

SharePlex® 9.1.0

Release Notes

Revision: 5/23/2018

About SharePlex	4
Join our community	5
About this release	6
New features in this release	7
New in version 9.1.0	7
New Features - Oracle	7
New support for Oracle in Amazon RDS cloud	7
Remote capture from Oracle	9
Oracle replication to Amazon Aurora PostgreSQL	9
Additional Oracle platform support	10
Support for Oracle object ids greater than 2147483647	10
New Oracle capture parameters	10
New Features - SQL Server	10
SQL Server replication to MySQL, PostgreSQL, Kafka	10
Capture from SQL Server 2008 R2	10
Support for additional SQL Server data types	11
Other new features	11
New database-specific installation guides	11
Updated SharePlex demonstrations	11
Enhancements in this release	12
Deprecations in this release	13
End of support for Oracle 10g	13
Parameter deprecations	13
Resolved Issues in this release	14

Resolved in version 9.1.0	14
Basic system requirements	16
System	16
Internet protocol	16
Interoperability between versions	17
System Requirements — Oracle Capture	19
Basic requirements	19
Supported versions and targets	19
On-premises Oracle source to on-premises Oracle target	19
On-premises Oracle source to on-premises Open Target	23
On-premises Oracle source to all cloud target types	27
Cloud Oracle source to all cloud target types	27
Supported data types — Oracle to Oracle	28
Conditions of support	29
Supported data types — Oracle to Open Target	31
Oracle to HANA supported data types	32
Oracle to MySQL supported data types	32
Oracle to PostgreSQL supported data types	33
Oracle to SAP ASE supported data types	34
Oracle to SQL Server supported data types	34
Oracle to Sybase supported data types	35
Oracle to Teradata supported data types	36
Oracle to XML supported data types	36
Supported objects and operations for DML replication	37
Tables	37
Sequences	38
Secured and compressed objects	38
Supported operations and objects for DDL replication	39
Oracle-to-Oracle DDL support	40
Oracle-to-Open Target DDL support	44
Non-supported Oracle features	45
Supported/non-supported SharePlex features for Open Target	45
System Requirements — SQL Server Capture	47
Supported versions and targets	47
On-premises SQL Server source to on-premises SQL Server target	47
On-premises SQL Server source to other on-premises targets	48
On-premises SQL Server source to all cloud target types	48
Cloud SQL Server source to all cloud target types	49
Conditions of support	49

Supported operations	50
Supported data types — SQL Server to SQL Server	50
Supported data types — SQL Server to Oracle and Open Target	51
SQL Server to MySQL supported data types	51
SQL Server to Oracle supported data types	53
SQL Server to PostgreSQL supported data types	54
SQL Server to XML supported data types	55
Supported SharePlex features	56
Known issues in this release	58
Third-party known issues	62
Licensing	64
Third Party Contributions in this release	65
About us	96
Contacting Quest	96
Technical support resources	96

About SharePlex

SharePlex provides high-speed replication from Oracle (on-premises and Amazon RDS) and SQL Server databases to different target databases and messaging containers on major Unix, Linux and Windows platforms — both on-premises and in the cloud. SharePlex supports a wide variety of configurations to meet different and complex data availability needs.

SharePlex supports reliable Oracle high availability configurations where replication maintains a duplicate database in a different location that is ready for fast, seamless failover and failback in planned or unplanned mode.

You can use SharePlex to replicate data from Oracle and SQL Server sources 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 includes, at no extra charge, the compare and repair tools that you need to verify the accuracy of a target maintained by replication. These tools not only detect hidden out-of-sync conditions, but they can also be used to repair target tables to restore synchronization with their source — without the need to stop replication or application activity. SharePlex detects extra or missing rows and rows whose values do not match. You can customize these comparisons, for example to filter the rows that are compared. By using the compare and repair features regularly, you can detect and correct hidden problems before they become larger ones that require a full, manual resynchronization.

SharePlex value and versatility continues 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

This is a minor release with added platform support.

New features in this release

New in version 9.1.0

New Features - Oracle

The following are new features that support SharePlex capture from Oracle and delivery to supported targets.

New support for Oracle in Amazon RDS cloud

The following new support has been added for Oracle on RDS:

- SharePlex can now capture from an Oracle database hosted on Amazon RDS.
- SharePlex can now post to an Oracle database on Amazon RDS without the need to install on the source server or an intermediary on-premises server.
- SharePlex can be installed in the cloud as a pre-installed, pre-configured Amazon Machine Image (AMI) on the EC2 service. An Oracle client is included in the image.

NOTES:

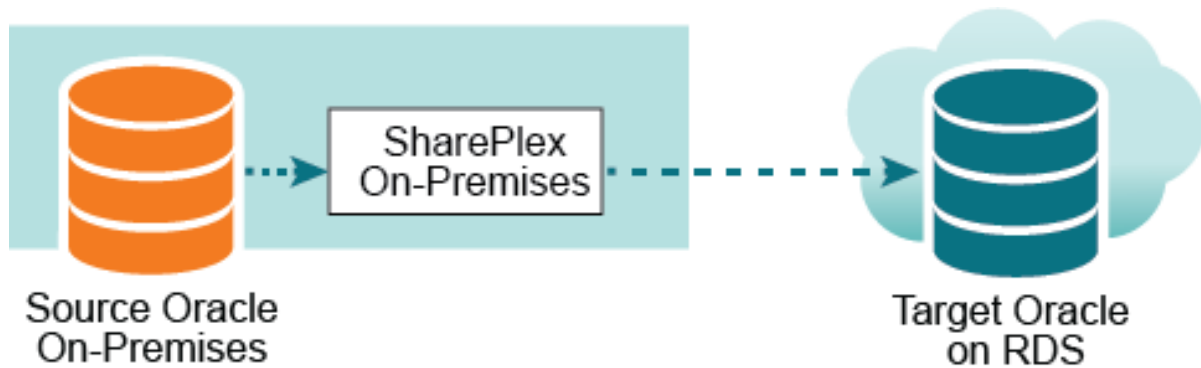
- A new documentation manual supports SharePlex for Oracle on RDS. See the SharePlex [Installation and Setup Guide for Amazon RDS](#).
- The user who runs the **ora_setup** utility for the RDS database must be the master user that was created when the RDS instance was created.
- Support of Oracle features on RDS is limited to the default option groups: **default:oracle-ee-12-1** and **default:oracle-ee-11-2**.
- See the for additional information and setup instructions.

Supported scenarios

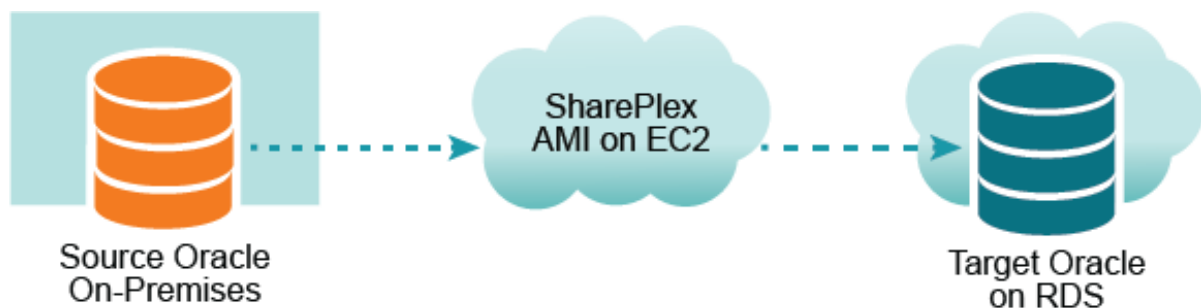
The following scenarios are now supported:

On-premises source, cloud RDS target

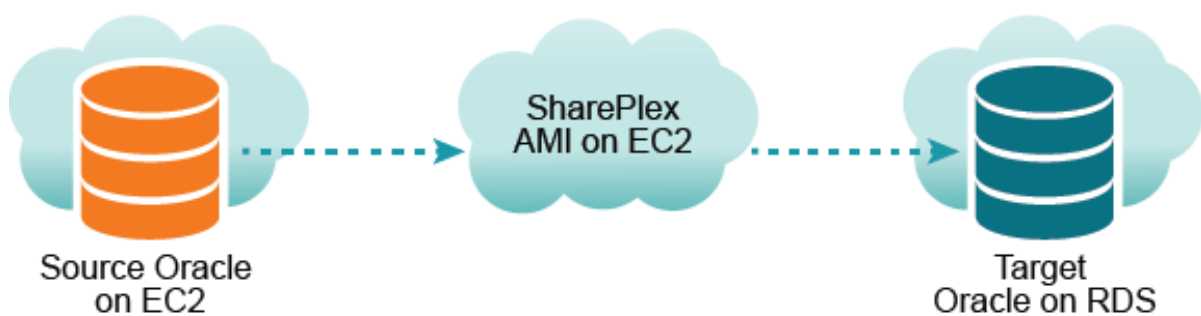
SharePlex installed on-premises:



