SYBASE®

An **SAP** Company

New Features Bulletin

Replication Server® Options
15.6

Linux, Microsoft Windows, and UNIX

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New Features

Learn about the new features of Replication Server® Options 15.6 when Replication Agent™, Enterprise Connect™ Data Access (ECDA), and ExpressConnect for Oracle (ECO) are used with Replication Server for heterogeneous replication.

For information about the new features of the Replication Server Options components, see:

- *Replication Agent New Features Bulletin*
- *Enterprise Connect Data Access New Features Guide*
- *ExpressConnect for Oracle Installation and Configuration Guide*

ExpressConnect for Oracle

ExpressConnect for Oracle (ECO), a component of Replication Server Options, provides direct communication between a Replication Server and a replicate Oracle data server. ECO has replaced the ECDA Option for Oracle in Replication Server Options 15.5.

You can use ECO if you have a licensed Replication Server and have purchased Replication Server Options for Oracle. If you have upgraded Replication Server to version 15.6, you must install ECO 15.5 ESD #1, which is included in Replication Server Options for Oracle 15.6.

See *ExpressConnect for Oracle Installation and Configuration Guide*.

SySAM Sub-capacity Licensing

Sybase® offers sub-capacity licensing options for Replication Agent and ExpressConnect for Oracle (ECO), allowing you to license a Sybase product on a subset of the total number of CPUs available on a physical machine.

For information about sub-capacity licensing for Replication Agent and ECO, see the *Replication Agent Installation Guide* and the *Replication Server Installation Guide*.

Oracle 11g Release 2

Replication Server Options supports Oracle 11g Release 2 at the same functional level as Oracle 11g Release 1.

Replication Server Options also supports some new Oracle 11g Release 2 features, including:

- Use of the **FORCE** option with the **CREATE OR REPLACE TYPE** command on types that do not have table dependencies

- Replication of DDL for tables on which the Flashback Data Archive has been enabled
- All Oracle time zone file formats

Supported and Unsupported Datatypes

Learn about the datatypes supported and not supported by Replication Server Options 15.6.

Datatypes for Oracle Replication

Learn about the datatypes supported and unsupported for replicating into and out of Oracle.

Replicating Datatypes into Oracle

These Sybase datatypes are supported or unsupported by ExpressConnect for Oracle for replicating into Oracle.

Table 1. ExpressConnect Supported and Unsupported Sybase Datatypes

Datatype	Supported	Unsupported
Sybase	`bigint`	`bigdatetime`
	`integer`	`bigtime`
	`smallint`	
	`tinyint`	
	`decimal`	
	`numeric`	
	`unsigned bigint`	
	`unsigned integer`	
	`unsigned smallint`	
	`unsigned tinyint`	
	`unichar`	
	`univarchar`	
	`unitext`	
	`float`	
	`double`	

Datatype	Supported	Unsupported
	`real`	
	`money`	
	`smallmoney`	
	`date`	
	`time`	
	`datetime`	
	`smalldatetime`	
	`timestamp`	
	`char`	
	`nchar`	
	`varchar`	
	`nvarchar`	
	`text`	
	`binary`	
	`varbinary`	
	`image`	
	`bit`	
	`sysname` (same as varchar(30))	
	`longsysname` (same as var-char(255))	
	`user-defined datatypes` (as underlying type)	

These Oracle datatypes are supported or unsupported by ExpressConnect for Oracle for replicating into Oracle.

Table 2. ExpressConnect Supported and Unsupported Oracle Datatypes

Datatype	Supported	Unsupported
Oracle	`anydata` (limited support)	associative array
	`bfile` (only for replication not gateway)	`mlslabel`
	`binary_double`	nested tables
	`binary_float`	Oracle-supplied datatypes
	`blob`	partial large object (LOB) updates
	`char`	`ref`
	`clob`	user-defined datatypes (UDDs) containing LOBs
	`date`	UDDs that are not final
	`interval day to second`	`urowid`
	`interval year to month`	`varray`
	`long`	SecureFile LOBs
	`long raw`	Oracle 11g `xmltype`
	`nchar`	
	`nclob`	
	`number`	
	`nvarchar2`	
	`raw`	
	`rowid`	
	`simple_integer`	
	`timestamp`	
	`timestamp with [local] time zone`	
	`UDD object type` (only for replication not gateway)	

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Datatype	Supported	Unsupported
	`varchar2`	
	Oracle 10g `xmltype` (limited support, handled as `clob`)	

Replicating Datatypes out of Oracle

These Oracle datatypes are supported or unsupported by Replication Agent for replicating out of Oracle.

