

SYBASE®

Installation Guide

Replication Agent™

15.1

[Linux, Microsoft Windows, and UNIX]

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About This Book

This book describes how to install Replication Agent™ on Linux, Microsoft Windows, and UNIX platforms.

Audience

This book is for replication System Administrators and Database Administrators who are responsible for managing a replication system within an enterprise network.

How to use this book

Read Chapter 1, “Preparing for Installation,” *before* you unload the Replication Agent software from the Replication Agent 15.1 distribution media. Use the Installation and Setup worksheet in Chapter 1 to gather and record the connectivity and configuration information you need to set up the Replication Agent.

See the Replication Agent *Administration Guide* for more information about the Replication Agent system:

- An introduction to the Replication Agent system, and an overview of its topology
- Specific configuration requirements for each Replication Agent system component

This book provides the following information:

- Chapter 1, “Preparing for Installation,” describes basic Replication Agent system requirements, and provides a worksheet to help you gather and record the configuration information that you need to install the Sybase Replication Agent software and set up the Sybase Replication Agent system.
- Chapter 2, “Installing Replication Agent,” describes how to install the Replication Agent 15.1 software on a Linux, Microsoft Windows, or UNIX platform. This chapter also describes how to uninstall the software.

Note For information about installing Replication Server® software, see the Replication Server installation and configuration guides for your platform.

Related documents

Replication Agent Refer to the following documents to learn more about the Sybase Replication Agent:

- Replication Agent *Reference Manual* – for information about all Replication Agent commands and configuration parameters, including syntax, examples, and detailed command usage notes
- Replication Agent *Primary Database Guide* – for detailed, database-specific information about each non-Sybase database that is supported by the Replication Agent
- Replication Agent *Administration Guide* – for an introduction to the Sybase Replication Agent system, and information about setting up and administering the Replication Agent and other components of the Sybase Replication Agent system
- The Replication Agent *Release Bulletin* – for last-minute information that was too late to be included in the books

Note A more recent version of the Replication Agent *Release Bulletin* may be available on the World Wide Web. To check for critical product or document information that was added after the release of the product CD, use the Sybase Product Manuals Web site.

Replication Server Refer to the following documents for more information about transaction replication systems and the Replication Server software:

- Replication Server *Design Guide* – for an introduction to basic transaction replication concepts and Sybase replication technology
- Replication Server *Heterogeneous Replication Guide* – for detailed information about configuring Replication Server and implementing a Sybase replication system with non-Sybase databases

Primary data server Make sure that you have appropriate documentation for the non-Sybase primary data server that you use with the Sybase replication system.

Java environment The Replication Agent requires a Java Runtime Environment (JRE) on the Replication Agent host machine.

- The Sybase Replication Agent release bulletin contains the most up-to-date information about Java and JRE requirements.
- Java documentation available from your operating system vendor describes how to set up and manage the Java environment on your platform.

Other sources of information

Use the Sybase Getting Started CD, the SyBooks™ CD, and the Sybase Product Manuals Web site to learn more about your product:

- The Getting Started CD contains release bulletins and installation guides in PDF format, and may also contain other documents or updated information not included on the SyBooks CD. It is included with your software. To read or print documents on the Getting Started CD, you need Adobe Acrobat Reader, which you can download at no charge from the Adobe Web site using a link provided on the CD.
- The SyBooks CD contains product manuals and is included with your software. The Eclipse-based SyBooks browser allows you to access the manuals in an easy-to-use, HTML-based format.

Some documentation may be provided in PDF format, which you can access through the PDF directory on the SyBooks CD. To read or print the PDF files, you need Adobe Acrobat Reader.

Refer to the *SyBooks Installation Guide* on the Getting Started CD, or the *README.txt* file on the SyBooks CD for instructions on installing and starting SyBooks.

- The Sybase Product Manuals Web site is an online version of the SyBooks CD that you can access using a standard Web browser. In addition to product manuals, you will find links to EBFs/Maintenance, Technical Documents, Case Management, Solved Cases, newsgroups, and the Sybase Developer Network.

