHAR(n)
VARCHAR	VARCHAR(n)
REAL	REAL
SMALLINT	SMALLINT
BIGINT	BIGINT
NUMERIC (whole number without fraction)	NUMERIC, DECIMAL
NUMERIC (fractional number)	FLOAT
DATE	DATE
DOUBLE PRECISION	DOUBLE PRECISION
TIMESTAMP	TIMESTAMP
TIMESTAMP_TZ	TIMESTAMP_TZ
BOOLEAN	BOOLEAN
TIME	TIME

Conditions of support

- **Char(n) data type -** In PostgreSQL, Char(n) is a fixed-size data type. If you insert char data with a length less than "n" into the "Char(n)" column, the remaining slots (n - length) are padded with space to occupy the complete "n" memory positions. Snowflake uses VARCHAR(n) for char storage since Snowflake lacks a comparable fixed-length character data type and only saves char data up to its length. Live replication will ensure that char column data is correctly copied. However, if users are manually inserting data into Snowflake for the equivalent of a Char(n) PostgreSQL column, then the user will need to handle padding as well to occupy the full "n" length so that data will be in sync in both the source and target database.
- **Text data types -** Snowflake Text data types have size limitation of 8 MB, so PostgreSQL's TEXT data type replication will be restricted to max 8 MB size limit of equivalent counterpart. Refer table below.

PostgreSQL Data type	Max Size	Snowflake Data type	Max Size
TEXT	unlimited	TEXT	8 MB of unicode chars

See Conditions of support for the additional conditions of support for the above-mentioned supported data types.

Supported operations and objects for DML replication

SharePlex supports DML operations on tables, with some conditions. DML can be replicated from an PostgreSQL Database as a Service to a Snowflake target.

Tables

SharePlex supports the following DML operations on tables when replicating data from an PostgreSQL Database as a Service to the Snowflake target:

- Singular and bulk operation - Insert with key(s)/ non key(s)
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)/ non key(s)

LIMITATIONS:
The following DML operations related limitations are observed while replicating data from PostgreSQL Database as a Service to Snowflake:

- Slowness while performing DML operations
  - **Single Insert:** Frequent commits and rollbacks can cause slowness in replication.
  - **Batch Inserts:** Insert with advance data types [target Snowflake data types: TEXT and BINARY] can cause significant slowness in replication for data with plain text or binary JSON and XML.
  - **Single Update and Delete :** Frequent commits and rollbacks can cause slowness.
  - **Batch Update and Delete:** The Snowflake ODBC driver does not support batching of transactions. It can cause significant slowness in replication.

For additional information, see Supported Operations and Objects for DML Replication.

Supported operations and objects for DDL replication

Currently, SharePlex does not support DDL operations when replicating data from a PostgreSQL Database as a Service as source to a Snowflake target. It only supports tables as objects for data replication.

PostgreSQL Database as a Service to SQL Server replication

SharePlex supports replication from PostgreSQL Database as a Service to SQL Server, according to the details below.

Supported target operating systems

The following operating systems are supported for SQL Server database. SharePlex supports only the 64-bit version of the listed operating systems.

Supported operating systems via native installation:

RHEL 7.x and 8.x

Remote replication from the following operating systems is supported:

RHEL 7.x and 8.x

Supported target operating systems via remote replication:

All platforms listed above, plus Windows Server 2016 and 2019, are supported via remote replication.

Supported target versions and ODBC requirements

SQL Server 2012, 2014, 2016, 2017, 2019 and 2022

> **NOTE:** SQL Server 2012, 2014, and 2016 databases hosted on Windows servers are compatible with Windows Server 2016 and above.

ODBC driver requirement: ODBC 17.10.1.1-1

Supported target cloud platforms

Amazon Web Services

Amazon EC2 (IaaS) Virtual Machine

Microsoft Azure

- Azure Virtual Machine (IaaS)
- Azure SQL Database
- Azure SQL Managed Instance

Google Cloud Platform

Google Cloud SQL for PostgreSQL

Supported data types

SharePlex supports the following data types for replication from PostgreSQL Database as a Service to SQL Server:

PostgreSQL	SQL Server
INT	INT
REAL	REAL
SMALLINT	SMALLINT
BIGINT	BIGINT
NUMERIC / DECIMAL	NUMERIC / DECIMAL
DOUBLE PRECISION	FLOAT
CHAR (1:8000)	CHAR(n)
CHAR (8001:)	VARCHAR (MAX)
CHAR (1:2000)	NCHAR (n)
VARCHAR (1:8000)	VARCHAR (n)
VARCHAR (8001:)	VARCHAR (MAX)
VARCHAR(1:2000)	NVARCHAR (n)
VARCHAR	VARCHAR (MAX) / TEXT
TEXT	TEXT / NTEXT / VARCHAR(MAX)
DATE	DATE
TIMESTAMP (p)	DATETIME2 (p)
TIMESTAMP	DATETIME2
TIMESTAMP WITH TIME ZONE	DATETIMEOFFSET

Supported DML operations

SharePlex supports DML operations on tables. DML can be replicated from a PostgreSQL Database as a Service to an SQL Server target.