Table 3. Replication Agent Supported and Unsupported Oracle Datatypes

Datatype	Supported	Unsupported
Oracle	`anydata` (limited support)	associative array
	`bfile`	`mlslabel`
	`binary_double`	nested tables
	`binary_float`	Oracle-supplied datatypes
	`blob`	partial LOB updates
	`char`	`ref`
	`clob`	UDDs containing LOB
	`date`	UDDs that are not final
	`interval day to second`	SecureFile LOBs
	`interval year to month`	`urowid`
	`long`	`varray`
	`long raw`	11g `xmltype`
	`nchar`	
	`nclob`	
	`number`	
	`nvarchar2`	
	`raw`	
	`rowid`	

Datatype	Supported	Unsupported
	`simple_integer`	
	`timestamp`	
	`timestamp with [local] time zone`	
	UDD object type	
	`varchar2`	
	10g `xmltype` (limited support, handled as `clob`)	

Oracle-Supplied Datatype Limitations
Replication Agent cannot replicate these Oracle-supplied datatypes:

- "ANY" types (`SYS.ANYTYPE`, `SYS.ANYDATASET`), except for `SYS.ANYDATA`
- All Oracle 11g XMLTypes (`XMLType`, `URIType`, `DBURIType`, `XDBURIType`, `HTTPURIType`) as well as Oracle 10g XML Types stored as XML Types (not as CLOB)
- Spatial Types (`MDSYS.SDO_GEOMETRY`, `SDO_TOPO_GEOMETRY`, `SDO_GEORASTER`)
- Media Types (`ORDSYS.ORDAudio`, `ORDSYS.ORDImage`, `ORDSYS.ORDImageSignature`, `ORDSYS.ORDVideo`, `ORDSYS.ORDDoc`, `SI_StillImage`, `SI_Color`, `SI_AverageColor`, `SI_ColorHistogram`, `SI_PositionalColor`, `SI_Texture`, `SI_FeatureList`)
- Expression filter type
- Replication from an `ANYDATA` column to a non-`ANYDATA` column
- `ANYDATA` size exceeding 16KB, which is the size constraint of the Replication Server `OPAQUE` datatype
- `BFile`, `UROWID`, `REF`, `NESTED TABLE`, and `VARRAY` datatypes stored in the `ANYDATA` column
- `XMLType` not stored as `CLOB`

Note: `XMLType` stored as `CLOB` can be replicated to Oracle and to Adaptive Server® Enterprise. When replicating to Oracle, use ExpressConnect for Oracle since this datatype is not supported by ECDA for Oracle.

- Replication of data stored in Oracle XML DB repository using standard protocols such as FTP and HTTP(S) or WebDAV, and other Oracle XML DB API
- Marking procedures that use `PLS_INTEGER` PL/SQL type or any of its other subtypes; however, Replication Agent does support marking procedures that use `SIMPLE_INTEGER` PL/SQL type.

Datatypes for Microsoft SQL Server Replication

Learn about the datatypes supported and unsupported for replicating into and out of Microsoft SQL Server.

Replicating Datatypes into Microsoft SQL Server

These Sybase datatypes are supported or unsupported by ECDA 15.0 ESD #3 and later for replicating into Microsoft SQL Server.