SharePlex installed on EC2 as an AMI:



Cloud EC2 source, cloud RDS target



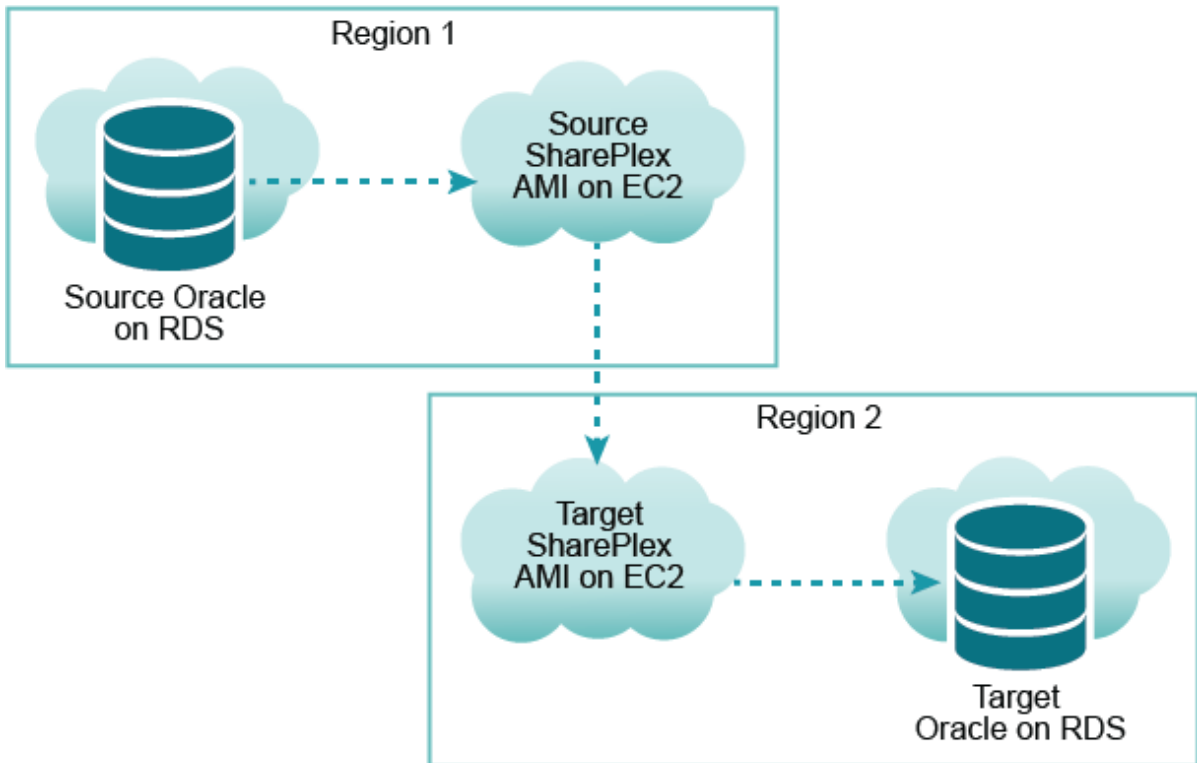
Cloud RDS source, cloud RDS target

Same AWS region:



Different AWS regions:

Source SharePlex connects to the source database, target SharePlex instance connects to the target database.



For full installation and setup instructions, see the [SharePlex Installation and Setup Guide](#).

Remote capture from Oracle

SharePlex can now capture from a remote Oracle database that is accessible only through TNS from the host where SharePlex is running. To enable this configuration, set the `SP_OCT_OLOG_USE_OCI` parameter to 1.

Oracle replication to Amazon Aurora PostgreSQL

SharePlex can now replicate from Oracle on-premises Linux to Amazon Aurora with PostgreSQL Compatibility.

Additional Oracle platform support

SharePlex now supports the following platforms:

- Capture and post for Oracle 12C R2 on HP-UX
- Capture and post for Oracle 12C R2 on Sparc Solaris
- Capture and post for Oracle 12C R2 on Solaris X86
- Capture and post for Oracle 12R2 on AIX

Support for Oracle object ids greater than 2147483647

SharePlex can now replicate objects that have object ids greater than 2147483647. The target SharePlex version must also be at least 9.1.

New Oracle capture parameters

- A new parameter `SP_OCT_OLOG_USE_OCI` controls whether Capture reads the redo logs directly from the files or by using OCI. This parameter must be enabled in the following conditions:
 - If the source database is running on ASM on Exadata
 - The source database is remote

This parameter replaces the `SP_OCT_ASM_USE_OCI` parameter. If you are currently using `SP_OCT_ASM_USE_OCI`, use the **reset param** command to restore it to its default of disabled, and then set `SP_OCT_OLOG_USE_OCI` to 1.

- A new parameter `SP_OCT_OLOG_RDS_MINER` controls whether Capture uses a second thread. This parameter should be set to 1 when SharePlex captures from an Oracle database on Amazon RDS.

New Features - SQL Server

The following are new features that support SharePlex capture from SQL Server and delivery to supported targets.

SQL Server replication to MySQL, PostgreSQL, Kafka

SharePlex can now replicate from a SQL Server source to MySQL, PostgreSQL, and Kafka targets. For more information, see [System Requirements — SQL Server Capture](#) on page 47.

NOTE: EDB Postgres Advanced Server version 10 is **not** supported by SQL Server Capture.

Capture from SQL Server 2008 R2

SharePlex can now replicate from a SQL Server 2008 R2 source to a SQL Server 2016 target.

Support for additional SQL Server data types

SharePlex now supports replication of BIT, MONEY, and UNIQUEIDENTIFIER datatypes between SQL Server databases. See [System Requirements — SQL Server Capture](#) on page 47 for supported data types when replicating to Open Target databases from SQL Server.

Other new features

The following are new features that affect SharePlex in general.

New database-specific installation guides

The SharePlex Installation and Setup Guide has been replaced with two, more targeted installation guides:

- SharePlex [Installation and Setup Guide for an Oracle Source](#)
- SharePlex [Installation and Setup Guide for a SQL Server Source](#)

This change makes it easier to understand the installation, setup, and upgrade requirements of Oracle Capture or SQL Server Capture, without the need to filter out unrelated content.

Each Installation and Setup guide contains the preinstallation checklist, installation, and setup information specific to the source type, with additional setup instructions for all of the supported targets for that source type.

NOTE:

The standalone Preinstallation Checklist guide is no longer published because it is replaced by the database-specific checklists in the new Installation and Setup Guides.

Updated SharePlex demonstrations

The CASCADE DELETE dependencies and triggers have been eliminated in the SharePlex basic and advanced demonstrations to streamline the process of running them. All appropriate demo objects were updated accordingly. Additionally, the basic SharePlex demonstration is constructed so that it works for any supported database and platform. The advanced SharePlex demonstration is strictly for Oracle databases.

Enhancements in this release

The following is a list of enhancements that were implemented in this release line.

- The data encryption feature has been enhanced to require the new Import parameter `SP_IMP_AES_ENABLE` to be enabled. This parameter prevents Import from receiving data from the source unless that data is encrypted.
UPGRADE NOTE: If you are currently using data encryption, you must enable this parameter before you restart the SharePlex processes. Otherwise, Import will return an error.
- The trace post command has been enhanced to show trace information for non-database targets, such as Kafka, JMS, and file output.
- The Read process has been improved to reduce its memory footprint and perform more efficient checkpoints.

Deprecations in this release

This section contains a list of SharePlex items that were deprecated in this release line and any data stores or platforms that are de-supported as of this release.

NOTE: For a list of all deprecated parameters and commands, their replacements (if any), and the version of SharePlex in which they were deprecated, see the SharePlex Reference Guide.

End of support for Oracle 10g

Oracle Database 10g is de-supported as of this release.

Parameter deprecations

- The SP_OCT_ASM_USE_OCI has been replaced by SP_OCT_OLOG_USE_OCI.
- SP_OPX_MAX_CDA is replaced by max_active_statements in the **Resources** category of the **target** command.
- The **threshold_size=packet_size** property of the **Kafka** category of the **target** command is deprecated.

