

New Features Bulletin Replication Server® Options 15.5 for Linux, Microsoft Windows, and UNIX

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This document includes new features of Replication Server® Options 15.5 when Replication Agent™, Enterprise Connect™ Data Access (ECDA), and ExpressConnect for Oracle (ECO) are used with Replication Server for heterogeneous replication.

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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

Replication Server Options introduces a new component called ExpressConnect for Oracle that provides direct communication between a Replication Server and a replicate Oracle data server. ExpressConnect for Oracle, which replaces the ECDA Option for Oracle, makes data easily accessible in a heterogeneous replication environment, and eliminates the need for installing and setting up a separate gateway server.

See *ExpressConnect for Oracle Installation and Configuration Guide*.

Supported and unsupported datatypes

This section identifies the supported and unsupported datatypes in Replication Server Options 15.5.

Replicating datatypes for Oracle

This section lists the datatypes supported and unsupported by ExpressConnect for Oracle for replicating into and out of Oracle.

Replicating datatypes into Oracle

Table 1 lists the Sybase® datatypes supported and not supported by ExpressConnect for Oracle for replicating into Oracle.

Table 1: 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	
	time	
	datetime	
	smalldatetime	
	timestamp	
	char	
	nchar	
	varchar	
	nvarchar	
	text	
	binary	
	varbinary	
	image	
	bit	
sysname (same as varchar(30))		
longsysname (same as varchar(255))		
user-defined datatypes (as underlying type)		

Table 2 lists the Oracle datatypes that are supported and not supported by ExpressConnect for Oracle for replicating into Oracle.

Table 2: 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 LOB updates
	char	ref
	clob	UDDs containing LOB
	date	UDDs that are not final
	interval day to second	urowid
	interval year to month	varray
	long	SecureFile LOBs
	long raw	
	nchar	
	nclob	
	number	
	nvarchar2	
	raw	
	rowid	
	simple_integer	
	timestamp	
	timestamp with [local] time zone	
	UDD object type (only for replication not gateway)	
	varchar2	
	xmltype (limited support, handled as clob)	

Replicating datatypes
out of Oracle

Table 3 lists the Oracle datatypes that are supported and not supported by Replication Agent for replicating out of Oracle.

Table 3: 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	
	nchar	
	nclob	
	number	
	nvarchar2	
	raw	
	rowid	
	simple_integer	
	timestamp	
	timestamp with [local] time zone	
	UDD object type	
	varchar2	
	xmltype (limited support, handled as clob)	

Oracle-supplied datatypes limitations

Replication Agent cannot replicate these Oracle-supplied datatypes:

- “Any” Types (SYS.ANYTYPE, SYS.ANYDATASET), except for SYS.ANYDATA.
- All Oracle 11g XML Types (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 it is not supported by ECDA Option 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.
- While Replication Agent supports marking procedures that use SIMPLE_INTEGER PL/SQL type, it does not support marking procedures that use PLS_INTEGER PL/SQL type or any of its other subtypes.

Replicating datatypes for Microsoft SQL Server

This section lists the datatypes supported and unsupported by ECDA 15.0 ESD #3 for replicating into and out of Microsoft SQL Server.

Replicating datatypes
into Microsoft SQL
Server

Table 4 lists the Sybase datatypes supported and not supported by ECDA 15.0 ESD #3 for replicating into Microsoft SQL Server.

Table 4: 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	
	time	
	datetime	
	smalldatetime	
	timestamp	
	char	
	nchar	
	varchar	
	nvarchar	
	text	
	binary	
	varbinary	
	image	
	bit	
	sysname (same as varchar(30))	
longsysname (same as varchar(255))		
user-defined datatypes (as underlying type)		

Table 5 lists the Microsoft SQL Server datatypes supported and not supported by ECDA 15.0 ESD #3 for replicating into Microsoft SQL Server.

Table 5: Supported and unsupported Microsoft SQL Server datatypes

Datatypes	Supported	Unsupported
Microsoft SQL Server	bigint	cursor
	nchar	date
	nvarchar	datetime2
	ntext	datetimeoffset
	varchar(max) (only for replication not gateway)	filestream
	nvarchar(max) (only for replication not gateway)	geography
	sql_variant	geometry
	binary	hierarchyid
	bit	large user-defined datatypes
	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)	
	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

Table 6 lists the Microsoft SQL Server datatypes that are supported and not supported by Replication Agent for replicating out of Microsoft SQL Server.

Table 6: 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 user-defined datatypes
	char	table
	datetime	time
	decimal	xml
	float	
	image	
	integer	
	money	
	numeric	
	real	
	smalldatetime	
	smallint	
	smallmoney	
	text	
	timestamp	
	tinyint	
	uniqueidentifier	
	varbinary	
	varbinary(max) (replicate must be Microsoft SQL Server)	
varchar		

Replicating datatypes for IBM DB2 UDB

This section lists the datatypes supported and unsupported by ECDA 15.0 ESD #3 for replicating into and out of IBM DB2 UDB.

Replicating datatypes into IBM DB2 UDB

Table 7 lists the Sybase datatypes supported and unsupported by ECDA 15.0 ESD #3 for replicating into IBM DB2 UDB.

Table 7: Supported and unsupported Sybase datatypes

Datatype	Supported	Unsupported
Sybase	bigint	bigdatetime
	integer	bigtime
	smallint	image
	tinyint	text
	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	
	sysname (same as varchar(30))	
	longsysname (same as varchar(255))	
	user-defined datatypes (as underlying type)	

Table 8 lists the IBM DB2 UDB datatypes supported and unsupported by ECDA 15.0 ESD #3 for replicating into IBM DB2 UDB.

Table 8: 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
	integer	ROWID
	decimal	long varchar for bit data
	real	xml
	double	user-defined datatypes
	time	
	timestamp	
	date	
	char	
	varchar	
	char for bit data	
	varchar for bit data	
	float	

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

Table 9 lists the IBM DB2 UDB datatypes that are supported and not supported by Replication Agent for replicating out of IBM DB2.

Table 9: Supported and unsupported IBM DB2 UDB datatypes

Datatypes	Supported	Unsupported
IBM DB2 UDB	bigint	ROWID
	char	user-defined datatypes
	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	
	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 that has XML columns. To replicate all but XML columns of a table, use the force option when marking the table for replication.

- When replicating DECFLOAT columns from IBM DB2 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

The following features are not supported by Replication Server Options 15.5:

- 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
- 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)

Unsupported features

- 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.