Table 4. ECDA Supported and Unsupported Sybase Datatypes

Datatype	Supported	Unsupported
Sybase	bigint	bigdatetime
	integer	bigtime
	smallint	
	tinyint	
	decimal	
	numeric	
	unsigned bigint	
	unsigned integer	
	unsigned smallint	
	unsigned tinyint	
	unichar	
	univarchar	
	unitext	
	float	
	double	
	real	
	money	
	smallmoney	
	date	

Datatype	Supported	Unsupported
	`time`	
	`datetime`	
	`smalldatetime`	
	`timestamp`	
	`char`	
	`nchar`	
	`varchar`	
	`nvarchar`	
	`text`	
	`binary`	
	`varbinary`	
	`image`	
	`bit`	
	`sysname` (same as varchar(30))	
	`longsysname` (same as varchar(255))	
	`UDDs` (as underlying type)	

These Microsoft SQL Server datatypes are supported or unsupported by ECDA 15.0 ESD #3 and later for replicating into Microsoft SQL Server.

Table 5. ECDA Supported and Unsupported Microsoft SQL Server Datatypes

Datatypes	Supported	Unsupported
Microsoft SQL Server	`bigint`	`cursor`
	`nchar`	`date`
	`nvarchar`	`datetime2`
	`ntext`	`datetimeoff-set`

Datatypes	Supported	Unsupported
	`varchar(max)` (only for replication not gateway)	`filestream`
	`nvarchar(max)` (only for replication not gateway)	`geography`
	`sql_variant`	`geometry`
	`binary`	`hierarchyid`
	`bit`	`large UDDs`
	`char`	`table`
	`datetime`	`time`
	`decimal`	`xml`
	`float`	
	`image`	
	`integer`	
	`money`	
	`numeric`	
	`real`	
	`smalldatetime`	
	`smallint`	
	`smallmoney`	
	`text`	
	`timestamp`	
	`tinyint`	
	`uniqueidentifier`	
	`varbinary`	
	`varbinary (max)` (only for replication not gateway)	

Datatypes	Supported	Unsupported
	`varchar`	

Note: The `varbinary(max)`, `varchar(max)`, `nvarchar(max)`, and `sql_variant` datatypes are supported only in a replication environment (not for gateway or any other ECDA use) and only to a replicate Microsoft SQL Server database.

Replicating Datatypes out of Microsoft SQL Server
These Microsoft SQL Server datatypes are supported or unsupported by Replication Agent for replicating out of Microsoft SQL Server.

Table 6. Replication Agent Supported and Unsupported Microsoft SQL Server Datatypes

Datatypes	Supported	Unsupported
Microsoft SQL Server	`bigint`	`cursor`
	`nchar`	`date`
	`nvarchar`	`datetime2`
	`ntext`	`datetimeoffset`
	`varchar(max)` (replicate must be Microsoft SQL Server)	`filestream`
	`nvarchar(max)` (replicate must be Microsoft SQL Server)	`geography`
	`sql_variant`	`geometry`
	`binary`	`hierarchyid`
	`bit`	`large UDDs`
	`char`	`table`
	`datetime`	`time`
	`decimal`	`xml`
	`float`	
	`image`	
	`integer`	

Datatypes	Supported	Unsupported
	`money`	
	`numeric`	
	`real`	
	`smalldatetime`	
	`smallint`	
	`smallmoney`	
	`text`	
	`timestamp`	
	`tinyint`	
	`uniqueidentifier`	
	`varbinary`	
	`varbinary(max)` (replicate must be Microsoft SQL Server)	
	`varchar`	

Datatypes for IBM DB2 UDB Replication

Learn about the datatypes supported and unsupported for replicating into and out of IBM DB2 UDB.

Replicating Datatypes into IBM DB2 UDB

These Sybase datatypes are supported or unsupported by ECDA 15.0 ESD #3 for replicating into IBM DB2 UDB.