Resolved Issues in this release

Resolved in version 9.1.0

Issue ID	Description
SPO-1103	Main thread waiting xxx for session -1 to commit
SPO-1297	Vertical Partitioning with Exclusion Should replicate add column
SPO-2363	Document support for ActiveMQ 5.11-5.13 Java set up
SPO-2846	param default file change for SP_OCT_GEN_STOP
SPO-3240	sp_ctrl redirect output not working
SPO-3272	reset param SP_OPX_UTILIZATION_TIMERS queue <queuename> not working
SPO-10057	Document SP_OPO_SYNC_LOG_FREQUENCY
SPO-10238	Poster core dumps if there is a queue name that starts with "ddl"
SPO-10865	Recognize 'Flashback' ddl as unsupported for both replicated/non-replicated tables
SPO-11010	Certain URP record on sys.obj\$ could cause capture to core
SPO-11025	Reader slow caused by frequent checkpoints on alter and create index
SPO-11029	ora_cleansp: prompt auto fills with \c and can't backspace to input correct info
SPO-11213	repair missing all column info
SPO-11494	open poster Sybase got error (false out of sync)
SPO-11529	Duplicate processing with Teradata Target during recovery
SPO-11554	Operations in a distributed transaction caused OOS
SPO-11615	repair ran out of cursors

Issue ID	Description
SPO-11678	Add debug to export/import to investigate rrls/wcmt issue
SPO-11687	SP_OPX_REDUCED_KEY feature is not implemented for Kafka and XML yet
SPO-11709	Compare slow on compare config
SPO-11731	Skip call for maxwriters
SPO-11770	Compare times out waiting for lock file
SPO-11773	Trace Post to support non-DB target such as Kafka
SPO-11776	Have reader write to ddl logs for create/drop tables
SPO-11872	Poster getting stuck on a blocking situation waiting for all queues done before a DDL or update sequence
SPO-11988	mss_setup creates shareplex user under master database for sql server
SPO-12149	Issue with shareplex_ddl_control when involving DDLs not associated with objects or schemas
SPO-12251	repair failed - invalid identifier 'OWNER'
SPO-12339	sp_ctrl redirect output not working since 8.6.3
SPO-12360	Capture incorrectly updated columns to NULL where it's not supposed to (Trailing NULL detection problem in OPP)
SPO-12395	ora_setup compare varray package for sdo_geomery

Basic system requirements

This chapter contains the basic system requirements for SharePlex. See also:

[System Requirements — Oracle Capture on page 19](#)

[System Requirements — SQL Server Capture on page 47](#)

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.

Internet protocol

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

NOTE: If the `SP_SYS_HOST_NAME` environment variable is set to an IPV6 address on the source system, SharePlex on the target system must be version 9.0 or later.

Platform	Source	Target	SharePlex Source and Target versions	On-premises/Cloud
Linux RHEL	Link-Local IPV6	Link-Local IPV6	9.0 - 9.0	On-premises
Linux RHEL	Link-Local IPV6	Link-Local IPV6	8.6.5 - 9.0	On-premises

Platform	Source	Target	SharePlex Source and Target versions	On-premises/Cloud
Linux RHEL	Link-Local IPV6	Link-Local IPV6	9.0 - 8.6	On-premises
Linux Suse	Link-Local IPV6	Link-Local IPV6	9.0 - 9.0	On-premises
Windows	Link-Local IPV6	Link-Local IPV6	9.0 - 9.0	On-premises
Windows	Link-Local IPV6	Link-Local IPV6	9.0 - 8.6.4	On-premises
HP UA	Link-Local IPV6	Link-Local IPV6	9.0 - 9.0	On-premises
HP IA	Link-Local IPV6	Link-Local IPV6	9.0 - 9.0	On-premises
SUN Sparc	Link-Local IPV6	Link-Local IPV6	9.0 - 9.0	On-premises
SUN Solaris	Link-Local IPV6	Link-Local IPV6	9.0 - 9.0	On-premises
AIX	Link-Local IPV6	Link-Local IPV6	9.0 - 9.0	On-premises
Linux RHEL	Public IPV6	Public IPV6	9.0 - 9.0	Cloud
Windows	Public IPV6	Public IPV6	9.0 - 9.0	Cloud

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 8.5 or earlier.

Versions with full interoperability

The following SharePlex versions are fully interoperable, including the Compare/Repair feature:

8.0.x
8.5.x
8.6.x
9.0.x
9.1.x

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`

System Requirements — Oracle Capture

This chapter contains the requirements for capture from an Oracle source database and replication to supported Oracle and Open Target targets.

Basic requirements

- SQL*Plus must be installed with any source or target Oracle Database.
- On Linux and Unix, set the hard-limit of the system file descriptors to a minimum of 1024 or higher, as the system permits.
- At least the minimum level of supplemental logging must be enabled. Some SharePlex features may require PK/UK supplemental logging to be enabled.

Supported versions and targets

This section is divided into the following sections according to the way that a database is implemented (on-premises or cloud):

[On-premises Oracle source to on-premises Oracle target](#)

[On-premises Oracle source to on-premises Open Target](#)

[On-premises Oracle source to all cloud target types](#)

[Cloud Oracle source to all cloud target types](#)

NOTES:

- Unless specified, Oracle, RAC, and ASM are supported for the same version.
- SharePlex supports only 64-bit Oracle Database.

On-premises Oracle source to on-premises Oracle target

This section shows the Oracle versions that SharePlex supports when the **source and target databases are both Oracle** and both are installed **on-premises**. SharePlex can replicate data between any of these database/platform combinations.

Oracle Version (source or target)	Supported Platforms (source or target) (See also the NOTES following this table)
Oracle 11gR1*	<p>AIX version:</p> <ul style="list-style-type: none"> • 5.3 • 6.1 <p>CentOS (x64) version:</p> <ul style="list-style-type: none"> • 5.10 • 6.5 <p>HP-UX 11.31 PA-RISC and Itanium</p> <p>Oracle Solaris version:</p> <ul style="list-style-type: none"> • 9 • 10 SPARC • 11 SPARC and x64 <p>Oracle Linux (x64) version:</p> <ul style="list-style-type: none"> • 4 • 5 <p>RHEL (x64) version:</p> <ul style="list-style-type: none"> • 4 • 5 <p>SuSE SLES (x64) version:</p> <ul style="list-style-type: none"> • 10 • 11 <p>Windows Server (x64) version:</p> <ul style="list-style-type: none"> • 2003 • 2008 • 2012 R1 and R2
Oracle 11gR2*	<p>AIX version:</p> <ul style="list-style-type: none"> • 5.3 • 6.1 • 7.1 <p>CentOS (x64) version:</p> <ul style="list-style-type: none"> • 5.10 • 6.5

Oracle Version (source or target)	Supported Platforms (source or target) (See also the NOTES following this table)
	<p>HP-UX 11.31 PA-RISC and Itanium</p> <p>Oracle Solaris version:</p> <ul style="list-style-type: none"> • 10 SPARC and x64 • 11 SPARC and x64 <p>Oracle Linux (x64) version:</p> <ul style="list-style-type: none"> • 4 • 5 • 5 on Exadata version 2, 3, 4 • 5.5 on Exadata version 3, 4 • 6 • 6.6 on Exadata version 5 • 7 <p>RHEL (x64) version:</p> <ul style="list-style-type: none"> • 4 • 5 • 6 • 7 <p>SuSE SLES (x64) version:</p> <ul style="list-style-type: none"> • 10 • 11 • 12** <p>Windows Server (x64) version:</p> <ul style="list-style-type: none"> • 2003 • 2008 • 2012 R1 and R2
<p>Oracle 12cR1</p>	<p>AIX version:</p> <ul style="list-style-type: none"> • 6.1 • 7.1 • 7.2 <p>CentOS (x64) version:</p> <ul style="list-style-type: none"> • 5.10

Oracle Version (source or target)	Supported Platforms (source or target) (See also the NOTES following this table)
	<ul style="list-style-type: none"> • 6.5 <p>HP-UX 11.31 Itanium</p> <p>Oracle Solaris version:</p> <ul style="list-style-type: none"> • 10 SPARC and x64 • 11 SPARC and x64 <p>Oracle Linux (x64) version:</p> <ul style="list-style-type: none"> • 5 • 5 on Exadata version 2, 3, 4 • 5.5 on Exadata version 3, 4 • 6 • 6.6 on Exadata version 5 • 7 <p>RHEL (x64) version:</p> <ul style="list-style-type: none"> • 5 • 6 • 7 <p>SuSE SLES (x64) version:</p> <ul style="list-style-type: none"> • 11 • 12** <p>Windows Server (x64) version:</p> <ul style="list-style-type: none"> • 2008 • 2012 R1 and R2
Oracle 12cR2	<p>AIX version:</p> <ul style="list-style-type: none"> • 7.1 • 7.2 <p>HP-UX 11.31 PA-RISC and Itanium</p> <p>Oracle Solaris version:</p> <ul style="list-style-type: none"> • 10 SPARC and x64 • 11 SPARC and x64 <p>Oracle Linux (x64) version:</p> <ul style="list-style-type: none"> • 6

Oracle Version (source or target)	Supported Platforms (source or target) (See also the NOTES following this table)
	<ul style="list-style-type: none"> • 7 <p>RHEL (x64) version:</p> <ul style="list-style-type: none"> • 6 • 7 <p>SuSE SLES (x64) version:</p> <ul style="list-style-type: none"> • 12** <p>Windows Server (x64) version:</p> <ul style="list-style-type: none"> • 2012 R1 and R2

NOTES:

* Linux running Oracle 11g must be running on Oracle 11.1.0.6.0+ or you must apply the one-off provided for Oracle Bug 6598432.