Tables

SharePlex supports the following DML operations on tables:

- Singular and bulk operation - Insert
- Singular and bulk operation - Update with key(s)/ non key(s)
- Singular and bulk operation - Delete with key(s)
- Above operations with rollback/savepoint

The target table must support the column types that are being replicated from the source PostgreSQL table.

Supported operations and objects for DDL replication

Currently, SharePlex does not support DDL operations when replicating data from a PostgreSQL Database as a Service as source to an SQL Server target. It only supports tables as objects for data replication.

Known Issues in this Release

The following is a list of known issues, including those attributed to third-party products, known to exist at the time of release.

Issue ID	Known Issues	Component/ Feature
SPSQL-5252	In the bi-directional replication of data from PostgreSQL 14.7 Google Cloud Platform to Oracle, the Poster process stops with an error when a user-defined procedure tries to resolve the conflicts that occurred on columns with a VARCHAR data type. This issue is observed if the update statement is triggered simultaneously in the same row on both source and target.	Bi-directional replication
SPSQL-4982	When there are multiple Named Queues set up in replication, after activating the config, the SharePlex Poster process displays the `execute select pg_replication_origin_create ('sp_post_2600_7'); failed` error upon its initial startup. However, after displaying the error, SharePlex automatically restarts the Poster process to resolve the issue.	Poster
SPSQL-4981	The SharePlex Poster process abruptly stops with the `Can't find object id` error when the `SP_OPX_THREADS` parameter is set to a higher number of threads that the system does not support. **Example:** Number of CPU(s): 4, Thread(s) per core: 2, Core(s) per socket: 2. Therefore, the optimal value for the `SP_OPX_THREADS` parameter is 4, with a maximum of 3 Post processes in a single server. **WORKAROUND:** Reset the `SP_OPX_THREADS` parameter to a lower value than the previous setting and restart the Poster process.	Poster
SPSQL-4971	The tables are getting out-of-sync after users perform bulk DML operations on the CLOB column data. This issue has been observed while working on Oracle 21c.	Oracle 21c
SPSQL-4854	The SharePlex Poster displays an error regarding the invalid length for a variable character string while replicating CLOB column data from Oracle to Oracle. This issue has been observed while working on Oracle 19c on the RHEL platform, and Oracle 21c. **Affected versions:** SharePlex 10.2, 11.0, 11.1, and 11.2 on the Linux platform.	Oracle to Oracle
SPSQL-4909	SharePlex displays a value in the `TARGET_ROWID` column of the `shareplex_conf_log` table even when the user sets the parameter `SP_OPO_LOG_CONFLICT` to 1. This issue is observed while replicating data from PostgreSQL to Oracle and Oracle to Oracle.	PostgreSQL to Oracle and Oracle to Oracle.
SPSQL-3596	In bi-directional replication of data from PostgreSQL to Oracle, an Oracle custom routine (`splex.PROCEDURE1`) is not taking priority over a SharePlex-prepared routine. On the contrary, the SharePlex-prepared routine (`LeastRecentRecord`) is taking priority over the custom procedure on Oracle Peer for conflict resolution.	PostgreSQL-Oracle BDR