Table 7. ECDA Supported and Unsupported Sybase Datatypes

Datatype	Supported	Unsupported
Sybase	`bigint`	`bigdatetime`
	`integer`	`bigtime`
	`smallint`	`image`
	`tinyint`	`text`

Datatype	Supported	Unsupported
	decimal	unitext
	numeric	
	unsigned bigint	
	unsigned integer	
	unsigned smallint	
	unsigned tinyint	
	unichar	
	univarchar	
	float	
	double	
	real	
	money	
	smallmoney	
	date	
	time	
	datetime	
	smalldatetime	
	timestamp	
	char	
	nchar	
	varchar	
	nvarchar	
	binary	
	varbinary	
	bit	

Datatype	Supported	Unsupported
	sysname (same as varchar(30))	
	longsysname (same as varchar(255))	
	UDDs (as underlying type)	

These IBM DB2 UDB datatypes are supported or unsupported by ECDA 15.0 ESD #3 for replicating into IBM DB2 UDB.

Table 8. ECDA Supported and Unsupported IBM DB2 UDB Datatypes

Datatypes	Supported	Unsupported
IBM DB2 UDB	bigint	blob
	graphic	clob
	vargraphic	dbclob
	decfloat (for replication only, not gateway)	long varchar
	smallint	long vargraphic
	float	ROWID
	integer	long varchar for bit data
	decimal	xml
	real	UDDs
	double	
	time	
	timestamp	
	date	
	char	
	varchar	
	char for bit data	
	varchar for bit data	

> **Note:** The decfloat datatype is supported only in a replication environment (not for gateway or any other ECDA use).

Replicating Datatypes out of IBM DB2 UDB

These IBM DB2 UDB datatypes are supported or unsupported by Replication Agent for replicating out of IBM DB2 UDB.

Table 9. Replication Agent Supported and Unsupported IBM DB2 UDB Datatypes

Datatypes	Supported	Unsupported
IBM DB2 UDB	bigint	ROWID
	char	UDDs
	char for bit data	xml
	blob	
	clob	
	date	
	dbclob	
	decfloat	
	decimal	
	double	
	float	
	graphic	
	integer	
	long varchar	
	long varchar for bit data	
	long vargraphic	
	real	
	smallint	
	time	

Datatypes	Supported	Unsupported
	`timestamp`	
	`varchar`	
	`varchar for bit data`	
	`vargraphic`	

IBM DB2 UDB 9.5 Support Limitations
Replication Agent does not support these features of IBM DB2 UDB 9.5:

- Replication of `XML` datatype

  Note: Since Replication Agent does not support replicating XML, restrictions have been imposed on marking a table containing XML columns. Replication Agent generates an error message each time an attempt is made to mark a table with XML columns. To replicate all but the XML columns of a table, use the **force** option when marking the table for replication.

- When replicating `DECFLOAT` columns from UDB to other back ends that do not support `DECFLOAT` or an equivalent datatype, `DECFLOAT` is mapped to `FLOAT`, which may cause a loss of precision.
- Replication Agent does not support replication of `DECFLOAT` special values such as positive and negative INFINITY, NAN, and SNAN. Replication Agent replicates these values to NULL if the column is nullable, or 0.0 if the column is not nullable.

Unsupported Features

Learn about the features that are not supported by Replication Server Options 15.6.

- Oracle-packaged stored procedures and functions (standalone procedures and functions are supported)
- Oracle virtual columns
- Oracle encrypted columns
- Oracle encrypted partitions
- Oracle label security
- Oracle schema objects in encrypted tablespaces
- IPv6-formatted addresses
- 4KB-sector disk drives
- IBM DB2 Universal Database data definition language (DDL) commands
- IBM DB2 Universal Database stored procedures
- IBM DB2 Universal Database row compression

- Replication Agent does not support these features of Microsoft SQL Server 2008:
  - Transparent data encryption (TDE)
  - Procedures with table-valued parameters (TVPs)
  - Sparse column and column set
  - MERGE SQL statement
- Replication Server parallel DSI (for non-ASE databases)
- Replication Server **rs_init** utility (for non-ASE databases)
- Replication Server **rs_subcomp** utility (for non-ASE databases)
- Replication Server automatic materialization (for non-ASE databases)
- Replication Server when replicating in an environment where other vendors are replicating (for non-ASE databases)
- Microsoft SQL Server Cluster
- Microsoft SQL Server virtual computed columns

Note: Only features and functionality covered in the Replication Server Options documentation are supported for that solution. If a feature or type of functionality is not documented, it is not supported.