** At the time of this writing, Oracle’s published documentation did not indicate support of SuSE SLES12. Basic testing of SharePlex has been done on SuSE SLES12. Quest will provide best effort support but cannot resolve specific Oracle issues on this platform until Oracle adds official support.

On-premises Oracle source to on-premises Open Target

This section shows the supported non-Oracle targets when the source Oracle database is installed **on-premises** and the target (database, file, or messaging container) is installed **on-premises**.

The source can be any Oracle 11g or 12c version on a platform that is supported by SharePlex as listed in [On-premises Oracle source to on-premises Oracle target](#).

Target	ODBC Driver Version	Supported Platforms
My SQL Version 5.6	My SQL ODBC driver 5.3.2 or later.	<p>RHEL (x64) version:</p> <ul style="list-style-type: none"> • 6 • 7 <p>SuSE SLES (x64) version:</p> <ul style="list-style-type: none"> • 11 • 12*
Community PostgreSQL Version 9.6.5	ODBC driver recommended by the vendor	<p>RHEL (x64) version:</p> <ul style="list-style-type: none"> • 6 • 7 <p>Windows Server (x64) version 2012</p>

Target	ODBC Driver Version	Supported Platforms
EDB Postgres Advanced Server Version 9.4.1.3	ODBC driver recommended by the vendor	RHEL (x64) version: <ul style="list-style-type: none"> • 6 • 7 Windows Server (x64) version 2012
Fujitsu Symfoware PostgreSQL Version 9.5.2	ODBC driver recommended by the vendor	RHEL (x64) version: <ul style="list-style-type: none"> • 6 • 7 Windows Server (x64) version 2012
SAP Adaptive Server Enterprise (ASE) Version 15.7	ODBC driver recommended by the vendor	CentOS (x64) version: <ul style="list-style-type: none"> • 5.10 • 6.5 RHEL (x64) version: <ul style="list-style-type: none"> • 4 • 5 • 6 • 7 SuSE SLES (x64) version: <ul style="list-style-type: none"> • 9 • 10 • 11 • 12*
SAP HANA Version 1.0 SPS 11 Rev111	Not applicable	RHEL (x64) version 7
SQL Server Versions: 2012 2014 2016	Microsoft SQL Server ODBC Driver, same version as database*	Windows Server (x64) version: <ul style="list-style-type: none"> • 2012 • 2012R2 • 2016 • 2017
Teradata Version 15.00.03.05	Teradata ODBC driver version 15.10.00.01 or	SuSE SLES (x64) version 11

Target	ODBC Driver Version	Supported Platforms
	later	
JMS ActiveMQ Version 5.8 IBM MQ Version 7.x and 8.x	Not needed	AIX version: <ul style="list-style-type: none"> • 6.1 • 7.1 CentOS (x64) version: <ul style="list-style-type: none"> • 5.10 • 6.5 Oracle Solaris version: <ul style="list-style-type: none"> • 9 • 10 (SPARC and x64) • 11 (SPARC and x64) Oracle Linux (x64) version: <ul style="list-style-type: none"> • 4 • 5 • 5 on Exadata version 2, 3, 4 • 5.5 on Exadata version 3, 4 • 6 • 6.6 on Exadata version 5 • 7 RHEL (x64) version: <ul style="list-style-type: none"> • 4 • 5 • 6 • 7 SuSE SLES (x64) version: <ul style="list-style-type: none"> • 10 • 11 • 12* Windows Server (x64) version: <ul style="list-style-type: none"> • 2003 • 2008 • 2012

Target	ODBC Driver Version	Supported Platforms
		<ul style="list-style-type: none"> • 2012R2
Kafka Apache Version .08 and later	Not needed	Windows Server (x64) version: <ul style="list-style-type: none"> • 2012 • 2012R2 • 2016
File	Not needed	AIX version: <ul style="list-style-type: none"> • 6.1 • 7.1 CentOS (x64) version: <ul style="list-style-type: none"> • 5.10 • 6.5 Oracle Solaris version: <ul style="list-style-type: none"> • 10 (SPARC and x64) • 11 (SPARC and x64) Oracle Linux version (x64): <ul style="list-style-type: none"> • 4 • 5 • 5 on Exadata versions 2, 3, 4 • 5.5 on Exadata version 3, 4 • 6 • 6.6 on Exadata version 5 • 7 RHEL (x64) version: <ul style="list-style-type: none"> • 4 • 5 • 6 • 7 SuSE SLES (x64) version: <ul style="list-style-type: none"> • 10 • 11 • 12* Windows Server (x64) version:

Target	ODBC Driver Version	Supported Platforms
		<ul style="list-style-type: none"> • 2003 • 2008 • 2012 • 2012R2

* Do *not* use the Microsoft SQL Server Native Client driver. The correct driver, the ODBC Driver, has versions such as 06.02.9200. The wrong driver, Native Client, has versions such as 11.00.3513

On-premises Oracle source to all cloud target types

This section shows what SharePlex supports when the source Oracle database is **on-premises** and the target database is **cloud-based**.

Source source Oracle version	Supported cloud targets
Oracle 11.2.0.4 and Oracle 12.1.0.2	Oracle 11.0.2.0.4 on AWS EC2 Linux Oracle 11.0.2.0.4 on AWS RDS Oracle 12.1.0.2 on AWS RDS Oracle 12.1.0.2 on AWS EC2 Linux My SQL 5.5 on AWS RDS* Aurora Postgres on AWS RDS* Postgres 9.5.2 on AWS RDS* Postgres 9.5.2 on AWS EC2 Linux Postgres 9.5.2 on Azure PaaS* SQL Server 2012 on AWS RDS* SQL Server 2012 on Azure IaaS SQL Server 2014 on AWS RDS* SQL Server 2014 on Azure IaaS SQL Server 2014 on Azure PaaS* SQL Server 2016 on AWS RDS* SQL Server 2016 on Azure IaaS SQL Server 2016 on Azure PaaS*

* In a PaaS environment that hosts an Open Target (non-Oracle) database, SharePlex cannot be installed on the cloud server, nor does it have access to the underlying operating system. In a PaaS environment, you must install SharePlex on a server that is external to the cloud deployment. You then configure SharePlex to interact with the target database through a remote connection. Because the connection originates locally, use the target database ODBC driver that matches the local platform.

Cloud Oracle source to all cloud target types

This section shows the supported targets when the source Oracle database is **cloud-based** and the target is **cloud-based**.

Source Oracle version	Supported cloud targets
Oracle 11.2.0.4 on AWS EC2 Linux	Oracle 11.0.2.0.4 on AWS EC2 Linux Oracle 11.0.2.0.4 on AWS RDS Oracle 12.1.0.2 on AWS RDS Oracle 12.1.0.2 on AWS EC2 Linux My SQL 5.5 on AWS RDS Aurora Postgres on AWS RDS Postgres 9.5.2 on AWS RDS Postgres 9.5.2 on AWS EC2 Linux SQL Server 2012 on AWS RDS SQL Server 2014 on AWS RDS SQL Server 2016 on AWS RDS
Oracle 12.1.0.2 on AWS EC2 Linux	Oracle 11.0.2.0.4 on AWS EC2 Linux Oracle 11.0.2.0.4 on AWS RDS Oracle 12.1.0.2 on AWS RDS Oracle 12.1.0.2 on AWS EC2 Linux My SQL 5.5 on AWS RDS Aurora Postgres on AWS RDS Postgres 9.5.2 on AWS RDS Postgres 9.5.2 on AWS EC2 Linux SQL Server 2012 on AWS RDS SQL Server 2014 on AWS RDS SQL Server 2016 on AWS RDS
Oracle 11.2.0.4 on AWS RDS	Oracle 11.0.2.0.4 on AWS EC2 Linux Oracle 11.0.2.0.4 on AWS RDS Oracle 12.1.0.2 on AWS RDS Oracle 12.1.0.2 on AWS EC2 Linux
Oracle 12.1.0.2 on AWS RDS	Oracle 11.0.2.0.4 on AWS EC2 Linux Oracle 11.0.2.0.4 on AWS RDS Oracle 12.1.0.2 on AWS RDS Oracle 12.1.0.2 on AWS EC2 Linux

**** Capture from AWS RDS is supported for Oracle versions 11.2.0.4.v11 and later, and 12.1.0.2.v7 and later. Post is supported for all Oracle versions that are supported by RDS and SharePlex. Support of Oracle features on RDS is limited to the default option groups: default:oracle-ee-12-1 and default:oracle-ee-11-2.