To access the Sybase Product Manuals Web site, go to Product Manuals at <http://www.sybase.com/support/manuals/>.

Sybase certifications on the Web

Technical documentation at the Sybase Web site is updated frequently.

❖ **To find the latest information on product certifications**

- 1 Point your Web browser to Technical Documents at <http://www.sybase.com/support/techdocs/>.
- 2 Click Certification Report.
- 3 In the Certification Report filter select a product, platform, and time frame and then click Go.
- 4 Click a Certification Report title to display the report.

❖ **To find the latest information on component certifications**

- 1 Point your Web browser to Availability and Certification Reports at <http://certification.sybase.com/>.

-
- 2 Either select the product family and product under Search by Base Product; or select the platform and product under Search by Platform.
 - 3 Select Search to display the availability and certification report for the selection.

❖ **To create a personalized view of the Sybase Web site (including support pages)**

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

- 1 Point your Web browser to Technical Documents at <http://www.sybase.com/support/techdocs/>.
- 2 Click MySybase and create a MySybase profile.

Sybase EBFs and software maintenance

❖ **To find the latest information on EBFs and software maintenance**

- 1 Point your Web browser to the Sybase Support Page at <http://www.sybase.com/support>.
- 2 Select EBFs/Maintenance. If prompted, enter your MySybase user name and password.
- 3 Select a product.
- 4 Specify a time frame and click Go. A list of EBF/Maintenance releases is displayed.

Padlock icons indicate that you do not have download authorization for certain EBF/Maintenance releases because you are not registered as a Technical Support Contact. If you have not registered but have valid information provided by your Sybase representative or through your support contract, click Edit Roles to add the “Technical Support Contact” role to your MySybase profile.

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

Style conventions

The following style conventions are used in this book:

- In a sample screen display, commands that you should enter exactly as shown appear like this:

```
pdb_xlog
```


- In the regular text of this document, variables or user-supplied words appear like this:
If you specify the `value` option, it changes the setting of the specified configuration parameter.
- In a sample screen display, variables or words that you should replace with the appropriate value for your site appear like this:
...where `rds` and `rdb` are the variables you should replace.
- In the regular text of this document, names of programs, utilities, procedures, and commands appear like this:
Use the `pdb_init` command to initialize the primary database.
- In the regular text of this document, names of database objects (tables, columns, stored procedures, etc.) appear like this:
Check the `price` column in the `widgets` table.
- In the regular text of this document, names of datatypes appear like this:
Use the `date` or `datetime` datatype.
- In the regular text of this document, names of files and directories appear like this:
Log files are in the `$SYBASE/RAX-15_1/inst_name/log` subdirectory.

Syntax conventions

The following syntax conventions are used in this book:

Table 1: Syntax conventions

Key	Definition
{ }	Curly braces indicate that you must choose at least one of the enclosed options. Do not type the braces when you enter the command.
[]	Brackets mean that choosing one or more of the enclosed options is optional. Do not type the brackets when you enter the command.
()	Parentheses are to be typed as part of the command.
	The vertical bar means you can select only one of the options shown.
,	The comma means you can choose as many of the options shown as you like, separating your choices with commas that you type as part of the command.

In reference sections of this document, statements that show the syntax of commands appear like this:

```
ra_config [param [, value]]
```

The words *param* and *value* in the syntax are variables or user-supplied words.

Character case conventions

The following character case conventions are used in this book:

- All command syntax and command examples are shown in lowercase. However, Replication Agent command names are *not* case sensitive. For example, PDB_XLOG, Pdb_Xlog, and pdb_xlog are equivalent.
- Names of configuration parameters are case sensitive. For example, Scan_Sleep_Max is not the same as scan_sleep_max, and the former would be interpreted as an invalid parameter name.
- Database object names are *not* case sensitive in Replication Agent commands. However, if you need to use a mixed-case object name in a command (to match a mixed-case object name in the database), you must delimit the object name with quote characters. For example:

```
pdb_get_tables "TableName"
```

Accessibility features

This document is available in an HTML version that is specialized for accessibility. You can navigate the HTML with an adaptive technology such as a screen reader, or view it with a screen enlarger.

