

New Features Bulletin Replication Server[®] Options 15.7.1

Linux, Microsoft Windows, and UNIX

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New Features in Replication Server Options 15.7.1

Learn about new features in Replication Server[®] Options 15.7.1 and its components: Replication Agent[™], Enterprise Connect[™] Data Access (ECDA), and ExpressConnect for Oracle (ECO).

Enterprise Connect Data Access

The ECDA Option for ODBC, a component of Replication Server Options, provides basic connectivity to DB2 UDB, Microsoft SQL Server, and ODBC-accessible databases. The ECDA Option for Oracle has been replaced by ECO.

You can use ECDA if you have a licensed Replication Server and have purchased Replication Server Options 15.7.1.

See Enterprise Connect Data Access 15.0.1 Release Bulletin for your operating system.

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 15.7.1.

You can use ECO if you have a licensed Replication Server and have purchased Replication Server Options for Oracle.

See ExpressConnect for Oracle Installation and Configuration Guide.

Oracle Instant Client libraries for ExpressConnect for Oracle

As of version 15.7.1, ECO no longer ships with Oracle Instant Client libraries.

After installing ECO, obtain the Oracle Instant Client libraries from the Oracle Web site and install them.

See the ExpressConnect for Oracle 15.7.1 Installation and Configuration Guide.

Replication Agent

These new features are available for Replication AgentTM 15.7.1 for Linux, Microsoft Windows, and UNIX.

Oracle Support

Replication Agent for Oracle 15.7.1 supports these features.

Multiple Replication Agents

Replication Agent for Oracle supports the use of multiple Replication Agent instances with Replication Server Multi-Path ReplicationTM to replicate data in parallel from one Oracle primary database across two or more independent replication paths. By replicating data in parallel, multiple Replication Agents can increase replication throughput and performance and reduce resource contention.

Supported Databases

Replication Agent for Oracle 15.7.1 supports multiple Replication Agents to replicate Oracle 10g and 11g tables and procedures to these replicate databases:

- Adaptive Server[®] Enterprise version 15.7 and later.
- Oracle version 10g and 11g. See *Replication Server Options > Replication Agent Release Bulletin > Product Summary > Product Compatibility.*
- Sybase[®] IQ version 12.7 ESD #3 and later. See *Replication Server Release Bulletin* > *Product Compatibility* > *Replication Server Interoperability* .

For a description of end-to-end Multi-Path Replication scenarios, see the *Replication Server Heterogeneous Replication Guide*.

New Parameters

Replication Agent for Oracle 15.7.1 includes the **ra_admin_owner** and **ra_admin_prefix** parameters for use with multiple Replication Agents. See the *Replication Agent Primary Database Guide* and the *Replication Agent Reference Manual*.

DDL Replication in a Multipath Environment

To prevent DDL synchronization errors, use the **pdb_setrepddl** command, which has been updated for environments using multiple Replication Agents.

License

No separate license is required to use multiple Replication Agents with Replication Agent for Oracle.

Oracle LogMiner

The Replication Agent for Oracle Log Reader component reads Oracle log data using LogMiner. The Log Reader component no longer reads Oracle logs directly.

Because the Log Reader component uses Oracle LogMiner, Replication Agent for Oracle supports the replication of:

- data in encrypted tablespaces and columns
- data in compressed tables and tablespaces and data compressed with the COMPRESS FOR DIRECT_LOAD OPERATIONS option
- data in Oracle SecureFiles

Replication Agent for Oracle observes the same limitations for Oracle data as Oracle LogMiner. For information about those limitations, see the Oracle documentation.

Removed Commands and Parameters

These commands have been removed from Replication Agent for Oracle:

- ra_deviceoffset
- ra_devicepath
- ra_helpdeviceoffset

These parameters have been removed from Replication Agent for Oracle:

- auto_adjust_block_count
- log_read_block_count

IBM UDB Support

Replication Agent for UDB 15.7.1 supports these features.

IBM UDB 9.7

Replication Agent for UDB supports IBM DB2 UDB 9.7.

Replication Agent for UDB supports:

- Row compression
- Extended TIMESTAMP precision

New Commands

These existing Replication Agent commands have been extended for use with Replication Agent for UDB.