Supported data types — Oracle to Oracle

SharePlex supports the following Oracle data types for replication to Oracle targets. See the [Conditions of support](#) on page 29 for additional information.

- ANYDATA ¹
- B-FILE
- BINARY DOUBLE
- BINARY FLOAT
- BLOB ²
- CHAR
- CLOB ²
- DATE
- INTERVAL
- LONG RAW²
- LONG ²
- NCHAR
- NCLOB ³
- NUMBER
- NVARCHAR2⁵
- RAW⁵
- ROWID
- SDO_GEOMETRY
- TIMESTAMP
- TIMESTAMP WITH LOCAL TIME ZONE
- TIMESTAMP WITH TIME ZONE
- UDT (User Defined Type)⁶
- VARCHAR
- VARCHAR2⁵
- VARRAY collectors
- XMLTYPE ⁴

Conditions of support

1. Conditions of support - 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 datatypes within ANYDATA are supported by SharePlex:
 - CHAR
 - DATE
 - NUMBER

- RAW
 - VARCHAR
 - VARCHAR2
 - TIMESTAMP
- A datatype within an ANYDATA type must be in-row (inside the column data). Oracle encapsulates the ANYDATA type as an in-row securefile 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. Conditions of support - 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 SecureFile LOBs as follows:
 - Logging must be enabled.
 - SharePlex supports uncompressed SecureFile LOBS and SecureFile LOBS with high or medium compression
 - SecureFile LOBS are not supported when the storage specification includes encryption and/or deduplication.
- SharePlex does not support LONG and LONG_RAW datatypes in a configuration where transformation or conflict resolution are performed.

3. Conditions of support - NCLOB

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

4. Conditions of support - 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. Conditions of support - 12c Extended datatypes

With the introduction of Extended Data Types, Oracle 12c provides the option to increase the maximum sizes of the following data types:

- VARCHAR2 up to 32767 bytes
- NVARCHAR2 up to 32767 bytes
- RAW up to 32767 bytes

SharePlex does not support the 12c Extended Data Type sizes. SharePlex supports the affected data types, but only up to the former 4000-byte limit for VARCHAR2 and NVARCHAR2 and up to the former 2000-byte limit for RAW — regardless of the character semantics used. Therefore, the total number of *characters* that are supported depends on the character set that is being used. For example, if your character set can reach 4 bytes per character (the limit is based on the potential, not actual, size of the data) then the maximum supported VARCHAR2 is 1000 characters.

6. User-defined types

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

7. Conditions of support - general

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

Supported data types — Oracle to Open Target

This section contains a grid that can be read vertically and horizontally to understand how SharePlex supports replication between an Oracle source and the various Open Target targets that SharePlex supports.

- (Column 1) Shows the Oracle data types that SharePlex can replicate to an Open Target target type.
- (Column 2) Shows the native data types that SharePlex supports for each target type.
- (Rows spanning Column 1-Column 2) Shows the default data type mapping (native Oracle data type to native target data type) that SharePlex uses when replicating Oracle ALTER TABLE...ADD COLUMN DDL operations. Post uses the specified native target data type in the column definition of the command on the target. The default mapping is what was tested and is supported. You can change the default mapping with the **set datatype** option of the **target** command, with the understanding that you become responsible for ensuring data compatibility. For more information, see the target command documentation in the SharePlex [Reference Guide](#).

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_Job** 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 datatypes to ensure successful DML operations.

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

Oracle to HANA supported data types

Oracle	HANA
BINARY_DOUBLE	double
BINARY_FLOAT	double
BLOB	blob
CHAR	char
CLOB	clob
DATE	date
LONG	clob
LONGRAW	blob
NCHAR	nchar
NCLOB	nclob
NUMBER	decimal
NVARCHAR	nvarchar
RAW	varbinary
TIMESTAMP	timestamp
VARCHAR/VARCHAR2	varchar

Conditions of support

See [Supported data types — Oracle to Oracle](#) on page 28 for additional conditions of support for Oracle source data types.

Oracle to MySQL supported data types

Oracle	MySQL
BINARY_DOUBLE ¹	double
BINARY_FLOAT	double
BLOB	longblob
CHAR	char
CLOB	longtext
DATE	datetime

Oracle	MySQL
LONG	text
LONGRAW	blob
NUMBER	numeric
RAW	varbinary
TIMESTAMP ²	datetime
VARCHAR2	varchar

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.
3. See [Supported data types — Oracle to Oracle](#) on page 28 for additional conditions of support for Oracle source data types.

Oracle to PostgreSQL supported data types

Oracle	PostgreSQL
BINARY_DOUBLE	double precision
BINARY_FLOAT ¹	double precision
BLOB	bytea*
CHAR	char
CLOB	text
DATE	date
LONG	text
NCHAR	char
NCLOB	text
NUMBER	numeric
NVARCHAR	varchar
RAW	bytea*
TIMESTAMP	timestamp
VARCHAR2	varchar

Conditions of support

1. The Oracle BINARY_FLOAT and PostgreSQL double precision data types have different precision. Make certain the source and target lengths are compatible. Numbers of 1880197350000000000 or larger can result in out-of-sync errors.
2. BLOB and RAW mappings to bytea are not supported for EDB Postgres Advanced Server due to limitations of the ODBC driver, but is supported for other PostgreSQL implementations.
3. See [Supported data types — Oracle to Oracle](#) on page 28 for additional conditions of support for Oracle source data types.

Oracle to SAP ASE supported data types

Oracle	SAP ASE
BINARY_DOUBLE	float
BINARY_FLOAT	float
BLOB	image
CHAR	char
CLOB	text
DATE	datetime
LONG	text
LONGRAW	image
NUMBER	numeric
RAW	varbinary
VARCHAR2	varchar

Conditions of support

See [Supported data types — Oracle to Oracle](#) on page 28 for additional conditions of support for Oracle source data types.

Oracle to SQL Server supported data types

Oracle	SQL Server
ANYDATA	sql_variant
BINARY_DOUBLE	float
BINARY_FLOAT	float
BLOB	image
CHAR	char

Oracle	SQL Server
CLOB	text
DATE	datetime2
LONG	text
LONGRAW	image
NCHAR	nchar
NCLOB	ntext
NUMBER	numeric
NVARCHAR	nvarchar
RAW	varbinary
TIMESTAMP WITH TIME ZONE	datetimeoffset
TIMESTAMP	datetime2
VARCHAR2	varchar

Conditions of support

See [Supported data types — Oracle to Oracle](#) on page 28 for additional conditions of support for Oracle source data types.

Oracle to Sybase supported data types

Oracle	Sybase
BINARY_DOUBLE	float
BINARY_FLOAT	float
BLOB	image
CHAR	char
CLOB	text
DATE	datetime
LONG	text
LONGRAW	image
NUMBER	numeric
RAW	varbinary
VARCHAR2	varchar

Conditions of support

See [Supported data types — Oracle to Oracle](#) on page 28 for additional conditions of support for Oracle source data types.

Oracle to Teradata supported data types

Oracle	Teradata
CHAR	char
DATE	timestamp
NUMBER	number
VARCHAR/VARCHAR2	varchar

Conditions of support

See [Supported data types — Oracle to Oracle](#) on page 28 for additional conditions of support for Oracle source data types.

Oracle to XML supported data types

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

- File in XML format
- JMS
- Kafka

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

Oracle	XML
TIMESTAMP	dateTime
TIMESTAMP WITH LOCAL TIME ZONE	dateTimeStamp
TIMESTAMP WITH TIME ZONE	dateTimeStamp
VARCHAR2	string
VARRAY ¹	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 [Supported data types — Oracle to Oracle](#) on page 28 for additional conditions of support for Oracle source data types.