Sybase Replication Agent version 15.1 and the HTML documentation have been tested for compliance with U.S. government Section 508 Accessibility requirements. 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.

For a section 508 compliance statement for Replication Server Options, go to the Voluntary Product Assessment Template at http://www.sybase.com/detail_list?id=52484

Note You might 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.

For information about how Sybase supports accessibility, see Sybase Accessibility at <http://www.sybase.com/accessibility>. The Sybase Accessibility site includes links to information on Section 508 and W3C standards.

If you need help

Each Sybase installation that has purchased a support contract has one or more designated people who are authorized to contact Sybase Technical Support. If you cannot resolve a problem using the manuals or online help, please have the designated person contact Sybase Technical Support or the Sybase subsidiary in your area.

Preparing for Installation

This chapter describes the Replication Agent system requirements, and other information you need to know *before* you install the Sybase Replication Agent version 15.1 software.

Note In this document, Linux is treated as a UNIX platform, unless the specific context requires a distinction.

Topic	Page
Reviewing installation requirements	1
Reviewing the installation process	6
Completing the Installation and Setup worksheet	9
Installation and Setup worksheet	18

Note Be sure to read the Replication Agent 15.1 *Release Bulletin*, which might contain more up-to-date information than this guide.

Reviewing installation requirements

Review the following installation requirements before you install the Replication Agent 15.1 software:

- SySAM requirements
- System requirements
- GUI and console requirements

- Team skill requirements

Note If you are upgrading from an earlier version of Replication Agent, see the Replication Agent *Primary Database Guide* for database-specific details on migration.

SySAM requirements

This section describes the required licensing information that you need to know before you install any of the components of Replication Agent.

Sybase Software Asset Management 2.0 (SySAM) is a licensing mechanism that:

- Allows System Administrators to monitor their site's use of Sybase products and optional features
- Records the Sybase software being used and licensed

Before you install Replication Agent, you must decide whether to configure an unserved license or a network license server. This information will be requested during installation. For detailed instructions, refer to the Sybase Software Asset Management 2.0 *User's Guide*.

SySAM verifies that a valid license exists for one of the following Replication Agents:

- Replication Agent for IBM DB2 UDB
- Replication Agent for Microsoft SQL Server
- Replication Agent for Oracle

The basic components of SySAM are:

- A license file
- The SySAM software, which consists of a license manager and management utilities

When you install Replication Agent, a SySAM license manager is automatically installed.

For all information for SySAM, refer to the Sybase Software Asset Management 2.0 *User's Guide*.

System requirements

This section describes the system requirements for:

- Database servers
- Java Runtime Environment (JRE)
- Platforms and operating systems
- Accommodating the RASD
- JDBC driver

Database servers

Replication Agent 15.1 supports the following database servers on Linux, Microsoft Windows, and UNIX platforms:

- IBM DB2 Universal Database
- Oracle
- Microsoft SQL Server database with Replication Agent running *only* on Microsoft Windows

Note The database server versions that are required and supported by Replication Agent 15.1 are listed in the Replication Agent 15.1 *Release Bulletin*.

Java Runtime Environment (JRE)

Because Replication Agent is a Java-based application, a Java Runtime Environment (JRE) must be installed on the Replication Agent host machine. A JRE appropriate for your operating system is installed automatically when you install the Replication Agent software.

Operating system patch levels must be current to support Java 5.0. See the following Web sites to determine which patches are required for your platform, and for current information about JREs for your platform:

- For information about JREs on the Linux, Sun Solaris, and Microsoft Windows platforms at <http://java.sun.com/j2se>
- For information about JREs on AIX platforms at <http://www.ibm.com/developerworks/java/jdk/aix/service.html>

- For information about JREs on HP-UX platforms at <http://www.hp.com/products1/unix/java>

Platforms and operating systems

The Replication Agent 15.1 software platforms and operating system versions are listed in the Replication Agent 15.1 *Release Bulletin*.

