



**New Features Bulletin**

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**Replication Server<sup>®</sup> Option for  
Oracle 15.7.1 ESD #2**

Linux, Microsoft Windows, and UNIX

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# New Features in Replication Server Option for Oracle 15.7.1 ESD #2

The Replication Server® Option for Oracle 15.7.1 ESD #2 includes Replication Agent™ and ExpressConnect for Oracle (ECO).

The Replication Server Option for Oracle 15.7.1 ESD #2 supports replication from an Oracle data server to:

- Adaptive Server® Enterprise
- Oracle
- Sybase® IQ

Replication of data from or to the Microsoft SQL Server or IBM DB2 UDB data servers is not supported in this release.

## **ExpressConnect for Oracle**

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ExpressConnect for Oracle (ECO), a component of the Replication Server Option for Oracle, provides direct communication between a Replication Server and a replicate Oracle data server.

ECO is installed automatically with Replication Server 15.7.1 ESD #1 EBF 20405. A static license is included with the Replication Server Option for Oracle 15.7.1 ESD #2. You can use ECO if you have a licensed Replication Server and have purchased the Replication Server Option for Oracle.

See the *ExpressConnect for Oracle Configuration Guide*.

## **Oracle Instant Client libraries for ExpressConnect for Oracle**

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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 Configuration Guide*.

## Replication Agent for Oracle

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These new features are available for Replication Agent for Oracle 15.7.1 ESD #2 for Linux, Microsoft Windows, and UNIX.

### Replication Agent Instance and RASD Login Requirement

Replication Agent no longer provides a default user ID and password for Replication Agent instances and the Replication Agent System Database (RASD) at installation.

When you create a new Replication Agent instance, you must provide a user ID and password. You can specify these from the command line or in a response file using the **rao\_admin** utility. The default password policy requires that the password be at least 6 but not more than 255 characters long.

For the RASD, Replication Agent automatically generates a user ID and password. You can change this password later.

See the *Replication Agent for Oracle Administration Guide > Setup and Configuration > Replication Agent Utilities > The Command Line Interface > rao\_admin*.

### Dynamic Password Encryption

Replication Agent uses a dynamic key for password encryption.

When you create a Replication Agent instance, a random key is generated automatically and stored in the **ra\_random** configuration parameter. You can clear this parameter setting with the **-k** option of the **rao\_admin** utility, after which Replication Agent regenerates a new value for **ra\_random** when the instance is restarted.

### Configurable Password Policy

The password policy for Replication Agent is now configurable.

You can configure:

- The maximum and minimum lengths of passwords using **max\_password\_len** and **min\_password\_len**.
- Whether passwords must contain lowercase characters, uppercase characters, numeric characters, or special characters using **password\_lowercase\_required**, **password\_uppercase\_required**, **password\_numeric\_required**, and **password\_special\_required**.
- The number of days before passwords expire and must be changed using **password\_expiration**.

An authorized administrator can reset the system administrator (sa) password without providing an old password by using the **reset\_password** parameter.

The **rasd\_set\_password** command allows you to reset the RASD password.

See the *Replication Agent for Oracle Reference Manual*.

### *Resetting the Replication Agent Administrator Password*

Use the **reset** option of the **rao\_admin** utility to reset the Replication Agent administrator password.

## **Secure Sockets Layer**

Replication Agent supports use of the secure sockets layer (SSL) for connections to and from Replication Agent instances.

As a client, a Replication Agent instance can use SSL in connecting to servers, including:

- Replication Server
- an Oracle primary data server

Client applications can use SSL to encrypt connections to Replication Agent.

### *Replication Agent General Configuration for SSL*

Each Replication Agent instance stores an asymmetric encryption key pair in an identity file located at the path indicated by **ssl\_identity\_filename**. The identity file is encrypted and is accessed with the password stored in **ssl\_identity\_password**. The Certificate Authority (CA) certificates for a Replication Agent instance are stored in a file located at the path indicated by **ssl\_certificates\_filename**.

### *Replication Agent as a Client*

To connect to an Oracle data server, set the **pds\_use\_ssl** Replication Agent configuration parameter to true. To verify the distinguished name (DN) of the server certificate, set **pds\_ssl\_sc\_dn**. Also specify the Oracle SSL port number using **pds\_port\_number**.

To connect to a Replication Server, set **rs\_use\_ssl** to true. To verify the DN of the Replication Server server certificate, set **rs\_ssl\_sc\_dn**.

### *Replication Agent as a Server*

To configure a Replication Agent instance to listen for SSL client connections on its administration port, set **use\_ssl** to true. Clients must then use SSL to connect to the Replication Agent instance.

See the *Replication Agent for Oracle Administration Guide* and the *Replication Agent for Oracle Reference Manual*.

## Deprecated Commands and Parameters

Some Replication Agent commands and parameters have been deprecated. Use the new commands and parameters where possible.

**Table 1. Commands**

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

**Table 2. Parameters**

Deprecated	New
<code>itm_admin_pw_min_length</code>	<code>min_password_len</code>
<code>pdb_convert_datetime</code>	Use the Replication Server heterogeneous datatype support (HDS) feature for all datatype conversion and translation.
<code>pdb_xlog_device</code>	<code>ra_admin_device</code>
<code>pdb_xlog_prefix</code>	<code>ra_admin_instance_prefix</code>
<code>pdb_xlog_prefix_chars</code>	<code>ra_admin_prefix_chars</code>

## Removed Utilities

Some Replication Agent utilities have been removed as of 15.7.1 ESD #2.