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 target or an Open Target 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 for an Oracle Source](#).

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: <ul style="list-style-type: none"> • 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 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

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 follows:

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 except Oracle 11gR1
DML on Oracle Label Security (OLS) ²	All target types
DML on compressed objects: Basic, OLTP, HCC ³	All target types
Direct Load (DLOAD) on compressed objects: Basic, OLTP, HCC ³	All target types

1. Conditions of support - TDE

SharePlex supports Tablespace Encryption and Column Encryption for Oracle 11g R2 and later versions, both source and target.

The SharePlex **copy/append** command does not support TDE.

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.

3. Conditions of support - compression

Under certain conditions, Oracle does not provide enough information in the redo log for SharePlex to replicate a DML operation on a compressed object. Testing of compressed objects is advised.

Supported operations and objects for DDL replication

SharePlex provides default and optional DDL support.

NOTE: Support for DDL on compressed Oracle objects is limited to the following:

- SharePlex supports DDL on compressed objects only for Oracle 11gR2 and later source Oracle databases.
- ALTER TABLE to ADD COLUMN and ALTER TABLE to DROP COLUMN are supported on Basic, OLTP, and HCC compressed Oracle objects for replication to all Oracle and Open Target 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

Oracle-to-Oracle DDL support

This section outlines both default and optional DDL support.

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**.

For details on these parameters, 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	Yes	SP_OCT_REPLICATE_DDL=3
Table and IOT (when they are added to the source after configuration activation)	Create Create as Select ² Drop	Yes	SP_OCT_AUTOADD_ENABLE=1
Index	Create Alter Drop	Yes	SP_OCT_AUTOADD_ENABLE=1
Materialized View ³	Create Drop	No	SP_OCT_AUTOADD_ENABLE=1 and SP_OCT_AUTOADD_MV=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

Supported object	Supported DDL Operation	Enabled by default?	Controlling parameter
			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

- 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.
- For CREATE TABLE AS SELECT, SharePlex supports the following datatypes: LONG, DATE, RAW, LONG RAW, ROWID, LONG VARCHAR, CHAR, CLOB, BLOB, CFILE, BFILE, TIMESTAMP, INTERVAL YEAR TO MONTH, INTERVAL DAY TO SECOND and ANYDATA.
- For CREATE MATERIALIZED VIEW the following applies:
 - SharePlex supports the following datatypes for CREATE MATERIALIZED VIEW: LONG, DATE, RAW, LONG RAW, ROWID, LONG VARCHAR, CHAR, CLOB, BLOB, CFILE, BFILE, TIMESTAMP, INTERVAL YEAR TO MONTH, INTERVAL DAY TO SECOND and ANYDATA. SharePlex does not support ALTER MATERIALIZED 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.

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

1. 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

Oracle-to-Open Target DDL support

SharePlex provides limited DDL support for replication from Oracle to Open Target. 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 Open Target.

The default Oracle to Open Target configuration is represented by the following parameter setting:

```
SP_OCT_REPLICATE_DDL=3
```

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

1. TRUNCATE TABLE is not supported from Oracle compressed objects to Open Target targets.
2. The default mappings of Oracle data types to their Open Target counterpart for replicated ALTER TABLE ADD COLUMN DDL is shown in [Supported data types — Oracle to Open Target](#) on page 31. When SharePlex adds the column, it defines it with the default data type. This mapping applies to the entire configuration (not per table).

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: <ol style="list-style-type: none"> 1. Remove source objects from replication 2. Perform the flashback 3. Add or change objects in an active configuration

Supported/non-supported SharePlex features for Open Target

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

SharePlex feature	Supported for Open Target	Not Supported for Open Target
reconcile command (target instantiation)	X	
compare/compare using and repair/repair using		X

SharePlex feature	Supported for Open Target	Not Supported for Open Target
commands		
copy/copy using and append/append using commands		X
Hash horizontally partitioned replication		X
Column-based horizontally partitioned replication	X (except Teradata)	
Vertically partitioned replication	X	
Column mapping	X	
Key definition	X	
Build configuration with scripts		X
Named queues	X	
Commit Reduction (feature of Post Enhanced Performance)	X	
Dependency Checking (feature of Post Enhanced Performance)		X
Transformation		X
Conflict resolution		X
Peer-to-peer replication (bi-directional)		X
Consolidated replication (many to one)	X	
Broadcast replication (one to many)	X	
High availability replication (active/passive bi-directional)		X
Change tracking target (CDC)		X
Data encryption	X	
Data compression	X	
SSH	X	
auth_hosts file	X	
Monitoring scripts	X	
SNMP monitoring	X	
Continue posting on error (SP_OPX_CONT_ON_ERR)	X	
Suspend on out of sync errors (SP_OPX_OUT_OF_SYNC_SUSPEND)	X	
Reduced key (SP_OPX_REDUCED_KEY)	X	
Logical Transaction Rollback on out-of-sync transactions		X

System Requirements — SQL Server Capture

This chapter contains the requirements for capture from a SQL Server source database and replication to supported targets.

SharePlex support for SQL Server as a target is documented in [Set up replication from Oracle to SQL Server](#) on page 1.

Supported versions and targets

This section is divided into the following sections according to the way that a database is implemented (on-premises or cloud):

[On-premises SQL Server source to on-premises SQL Server target](#)

[On-premises SQL Server source to other on-premises targets](#)

[On-premises SQL Server source to all cloud target types](#)

[Cloud SQL Server source to all cloud target types](#)

NOTE: SharePlex supports both SQL Server Standard Edition and SQL Server Enterprise Edition.

On-premises SQL Server source to on-premises SQL Server target

This section shows the SQL Server versions that SharePlex supports when the **source and target databases are both SQL Server** and both are installed **on-premises**. SharePlex can replicate data between any of these database/platform combinations.

SQL Server Version (source or target)	Supported Platforms (source or target)
SQL Server 2008	Windows Server 2012 Windows Server 2012 R2
SQL Server 2012	Windows Server 2012 Windows Server 2012 R2
SQL Server 2014	Windows Server 2012 Windows Server 2012 R2

SQL Server Version (source or target)	Supported Platforms (source or target)
SQL Server 2016	Windows Server 2012 Windows Server 2012 R2

On-premises SQL Server source to other on-premises targets

This section shows the supported non-SQL Server targets when the source SQL Server database is installed **on-premises** and the target is installed **on-premises**.

Source	Source Platform	Supported Targets
SQL Server 2014	Windows Server 2012	Oracle 11g R2 (11.2.0.3) on: <ul style="list-style-type: none"> • Windows Server 2012 R2 • Linux RHEL 6.2 • Linux RHEL 7.3 • AIX 6.1 • HP-UX 11.31 Oracle 12c (12.1.0.1) on: <ul style="list-style-type: none"> • Windows Server 2012 • Linux RHEL 6.6 • Linux RHEL 6.6 • Sparc Solaris 10 • Intel Solaris 11.2 • AIX 6.1 Kafka 0.10 on Linux RHEL 7.3
SQL Server 2016	Windows Server 2012	PostgreSQL 9.6 on Linux 7.2 PostgreSQL 10.0* on Windows 2012R2 MySQL 5.7 on Linux 7.2

***NOTE:** SharePlex supports the Community, Fujitsu, and EDB PostgreSQL implementations, with the exception that EDB Postgres Advanced Server version 10 is not supported by SharePlex.

On-premises SQL Server source to all cloud target types

This section shows what SharePlex supports when the source SQL Server database is **on-premises** and the target database is **cloud-based**.

Source source Oracle version	Supported cloud targets
SQL Server 2012	SQL Server 2012 on Azure IaaS SQL Server 2014 on Azure IaaS SQL Server 2012 on Azure PaaS SQL Server 2014 on Azure PaaS SQL Server 2016 on Azure PaaS
SQL Server 2014	SQL Server 2012 on Azure IaaS SQL Server 2014 on Azure IaaS SQL Server 2012 on Azure PaaS SQL Server 2014 on Azure PaaS SQL Server 2016 on Azure PaaS
SQL Server 2016	SQL Server 2012 on Azure IaaS SQL Server 2014 on Azure IaaS SQL Server 2012 on Azure PaaS SQL Server 2014 on Azure PaaS SQL Server 2016 on Azure PaaS

Cloud SQL Server source to all cloud target types

This section shows the supported targets when the source SQL Server database is **cloud-based** and the target is **cloud-based**.