The following are installation requirements for the databases:

- Replication Agent for Microsoft SQL Server must be installed on a Microsoft Windows host from which it can directly access the primary Microsoft SQL Server transaction logs.
- Replication Agent for Oracle must be installed on a UNIX or Microsoft Windows host from which it can directly access the primary Oracle redo logs.
- Replication Agent for IBM DB2 Universal Database (UDB) must be installed on the same UNIX or Microsoft Windows host as the UDB server or the UDB Administration Client.

Accommodating the RASD

Note This section applies only to Replication Agent for Oracle and Replication Agent for Microsoft SQL Server.

Each Replication Agent for Oracle or Replication Agent for Microsoft SQL Server instance uses an embedded SQL Anywhere database to manage its Replication Agent System Database (RASD).

Because the RASD stores information about primary database structure or schema objects, its size depends partly on the number of tables and procedures replicated, and the number of database users in the primary database.

When it replicates a Data Definition Language (DDL) transaction, the Replication Agent creates a new *version* of the affected object's metadata in its RASD. Over time, the size of the RASD can grow significantly, depending on the number and frequency of DDL transactions replicated.

If the RASD runs out of disk space, the Replication Agent will shut down and suspend replication. To prevent this, you must provide adequate disk space on the Replication Agent host machine to accommodate the initial size of the RASD, as well as some potential growth.

See the *Replication Agent Administration Guide* for more information about the RASD.

JDBC driver

The JDBC drivers that are required and supported by Replication Agent 15.1 are listed in the *Replication Agent 15.1 Release Bulletin*.

GUI and console requirements

The standard installation procedure for Replication Agent 15.1 software uses the installation program wizard in GUI mode (the GUI wizard).

If you want to use the installation program GUI wizard to install Replication Agent on a server without a display, keyboard, and pointing device, you need access to a remote machine with a GUI environment, networked to the Replication Agent host. Before you start the installation program wizard, verify that the remote machine is configured to provide a GUI environment for the server on which the Replication Agent software will be installed.

Note You can use the installation program wizard in console mode to install Replication Agent from an operating system command prompt, without a GUI environment. See “Installing in console mode” on page 40 for more information.

Team skill requirements

You need team members with specific skills to successfully install and configure a replication environment using Replication Agent 15.1. For your site, identify the person or team responsible for each skill set listed in Table 1-1.

Table 1-1: Replication Agent installation skill requirements

Role	Skill set
Operating System Administrator	<ul style="list-style-type: none">• Understanding of Linux, Sun Solaris, HP-UX, AIX, or Microsoft Windows operating system• Knowledge of standards and conventions at the installation site
Communications Administrator	<ul style="list-style-type: none">• Understanding of connectivity and communication protocols used at your site, such as TCP/IP• Understanding of your site's network configuration• Ability to design, establish, test, and troubleshoot remote communications between the primary database, Replication Agent, and Replication Server
Replication Server Administrator	<ul style="list-style-type: none">• Understanding of Replication Server and the replication system environment• Replication Server administrator privileges
Enterprise Connect Data Access (ECDA) Administrator	<ul style="list-style-type: none">• Understanding of ECDA and applying data to non-Sybase databases• ECDA administrator privileges
Primary Database Administrator	<ul style="list-style-type: none">• Understanding of the primary database• Primary database administrator privileges

Reviewing the installation process

Installing Replication Agent software is just one part of the process of setting up a replication system.

Table 1-2 lists the major steps required to set up a replication system to replicate transactions from a non-Sybase primary database in an enterprise network.