Issue ID	Known Issues	Component/ Feature

SPO-24757	SharePlex displays the "`ORA-04036: PGA memory used by the instance exceeds PGA_AGGREGATE_LIMIT`" error while performing the Compare/Repair operation on the XML data.
	WORKAROUND:
	1. Upgrade Oracle to 19.19 DBRU
	2. Set appropriate PGA_AGGREGATE_LIMIT using the below Oracle suggested script :
	`WITH`
	`MAX_PGA as`
	`(select round(value/1024/1024,1) max_pga from v$pgastat where name='maximum PGA allocated'),`
	`MGA_CURR as`
	`(select round(value/1024/1024,1) mga_curr from v$pgastat where name='MGA allocated (under PGA)'),`
	`MAX_UTIL as`
	`(select max_utilization as max_util from v$resource_limit where resource_name='processes')`
	`SELECT`
	`a.max_pga "Max PGA (MB)",`
	`b.mga_curr "Current MGA (MB)",`
	`c.max_util "Max # of processes",`
	`round(((a.max_pga - b.mga_curr) + (c.max_util * 5)) * 1.1, 1) "New PGA_AGGREGATE_LIMIT (MB)"`
	`FROM MAX_PGA a, MGA_CURR b, MAX_UTIL c`
	`WHERE 1 = 1;`
	3. Upgrade to or install the SharePlex 11.1 version
		Compare/Repair

SPO-22342	Performance issue is observed while performing the DML operations in bulk.	MySQL
SPO-22517	Performance issue is observed during replication while using partition table over the cloud.	PostgreSQL and MySQL
SPO-21993	While activating a config file with an Oracle SCN number, users are not able to delete a column in a DDL activity.	DDL Drop Column
SPO-21339	The SharePlex Capture process is getting stuck when users change the Oracle compatibility parameter from 11g to 12c. This issue is observed on the 12c 4 node RAC database.	Capture

Issue ID	Known Issues	Component/ Feature
SPO-20843	Copy job status shows 'Locked' even when competed.	Copy/ Append
SPO-20842	On Oracle 19c processing large n-items can lead to OOS and/or missing commits.	LOBs, VARRAYs, XML
SPO-20841	Post will fail with ORA-14400 performing DML on partitioned table with VARAY residing in an OLTP compressed tablespace.	Partitioned Replication
SPO-20733	Compare will hang and the compare server will exit comparing table that has VARRAY containing UDT type.	Compare
SPO-20451	Compare/Repair using [schema].[table] may not work on AIX7.2 with Oracle19c due to establishing a network connection.	Compare
SPO-20205	**Oracle to Kafka supported data format:** Kafka replicates the varray column data only in the XML format. Currently, Kafka does not replicate the varray column data in the JSON format.	Kafka
SPO-19048	Replication of tables with varray columns from an Oracle source to a non-Oracle target can get out of sync because Oracle doesn't include key information on updates.	Post to non-Oracle targets
SPO-16453	The BINARY_FLOAT and BINARY_DOUBLE data types are not supported for the **copy** command.	Character Sets

Third-party known issues

Issue ID	Known Issue	Component/ Feature
SR 3-33906406631	After moving the LOB segment, users may encounter an 'ORA-22275' or 'ORA-22990' Oracle error when performing DML operations. Additionally, the Compare result may be displayed as out of sync. This intermittent issue has been observed on Oracle 21c. This is a known Oracle bug. See Oracle bug report SR 3-33906406631.	Oracle
101806	When replicating data from Oracle to MySQL, SharePlex Poster displays an error after performing the Update operation on columns with the data type integer and column values that are multiples of 1000. This issue is related to a defect in the MySQL database: https://bugs.mysql.com/bug.php?id=101806	MySQL
54799	RHEL with 11g may encounter issues when producing core files. To work around this issue users will need to change the parameter "core_pattern" in the /proc/sys/kernel/core_pattern file. The following command enables core files: sysctl -w kernel.core_pattern=core. The original setting is: /corefiles/core. In this state, the system looks for a directory named /corefiles, which does not exist, therefore a core file could not be created.	Linux
125639	There might be an issue when replicating VARRAYs with FLOAT(n) type to a target machine running Oracle 10g, due to the way that Oracle handles Float(n) types. Float is not an Oracle type; it is a SQL-92 type and Oracle is not consistent in the way that it handles the float type. This is a known Oracle bug. See Oracle bug report 4266304.	Oracle