Source SQL Server version	Supported cloud targets
SQL Server 2012 on Azure IaaS	SQL Server 2012 on Azure IaaS SQL Server 2014 on Azure IaaS SQL Server 2012 on Azure PaaS SQL Server 2014 on Azure PaaS SQL Server 2016 on Azure PaaS
SQL Server 2014 on Azure IaaS	SQL Server 2012 on Azure IaaS SQL Server 2014 on Azure IaaS SQL Server 2012 on Azure PaaS SQL Server 2014 on Azure PaaS SQL Server 2016 on Azure PaaS

Conditions of support

This section shows the limitations of capturing from a SQL Server source.

- SQL Server native replication and SharePlex replication cannot be used at the same time for the same database.
- All SQL Server tables in the SharePlex replication configuration must be defined in the database with a primary key. A SharePlex key definition is not sufficient, nor can SharePlex use all columns as a key. You can use SharePlex filtering features in the configuration file to omit tables that do not have a primary key.
- A transaction must COMMIT to the SQL Server source before it can be captured by SharePlex.
- Replication between tables in same database is not supported. Replication between tables in different databases in the same or another SQL Server instance is supported.

Supported operations

- SharePlex supports only DML replication from SQL Server to any of the supported targets.
- SharePlex does not support the replication of SQL Server DDL operations.

The DML operations supported are: INSERT, UPDATE, and DELETE operations between SQL Server source tables and supported target tables that contain supported column types.

NOTES:

SharePlex only replicates DML changes that are made to SQL Server source objects that are listed in the configuration file.

SharePlex requires SQL Server Replication to be installed on the source system. See the *SharePlex Installation Guide* for more information.

Supported data types — SQL Server to SQL Server

SharePlex supports DML operations between SQL Server databases that contain the following SQL Server data types:

- bigint
- binary
- bit
- char
- date
- datetime
- datetime2
- datetimeoffset
- decimal
- float
- image

- integer
- money
- nchar
- ntext
- numeric
- nvarchar
- nvarchar(max)
- real
- smalldatetime
- smallint
- text
- time
- tinyint
- uniqueidentifier
- varbinary
- varbinary(max)
- varchar
- varchar(max)

Supported data types — SQL Server to Oracle and Open Target

The following tables show the supported data type mappings between a SQL Server source and a given Oracle or Open Target database. These are the mappings that have been tested and are known to be successful across a variety of use cases. Mapping to unsupported data types may succeed but have not been tested.

SQL Server to MySQL supported data types

SQL Server	MySQL	Notes
binary (length <= 255)	binary	
binary (length > 255)	longblob	
char (length <= 255)	char	
char (length > 255)	longtext	

SQL Server	MySQL	Notes
date	date	
datetime	datetime	
datetime2	datetime	MySQL datetime supports up to 6 fractional digits, whereas SQL Server datetime2 supports up to 7 fractional digits.
decimal	decimal	
float	float	
image	longblob	
integer	integer	
nchar (length <= 255)	nchar	
nchar (length > 255)	longtext (utf8)	The character set of the target longtext column must be utf8.
ntext	longtext (utf8)	The character set of the target longtext column must be utf8.
numeric	numeric	
nvarchar	varchar	The effective maximum length of a VARCHAR is subject to the maximum row size (65,535 bytes, which is shared among all columns) and the character set used.
nvarchar(max)	longtext (utf8)	The character set of the target longtext column must be utf8.
real	float	
smalldatetime	datetime	
smallint	smallint	
text	longtext	
time	time	
tinyint	tinyint	
varbinary	varbinary	
varbinary(max)	longblob	
varchar	varchar	The effective maximum length of a VARCHAR is subject to the maximum row

SQL Server	MySQL	Notes
		size (65,535 bytes, which is shared among all columns) and the character set used.
varchar(max)	longtext	

SQL Server to Oracle supported data types

SQL Server	Oracle
bigint	NUMBER
binary	RAW
char	CHAR
date	DATE
datetime	TIMESTAMP
datetime2	TIMESTAMP
datetimeoffset	TIMESTAMP WITH TIME ZONE
decimal	NUMBER
float	NUMBER
image	BLOB
integer	NUMBER
nchar	NCHAR
ntext	NCLOB
numeric	NUMBER
nvarchar	NVARCHAR
nvarchar(max)	NCLOB
real	NUMBER
smalldatetime	DATE
smallint	NUMBER
text	CLOB
sql_variant	ANYDATA
float	BINARY_DOUBLE
text	CLOB

SQL Server	Oracle
time	DATE
tinyint	NUMBER
varbinary	RAW
varbinary(max)	BLOB
varchar	VARCHAR
varchar(max)	CLOB

SQL Server to PostgreSQL supported data types

SQL Server*	PostgreSQL
bit	boolean
char	char
date	date
datetime	timestamp(3)
datetime2	timestamp
datetimeoffset	timestamp with timezone
float	double precision
image	bytea
integer	integer
nchar	char
ntext	text
numeric	numeric
nvarchar	varchar
nvarchar(max)	text
real	real
smalldatetime	timestamp(0)
smallint	smallint
text	text
time	time
tinyint	smallint
varbinary	bytea
varbinary(max)	bytea

SQL Server*	PostgreSQL
varchar	varchar
varchar(max)	text

***NOTE:** EDB Postgres Advanced Server version 10 is not supported by SharePlex.

SQL Server to XML supported data types

SQL Server	XML
int	decimal
numeric	decimal
smallint	decimal
tinyint	decimal
float	decimal
real	decimal
date	dateTime
datetime	dateTime
datetime2	dateTime
datetimeoffset	dateTimeStamp
smalldatetime	dateTime
time	dateTime
char	string
nchar	string
text	coob
ntext	clob
nvarchar	string
binary	base64Binary
varbinary	base64Binary
image long	base64Binary

Supported SharePlex features

The following table shows whether or not SharePlex features are supported when SQL Server is the source.

SharePlex feature	Supported with Oracle Target	Supported with OpenTarget
Replication from SQL Server tables to any target where the version of SharePlex is earlier than 9.0.	No	No
Auto-add of new tables that satisfy a wildcard	No	No
flush command	Yes	Yes
reconcile command (target instantiation)	Yes	Yes
compare/compare using and repair/repair using commands	No	No
copy/copy using and append/append using commands	No	No
Hash horizontally partitioned replication	No	No
Column-based horizontally partitioned replication	No	No
Vertically partitioned replication	Yes	Yes
Column mapping	Yes	Yes
Key definition (SQL Server tables must have a defined key)	No	No
Build configuration with scripts	No	No
Named queues	Yes	Yes
Post Enhanced Performance	No	No
Transformation	Yes	No
Conflict resolution	Yes	No
Peer-to-peer replication (bi-directional)	No	No
Consolidated replication (many to one)	Yes	Yes
Broadcast replication (one to many)	Yes	Yes
Cascading replication (source-intermediary-target)	Yes	Yes
High availability replication (active/passive bi-directional)	No	No
Change history target (CDC)	Yes	No
Data encryption	No	No

SharePlex feature	Supported with Oracle Target	Supported with OpenTarget
Data compression	No	No
SSH	No	No
auth_hosts file	No	No
Monitoring scripts	No	No
SNMP monitoring	No	No
Continue posting on error (SP_OPX_CONT_ON_ERR)	Yes	Yes
Suspend on out of sync errors (SP_OPX_OUT_OF_SYNC_SUSPEND)	Yes	Yes
Reduced key (SP_OPX_REDUCED_KEY)	Yes	Yes
sp_ctrl commands	See the command documentation in the Reference Guide.	See the command documentation in the Reference Guide.
Logical Transaction Rollback on out-of-sync transactions	Yes	No

Known issues in this release

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

SQL Server capture known issues

Known Issue	Issue ID
If the source SQL Server version is 2012 and below, SharePlex will re-capture transactions that were already been processed if SharePlex is shut down ungracefully, either intentionally with a kill command or due to system failure. This results in double-posting on the target and resultant unique-constraint errors. To avoid these errors, always shut down SharePlex gracefully with the shutdown command in sp_ctrl before you shut down or reboot a system.	N/A
When replicating SQL Server datetimeoffset(0) to a target Oracle timestamp(0) with time zone column (only for precision 0), the timestamps will have incorrect timezone values in the Oracle target.	SPO-12155

General known issues

Known Issue	Issue ID
The reported core file was not generated on systems running Oracle 11g on the SunOS, AIX, HP-UX (PA-RISC and IA64), and Linux platforms.	66306
If the customer issues an "ALTER TABLE ... MOVE COMPRESS" DDL command against a table in replication, SharePlex will replicate the DDL to the target by default. After post issues the DDL, if the target table had indexes, they are now unusable and post will subsequently fail trying to apply changes to the table. If post gets an error on the table such as "ORA-01502: index XXX or partition of such index is in unusable state", the user must rebuild any indexes the table may have before restarting post in order to rectify the situation.	N/A