The Administrator GUI utility has been removed. Use the existing `rao`, `rao_admin`, and `raoagt_service` command line utilities instead.



## New Commands and Parameters

List of new Replication Agent commands and parameters.

Command	Description
<b>ra_finalize_upgrade</b>	Finalizes the upgrade of instances from a previous version and prevents downgrade to the previous version.
<b>ra_regenerate_keys</b>	Regenerates the values of <b>ra_random</b> and <b>ra_password_key</b> .
<b>rasd_set_password</b>	Sets the Replication Agent System Database (RASD) password.

Parameter	Description
<b>max_password_len</b>	Specifies the maximum password length Replication Agent uses for a new user.
<b>min_password_len</b>	Specifies the minimum password length Replication Agent uses for a new user.
<b>password_expiration</b>	Specifies the number of days before a password expires.
<b>password_lowercase_required</b>	Specifies that lowercase characters are required in passwords.
<b>password_numeric_required</b>	Specifies that numeric characters are required in passwords.
<b>password_special_required</b>	Specifies that special characters are required in passwords.
<b>password_uppercase_required</b>	Specifies that uppercase characters are required in passwords.
<b>pds_ssl_sc_dn</b>	The distinguished name (DN) of the primary data server certificate. This optional parameter is only valid if <b>pds_use_ssl</b> is true.
<b>pds_use_ssl</b>	Indicates whether to use SSL to connect to the primary data server.
<b>reset_password</b>	Used to reset the system administrator (sa) password.

Parameter	Description
<b>rs_ssl_sc_dn</b>	The distinguished name (DN) of the Replication Server certificate. This optional parameter is only valid if <b>rs_use_ssl</b> is true.
<b>rs_use_ssl</b>	Indicates whether to use SSL to connect to Replication Server.
<b>ssl_identity_filename</b>	Indicates the path to a Replication Agent instance identity file containing an asymmetric key pair used for SSL communication.
<b>ssl_identity_password</b>	The password for accessing a Replication Agent instance identity file.
<b>ssl_certificates_filename</b>	Indicates the path to the file containing Certificate Authority (CA) certificates included with Replication Agent at installation.
<b>use_ssl</b>	Indicates whether clients must use SSL to connect to Replication Agent.

See the *Replication Agent for Oracle Reference Manual*.

## Datatypes for Oracle Replication

List of supported and unsupported datatypes 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 3. ExpressConnect Supported and Unsupported Sybase Datatypes**

Datatype	Supported	Unsupported
Sybase	bigint	bigdatetime
	integer	bigtime
	smallint	
	tinyint	
	decimal	

<b>Datatype</b>	<b>Supported</b>	<b>Unsupported</b>
	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	

Datatype	Supported	Unsupported
	image	
	bit	
	sysname (same as varchar(30))	
	longsysname (same as varchar(255))	
	user-defined datatypes (as underlying type)	

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

**Table 4. 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		

Datatype	Supported	Unsupported
	number	
	nvarchar2	
	raw	
	rowid	
	simple_integer	
	timestamp	
	timestamp with [local] time zone	
	UDD object type (only for replication not gateway)	
	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 5. 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

Datatype	Supported	Unsupported
	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 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

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**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.

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- 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.

## Unsupported Functionality

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This functionality is not supported by Replication Server Option for Oracle 15.7.1 ESD #2.

- 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
- Replication Server **rs\_init** utility
- Replication Server **rs\_subcomp** utility
- Replication Server automatic materialization
- Replication Server when replicating in an environment where other vendors are replicating

## 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.

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**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.

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## Technical Support

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Get support for Sybase products.

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- If you purchased the product directly from Sybase or from an authorized Sybase reseller:
  - a) Point your Web browser to <http://www.sybase.com/support>.
  - b) Select **Support > EBFs/Maintenance**.
  - c) If prompted, enter your MySybase user name and password.
  - d) (Optional) Select a filter, a time frame, or both, and click **Go**.
  - e) Select a product.



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- f) Click the **Info** icon to display the EBF/Maintenance report, or click the product description to download the software.
- If you ordered your Sybase product under an SAP contract:
  - a) Point your browser to *<http://service.sap.com/swdc>*.
  - b) Select **Search for Software Downloads** and enter the name of your product. Click **Search**.

## **Sybase Product and Component Certifications**

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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](http://www.sybase.com/detail_list?id=9784)*
- For platform certifications, go to *<http://certification.sybase.com/ucr/search.do>*

## **Creating a MySybase Profile**

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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**.

## **Accessibility Features**

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Accessibility ensures access to electronic information for all users, including those with disabilities.

Documentation for Sybase products is available in an HTML version that is designed for accessibility.

Vision impaired users can navigate through the online document with an adaptive technology such as a screen reader, or view it with a screen enlarger.

Sybase HTML documentation has been tested for compliance with accessibility requirements of Section 508 of the U.S Rehabilitation Act. Documents that comply with Section 508 generally also meet non-U.S. accessibility guidelines, such as the World Wide Web Consortium (W3C) guidelines for Web sites.

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**Note:** You may need to configure your accessibility tool for optimal use. Some screen readers pronounce text based on its case; for example, they pronounce ALL UPPERCASE TEXT as initials, and MixedCase Text as words. You might find it helpful to configure your tool to announce syntax conventions. Consult the documentation for your tool.

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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.