Issue ID	Known Issue	Component/ Feature
44626	Users wishing to employ IOTs with overflow need to be running Oracle 11g or higher. This is a known Oracle issue addressed under Oracle Bug 4627859.	Oracle
53701	There is a known issue with INSERT DIRECT LOAD VALUES (IDLV) in Oracle 11g that prevents the reading or modification of an object after modifying it in parallel. Oracle has provided three (3) solutions for addressing this issue. They can be found in the Oracle update of SR6849411.993 dated 05-07-2008. This issue was fixed by Oracle in 11gR2.	Oracle
59258	Oracle versions 10.2.0.1 through 11.1.0.6 on AIX 5.3 (64 bit), members of SharePlex Admin group, other than the installation user, cannot run ora_ setup or start SharePlex. This is an Oracle issue. Please refer to Oracle Bug# 6800649 and apply Patch 6800649.	Oracle
75179	Oracle 11gR2 - During a SYNC job, the copy of a new table (without data) failed at “EXP-00011: table does not exist” . The table that failed is a new table without any data. The EXP-00011 is caused by 11gR2 new feature "Deferred Segment Creation" that is controlled by the initialization parameter DEFERRED_SEGMENT_CREATION. The default is ON. To avoid this error, disable the parameter. A tar has been opened with Oracle and Oracle created a note 960216.1 Original Export Raises EXP-11 Table Does Not Exist.	Oracle
92152	OLTP compression with supplemental logging enabled may corrupt the Oracle Undo block, so Oracle suggests disabling supplemental logging when running OLTP compression. However, SharePlex requires supplemental logging to be enabled, so you may encounter this bug. This affects Oracle versions 11.2.0.2, 11.2.0.1 and 11.1.0.7. See Metalink ID 1191474.1.	Oracle

Licensing

To use the license utilities, such as to view, add, or remove license keys, see the **SharePlex License Utilities** section in the SharePlex Reference guide or SharePlex Installation and Setup Guide. For more information, contact your account manager.

SharePlex 11 requires new license keys.

License keys issued for versions prior to 11.0 will be incompatible with SharePlex 11.x. Existing customers should obtain a new license key before installing and/or upgrading to SharePlex 11.x. To obtain a new license key, please refer to the Licensing Assistance page on the Support Portal.

SharePlex 11.0 and 11.1 are available for installation on Linux and Unix platforms.

An 11.x version of SharePlex that can be natively installed on Windows will be delivered in the future. Customers who wish to replicate to and from sources and targets that run on Windows can either use the 10.x version of SharePlex or use remote replication, where the SharePlex software runs on a Linux server. Please see the System Requirements sections for details on supported source/target combinations with remote replication.

> **NOTE:** To upgrade from SharePlex 10.x to 11.0 or 11.1, a new SharePlex license key must be requested. However, to upgrade from SharePlex 11.0 to 11.1, the existing effective SharePlex license key can be utilized.

Understanding SharePlex licensing and platform requirements

SharePlex licenses have validity and usage limits according to specific platforms. For example, you must have a PostgreSQL license to use a PostgreSQL database and a Kafka license to use the Kafka platform.

Additionally, SharePlex supports multiple keys for situations where customers need two platforms on one server.

For example, if a user is replicating data from an Oracle source to a Kafka target, where one SharePlex instance is serving as both the source and target, the SharePlex server would require both Oracle and Kafka licenses.

Installing a trial version

To install a trial version of SharePlex, users need to select the **All Platforms** option when prompted during installation of SharePlex or while running the **splex_add_key** utility. For additional information, see the **Install SharePlex** section in the SharePlex Installation Guide.

Third Party Contributions in this Release

This product contains the following third-party components. For third-party license information, go to our website at https://www.quest.com/legal/third-party-licenses.aspx. Source code for components marked with an asterisk (*) is available at https://opensource.quest.com.

Table 1: List of Third-Party Contributions

Component	License or Acknowledgment
ActiveMQ-CPP 3.9.5	Copyright © 2019, The Apache Software Foundation. Apache License 2.0.
Apache Commons Cli 1.2	Copyright © 2000-2014 The Apache Software Foundation. All Rights Reserved. Apache License 2.0.
Apache Commons Collections 3.2.1	Copyright © 2000-2014 The Apache Software Foundation. All Rights Reserved. Apache License 2.0.
Apache Commons IO 2.4	Copyright © 2002-2019 The Apache Software Foundation. All Rights Reserved. Apache License 2.0.
Apache Commons Lang 3.1	Copyright © 2001-2019 The Apache Software Foundation. All Rights Reserved. Apache License 2.0.
Apache Portable Runtime (APR) 1.7.2	Copyright (C) 2014 Free Software Foundation, Inc. Copyright (C) 1996-2019, 2021-2022 Free Software Foundation, Inc. Copyright (C) 2010-2019, 2021 Bootstrap Authors
apr-util-1.6.3	Copyright (C) 1991-2, RSA Data Security, Inc. Created 1991. All, Copyright (C) 1991-2, RSA Data Security, Inc. Created 1991., Copyright (c) 2012-2014 Jean-Philippe Aumasson Copyright (c) 2012-2014 Daniel J. Bernstein <djb@cr.yp.to>
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