Command	Description
pdb_skip_op	Returns, adds to, or removes operations from a list of operations to skip during pro- cessing. The format of the record locator is database-specific.
ra_helparticle	Returns information about primary database articles from the RASD.
ra_helpfield	Returns information about primary database fields (columns in tables, or input parame- ters in stored procedures) from the RASD.
ra_helplocator	Returns information about fields in the LTM Locator value.
ra_helpop	This command returns information for use in troubleshooting a specified database transaction log operation.
ra_truncatearticles	Truncates unused articles in the RASD.

See the Replication Agent Reference Manual.

JDBC

Replication Agent for UDB uses the DB2 Universal Database JDBC[™] driver to connect to the primary database in DB2 Universal Database.

To use the JDBC driver, set pds_connection_type to UDBJDBC.

UDBODBC is no longer a valid value for pds_connection_type.

Deprecated Commands, Parameters, and Utilities

Some Replication Agent commands, parameters, and utilities have been deprecated as of the 15.7.1 release. Use the new commands, parameters, and utilities where possible.

Table 1.	Commands
----------	----------

Deprecated	New
pdb_xlog	ra_admin

Deprecated	New
pdb_xlog create	ra_admin init
pdb_xlog init	
pdb_xlog create, force	ra_admin refresh
pdb_xlog init, force	
pdb_xlog remove	ra_admin deinit
pdb_xlog remove, force	ra_admin deinit, force
pdb_xlog move_truncpt	ra_locator move_truncpt
ra_downgrade_accept	ra_downgrade
ra_downgrade_prepare	ra_migrate

Table 2. Parameters

Deprecated	New	
pdb_convert_datetime	Use the Replication Server heterogeneous datatype support (HDS) feature for all data type conversion and translation.	
pdb_xlog_device	ra_admin_device	
pdb_xlog_prefix	ra_admin_instance_prefix	
pdb_xlog_prefix_chars	ra_admin_prefix_chars	

Table 3. Utilities

Deprecated	Use Instead	
Administrator GUI	Use the existing agt_service , ra , and ra_ad- min command line utilities.	

Removed Commands and Parameters

Some Replication Agent commands and parameters have been removed as of the 15.7.1 release.

These commands have been removed from Replication Agent:

- pdb_asmdiskmap
- pdb_commit_generation_filter

These parameters have been removed from Replication Agent:

- archive _read_block_count
- Ir_parallel_scan
- pdb_commit_generation
- pdb_commit_interval
- ra_direct_read
- scan_eol_threshold

New Commands

These Replication Agent commands have been added.

Command	Description
pdb_thread_filter	Filters all activity on an Oracle instance redo log thread or threads during replication, and displays a list of threads being filtered.
ra_helparchive	Displays a list of metadata for all managed archive logs or for a specific redo log thread.
ra_helptran	Returns a list of all open transactions.
ra_purge_first_open	Removes the first open transaction from the list of open transactions.
ra_statrack	Starts and stops the statistics tracking thread.

See the Replication Agent Reference Manual.

Encrypted Login

Replication Agent 15.7.1 supports logging in to a Replication Agent instance using an encrypted password.

You can also set the encryption level when you set the Replication Agent administrator login and password with **ra_set_login**.

For more information, see the *Replication Agent Reference Manual > ra_set_login*.

License Information

Replication Agent 15.7.1 adds the **ra_license** command for obtaining license information for Replication Agent and its licensed features.

For more information, see the *Replication Agent Reference Manual > ra_license*.

Supported and Unsupported Datatypes

Learn about the datatypes supported and not supported by Replication Server Options 15.7.1.

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.

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	

Table 4. ExpressConnect Supported and Unsupported Sybase Datatypes

Datatype	Supported	Unsupported
	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.

Datatype	Supported	Unsupported
Oracle	anydata (limited support)	associative array

Datatype	Supported	Unsupported
	bfile (only for replication not gateway)	mlslabel
	binary_double	nested tables
	binary_float	Oracle-supplied datatypes
	blob	partial large object (LOB) up- dates
	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)	
	varchar2	

Datatype	Supported	Unsupported
	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 6. 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	
	nchar	
	nclob	
	number	
	nvarchar2	
	raw	
	rowid	
	simple_integer	

Datatype	Supported	Unsupported
	timestamp	
	timestamp with [local] time zone	
	UDD object type	
	varchar2	
	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
- Oracle 10g and 11g XMLType data replicated to Oracle 11g. Replication Agent does support replicating XMLType data to Oracle 10g.
- 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 10g and to Adaptive Server Enterprise. When replicating to Oracle 10g, 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 15.0.1 and later for replicating into Microsoft SQL Server.