Post to JMS known issues

Known Issue	Issue ID
Replication of batch operations to ActiveMQ may cause a hang. The workaround is to set the SP_ORD_BATCH_ENABLE parameter to 0.	SPO-11335

Known Issue	Issue ID
If the post process that is writing to JMS is not on the same machine as the source database, and if the two machines are of different endianness, NCHAR data will not be written to JMS correctly.	107471

Install Upgrade known issues

Known Issue	Issue ID
A memory fault (core dump) was encountered during the "Setting file ownerships" section of the SharePlex installation on HP-UX PA-RISC.	71355

Windows known issues

Known Issue	Issue ID
On Windows systems, the uninstaller does not prompt for the version of SharePlex to be removed from a system. When there are multiple versions of SharePlex installed on a system, it removes only the first installation.	N/A
In the Windows environment, always run sp_ctrl from the same drive on which you have installed SharePlex. If you run sp_ctrl from another drive, you will be prompted for a login ID and password. After you provide the login ID and password, sp_ctrl will run normally.	N/A
If the user wants to change the installation directory for a given port, the user must first uninstall from the previous location. Note that if the user wants to keep the previous VARDIR it should be copied to the new location prior to the uninstall.	62620

ASM known issues

Known Issue	Issue ID
If the redo_log or archive_log that SharePlex is currently reading is involved in "rebalancing" due to the removal of a disc group, the Capture process will pause until the rebalance procedure for that file is complete.	N/A
On raw device ASM systems, the sp_desvr may get stuck and the process can not be killed even when kill -9 is issued; users must reboot the system to recover from it.	61713

Startup known issues

Known Issue	Issue ID
If you have SharePlex configured to start from a startup script and it returns an error similar to: System call error: sp_cnc (connecting from cdrpx.mcit.med.umich.edu) Bad file number Can't	N/A

Known Issue	Issue ID
-------------	----------

dup2 stderr try adding nohup to your script. The nohup command directs a command (in this case the startup of SharePlex) to continue in the background after the current user (the script) logs out. The syntax is:

```
cd /product_directory/bin
nohup ./sp_cop &
```

Character Sets known issues

Known Issue	Issue ID
-------------	----------

Avoid replicating NCHAR datatypes using different character sets such as AL16UTF16 on the source machine and UTF8 on the target due to byte size limitations. Oracle stores NCHAR data with a maximum limit of 2000 bytes. A fixed length NCHAR character set such as AL16UTF16 has a different maximum number of characters than a variable length NCHAR character set such as UTF8. For the fixed length AL16UTF16 character set, each character is stored as 2 bytes; thus, the maximum number of characters is 1000 for NCHAR data. For the variable length UTF8 character set, the maximum number of characters a column can accommodate depends on how many bytes each character requires. If you replicate 1000 3-byte characters from a source machine using the AL16UTF16 character set to a target machine set to UTF8, you will get the following Oracle error message on the target, since it needs 3000 bytes:

```
ORA-01461 can bind a LONG value only for insert into a LONG column
```

copy/append known issues

Known Issue	Issue ID
-------------	----------

If you need to copy a materialized view to a table, you should drop the target table before copying. Please be aware that the new target table created by copy will have an additional column named M_ROW\$\$ which does not exist on the source. The use of append on a materialized view to a table is not supported.

41679

Conflict Resolution known issues

Known Issue	Issue ID
-------------	----------

The !ControlExtendedCharSet prepared conflict resolution routine and the !DEFAULT parameter currently cannot be used for generic conflict resolution.

N/A

Partitioned Replication known issues

Known Issue	Issue ID
When using a compound routing map in a placeholder route in the configuration file, do not use spaces between each routing component. For example, sysb@o.orab+sysc@o.oraC is correct because there are no spaces before or after the + symbol.	N/A

Vertical and Horizontal Partitioning known issues

Known Issue	Issue ID
When using horizontal partition replication with DATE datatype in the column condition, the DATE needs to follow the SP date string format, 'MMDDSYYYHH24MISS'. Otherwise, the Read and Compare processes are not able to process it.	55268

LOBs, VARRAYs, and XML known issues

Known Issue	Issue ID
Users may encounter an out-of-sync condition when an UPDATE occurs on a table that contains a UDT with a VARRAY column, and there is no KEY on the table. This issue is specific to Solaris x86 platforms.	29650

DDL Replication known issues

Known Issue	Issue ID
Replicating CREATE ROLE (set param SP_OCT_REPLICATE_ALL_DDL 1) is changing the grantee name on the target to the name of the SharePlex Administrator.	2242
If the Capture process is behind in reading the Oracle redo or archive logs when the SP_OCT_REPLICATE_ALL_DDL parameter is enabled it will replicate DDLs whose time stamps precede this event.	56957

Partition DDL known issues

Known Issue	Issue ID
If separate SQL statements for partition DDL and index rebuild are run on the source, SharePlex only replicates the partition DDL and leaves target global index unusable. This is because ALTER INDEX is not supported by SharePlex. The recommended work around is that all partition DDLs which mark global indexes as unusable should be run with an appending	57939

Known Issue	Issue ID
-------------	----------

clause UPDATE GLOBAL INDEXES to the ALTER TABLE SQL statements. The alternative is to manually rebuild the global indexes on target.

ora_cleansp known issues

Known Issue	Issue ID
-------------	----------

On HP-Itanium systems, you might see the following warning when running ora_cleansp:
Warning: Ignoring setuid/setgid bit on "./ora_cleansp" as the system tunable "secure_sid_scripts" is set.

NA

This occurs when ora_cleansp is run by a user who is not the owner of ora_cleansp and when secure_sid_scripts, a system tunable parameter, is set. This condition is harmless to ora_cleansp and you should ignore the warning.

Function based index known issues

Known Issue	Issue ID
-------------	----------

If there is more than one function defined in the index, SharePlex will choose the first. SharePlex cannot support multiple functions.

92931

Hybrid Columnar Compression known issues

Known Issue	Issue ID
-------------	----------

Activation will not fail if a table with "COMPRESS FOR QUERY LOW" compression is activated. Capture will log a message indicating that "COMPRESS FOR QUERY LOW" is not supported

107487

Third-party known issues

Third-party known issues: Linux

Known Issue	Issue ID
-------------	----------

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.

54799

Third-party known issues: Oracle

Known Issue	Issue ID
Oracle may allow an invalid date, such as year 0000, to be inserted as the key value of a table without generating an error. This causes SharePlex to return an "Invalid DATE format detected in record with rowid" error when trying to insert the record to the target.	SPO-1368
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.	44626
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	53701
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.	59258
On Windows systems, the Post process May exit when it encounters an "ORA-07445: exception encountered: core dump" error. Please refer to Oracle Bug 6658912 for more information and the Oracle provided work around.	67441
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.	75179
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.	92152
Sometimes the Post process will hang updating a SecureFile LOB. For more information please refer to Oracle tar SR 3-2898230851: OCILobWrite hangs at the OCI_LAST_PIECE for securefile LOB.	N/A
There is an Oracle bug that can cause the database to crash when supplemental logging is enabled and transactions involving tables in a compressed tablespace are rolled back. Please refer to Oracle bug 8331063 for more information.	N/A
A known issue in PL/SQL prevents the SharePlex conflict resolution logic from compiling the PL/SQL for tables whose names are the same as their owners. Oracle has stated that the issue will not be fixed. See Oracle TAR 2577886.996 for more information. This issue does not affect replication; SharePlex supports tables with identical owner and table names.	N/A

Licensing

The current license model for SharePlex is to license for a specific host, which depending on edition is licensed by core(s) or socket(s) and specific message repository (i.e. database, JMS/text files) etc. Specifics of license terms should be obtained from your account manager.

To activate a trial license

1. Run the SharePlex command:
`./splex_add_key`

SharePlex License Utility
1) Read license key from file
2) Enter license key manually
3) Add license key for alternate host
q) Quit License Utility
Enter option:
2. Enter option 2.
3. Enter the key provided in the email from Quest Licensing.
4. For the customer name, enter: Trial Version.

To activate a purchased commercial license

1. Run the SharePlex command:
`./splex_add_key`

SharePlex License Utility
1) Read license key from file
2) Enter license key manually
3) Add license key for alternate host
q) Quit License Utility
Enter option:
2. Enter option 2.
3. Enter the key provided in the email from Quest Licensing.
4. Enter the customer name provided in that email.

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>.

Table 1: List of Third-Party Contributions

Component	License or Acknowledgment
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Version - 9.1.0