Table 1-2: Setting up a Sybase replication system

Step	To do this	Refer to
1	<p><i>Install the primary data server.</i></p> <p>The primary data server is the source of transactions to be replicated.</p>	<ul style="list-style-type: none"> • Primary data server documentation • Vendor documentation or Web site for the primary data server
2	<p><i>Install the connectivity drivers for the primary database server.</i></p> <p>You must install the correct JDBC driver for your primary database server.</p>	<ul style="list-style-type: none"> • “Setting up connectivity to the primary database” on page 31 in this manual • Vendor documentation or Web site for the primary data server
3	<p><i>Install Replication Server and create connections.</i></p> <p>This includes:</p> <ul style="list-style-type: none"> • Designing the replication system • Installing Replication Server • Defining connections from Replication Server to the ERSSD and routes between Replication Servers • Defining connections using ECDA when replicating to a non-Sybase database 	<ul style="list-style-type: none"> • Replication Server documentation • ECDA documentation
4	<p><i>Prepare to install Replication Agent.</i></p> <ul style="list-style-type: none"> • Review installation requirements and the installation procedure for Replication Agent. • Complete the “Installation and Setup worksheet” on page 18. 	<ul style="list-style-type: none"> • Chapter 1, “Preparing for Installation,” in this book and Chapter 2, “Setting Up and Configuring Replication Agent,” in the <i>Replication Agent Administration Guide</i> • Replication Agent <i>Release Bulletin</i>

Step	To do this	Refer to
5	<p><i>Install the Replication Agent software.</i></p> <p>When installing the software:</p> <ul style="list-style-type: none"> • For Microsoft SQL Server, Replication Agent for Microsoft SQL Server must be installed on a Microsoft Windows host from which it can directly access the primary Microsoft SQL Server transaction logs. • For Oracle, Replication Agent for Oracle must be installed on a UNIX or Microsoft Windows host from which it can directly access the primary Oracle redo logs. • For UDB, Replication Agent for UDB must be installed on the same UNIX or Microsoft Windows host as the DB2 UDB server or a DB2 UDB client. 	<p>“Installing the Replication Agent software” on page 35 in this guide</p>
6	<p><i>Configure Replication Server and primary data server connections.</i></p> <p>This includes:</p> <ul style="list-style-type: none"> • Creating a Replication Server database connection to the primary data server • Creating a Replication Server login for the Replication Agent instance • Configuring Replication Agent parameters • Testing connections between the Replication Agent and the primary Replication Server, and between the Replication Agent and the primary data server 	<p>Replication Agent Administration Guide, Chapter 3, “Administering Replication Agent”</p>
7	<p><i>Set up the Replication Agent instance.</i></p> <p>This includes:</p> <ul style="list-style-type: none"> • Creating the Replication Agent transaction log objects • Marking primary objects for replication 	<p>Replication Agent Administration Guide, Chapter 2, “Setting Up and Configuring Replication Agent”</p>
8	<p><i>Prepare for replication.</i></p> <p>Refer to the checklist to verify that all the replication system components are in place before you start replication.</p>	<p>Replication Agent Administration Guide, Chapter 2, “Setting Up and Configuring Replication Agent”</p>

Step	To do this	Refer to
9	<p>Verify your replication system using <i>Replication Agent test scripts (optional)</i>.</p> <p>Use the test scripts provided with Replication Agent to set up a test environment and verify replication from a primary database to a replicate database.</p>	Replication Agent <i>Primary Database Guide</i> , the chapter for your primary data server
10	<p><i>Materialize subscriptions to primary data.</i></p> <p>For each subscription, this process:</p> <ul style="list-style-type: none"> Validates and activates the subscription Populates tables in the replicate database so they are synchronized with the primary database before you start replication 	<ul style="list-style-type: none"> Replication Server documentation Replication Agent <i>Administration Guide</i>, Appendix A, “Materializing Subscriptions to Primary Data”
11	<p><i>Start replication.</i></p> <p>Put the Replication Agent instance in the <i>Replicating</i> state.</p>	Replication Agent <i>Administration Guide</i> , Chapter 2, “Setting Up and Configuring Replication Agent”

Completing the Installation and Setup worksheet

The “Installation and Setup worksheet” on page 18 provides a place for you to record the information you need to install and configure your replication system.

Note Record all the information in the Installation and Setup worksheet *before* you begin software installation. The worksheet organizes several configuration parameter values and other values that you need to know to install Replication Agent properly.