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	

Table 7. ECDA Supported and Unsupported Sybase Datatypes

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 15.0.1 and later for replicating into Microsoft SQL Server.

Table 8. 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 replica- tion not gateway)	filestream
	nvarchar(max) (only for replica- tion 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 rep- lication, 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.

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	

Table 9. Replication Agent Supported and Unsupported Microsoft SQL Server Datatypes

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 15.0.1 for replicating into IBM DB2 UDB.

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

Table 10. ECDA Supported and Unsupported Sybase Datatypes

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 15.0.1 for replicating into IBM DB2 UDB.

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	

Table 11. ECDA Supported and Unsupported IBM DB2 UDB Datatypes

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.

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	

Table 12. Replication Agent Supported and Unsupported IBM DB2 UDB
Datatypes

Datatypes	Supported	Unsupported
	timestamp	
	varchar	
	varchar for bit data	
	vargraphic	

IBM DB2 UDB 9.5 and 9.7 Support Limitations

Replication Agent does not support these features of IBM DB2 UDB 9.5 or 9.7:

• 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 Functionality

This functionality is not supported by Replication Server Options 15.7.1.

- Oracle-packaged stored procedures and functions (standalone procedures and functions are supported)
- Oracle virtual columns
- Oracle label security
- Custom function strings for text and image processing with ECO see the *Replication Server Heterogeneous Replication Guide.*
- IPv6-formatted addresses
- 4KB-sector disk drives
- IBM DB2 Universal Database data definition language (DDL) commands
- IBM DB2 Universal Database stored procedures
- IBM DB2 clients and servers of different versions on different machines if your IBM DB2 client is installed on a different operating system than your IBM DB2 server, both the client and server must be of the same version.

- 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 **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.

Obtaining Help and Additional Information

Use the Sybase Getting Started CD, Product Documentation site, and online help to learn more about this product release.

- The Getting Started CD (or download) contains release bulletins and installation guides in PDF format, and may contain other documents or updated information.
- Product Documentation at *http://sybooks.sybase.com/* is an online version of Sybase documentation that you can access using a standard Web browser. You can browse documents online, or download them as PDFs. In addition to product documentation, the Web site also has links to EBFs/Maintenance, Technical Documents, Case Management, Solved Cases, Community Forums/Newsgroups, and other resources.
- Online help in the product, if available.

To read or print PDF documents, you need Adobe Acrobat Reader, which is available as a free download from the *Adobe* Web site.

Note: A more recent release bulletin, with critical product or document information added after the product release, may be available from the Product Documentation Web site.

Technical Support

Get support for Sybase products.

If your organization has purchased a support contract for this product, then one or more of your colleagues is designated as an authorized support contact. If you have any questions, or if

you need assistance during the installation process, ask a designated person to contact Sybase Technical Support or the Sybase subsidiary in your area.

Downloading Sybase EBFs and Maintenance Reports

Get EBFs and maintenance reports from the Sybase Web site.

- 1. Point your Web browser to http://www.sybase.com/support.
- 2. From the menu bar or the slide-out menu, under Support, choose EBFs/Maintenance.
- 3. If prompted, enter your MySybase user name and password.
- (Optional) Select a filter from the **Display** drop-down list, select a time frame, and click Go.
- 5. Select a product.

Padlock icons indicate that you do not have download authorization for certain EBF/ Maintenance releases because you are not registered as an authorized support contact. If you have not registered, but have valid information provided by your Sybase representative or through your support contract, click **My Account** to add the "Technical Support Contact" role to your MySybase profile.

6. Click the **Info** icon to display the EBF/Maintenance report, or click the product description to download the software.

Sybase Product and Component Certifications

Certification reports verify Sybase product performance on a particular platform.

To find the latest information about certifications:

- For partner product certifications, go to http://www.sybase.com/detail_list?id=9784
- For platform certifications, go to http://certification.sybase.com/ucr/search.do

Creating a MySybase Profile

MySybase is a free service that allows you to create a personalized view of Sybase Web pages.

- 1. Go to *http://www.sybase.com/mysybase*.
- 2. Click Register Now.

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For information about how Sybase supports accessibility, see the Sybase Accessibility site: *http://www.sybase.com/products/accessibility*. The site includes links to information about Section 508 and W3C standards.

You may find additional information about accessibility features in the product documentation.

Obtaining Help and Additional Information