Make a copy of the Installation and Setup worksheet, and record the required information as you read through the following sections. You may need to refer to the worksheet often as you install and set up Replication Agent.

Save a copy of the completed worksheet for your site records, in case you need to refer to it during future Sybase product installations or upgrades.

Section 1: Replication Agent administration information

Determine and record the Replication Agent administration information and record it in Section 1 of the worksheet.

❖ To complete Section 1 of the Installation and Setup worksheet

- 1 Determine the instance type of the Replication Agent. This instance type indicates which primary database server the Replication Agent will work with.

Instance types are:

- mssql – Microsoft SQL Server (Replication Agent for Microsoft SQL Server must be installed on a Microsoft Windows host from which it can directly access the primary Microsoft SQL Server transaction logs.)
- oracle – Oracle Database Server (Replication Agent for Oracle must be installed on a UNIX or Microsoft Windows host from which it can directly access the primary Oracle redo logs.)
- ibmudb – IBM DB2 Universal Database (UDB) (Replication Agent for UDB must be installed on the same UNIX or Microsoft Windows host as the DB2 UDB server or a DB2 UDB client.)

Record the instance type as item 1a in Section 1: Replication Agent administration information on the “Installation and Setup worksheet.”

- 2 Determine the name of the Replication Agent instance. This name should identify this specific instance.

Record the name of the instance as item 1b in Section 1: Replication Agent administration information on the “Installation and Setup worksheet.”

- 3 Identify the client socket port number of the administration port for this Replication Agent instance. The port number must be unique on the Replication Agent host machine.

If you are not the System Administrator for the system on which you are installing the Replication Agent instance, ask your System Administrator which port number you should use for the Replication Agent administration port.

Note Port numbers have a range of 1 to 65,535.

Record the port number as item 1c in Section 1: Replication Agent administration information on the “Installation and Setup worksheet.”

Note Replication Agent for Oracle and Replication Agent for Microsoft SQL Server each require two port numbers. The additional one is for the RASD. By default, Replication Agent assigns the RASD port—*admin port + 1*. This number must also be unique on the Replication Agent host machine. For more information, see “Accommodating the RASD” on page 4.

- 4 Determine the location of the interfaces file (*sql.ini* on Microsoft Windows or *interfaces* on Linux and UNIX).

Use this item only if you plan to use the *isql* or *jsql* utility or Replication Manager (RM) to administer the Replication Agent instance.

Note The interfaces file must reside on the same machine as the Replication Agent client (*isql* or Replication Manager) not necessarily on the Replication Agent host machine.

Record the interfaces file location as item 1d in Section 1: Replication Agent administration information on the “Installation and Setup worksheet.”

- 5 Determine the administrative user ID and password for logging in to the Replication Agent administration port. Use this information to create the administrative user ID during configuration and setup.

See the Replication Agent *Administration Guide* for more information.

Record the administrative user ID as item 1e (*admin_user*) and the password as item 1f (*admin_pw*) in Section 1: Replication Agent administration information on the “Installation and Setup worksheet.”

Section 2: Replication Server parameter values for the primary database connection

Determine the values of the connection parameters for Replication Server. These values are used in the Replication Server create connection command when you create the database connection for the primary database.

See the Replication Server *Administration Guide* for more information about using the create connection command.

❖ To complete Section 2 of the Installation and Setup worksheet

- 1 Identify a data server name and a database name representing the primary database connection for the Replication Server.
 - Replication Server connects to the primary database through the Replication Agent instance, so the data server name can be the name of the Replication Agent instance.
 - The database name can be any name that helps you identify the connection Replication Server uses to communicate with the primary database.

Record the instance name or data server name as item 2a (rs_source_ds) and the database name as item 2b (rs_source_db) in Section 2: Replication Server parameter values for the primary database connection on the “Installation and Setup worksheet.”

Note These names are case sensitive.

- 2 Identify the Maintenance User ID and password associated with the Replication Server database connection to the primary database.

The Maintenance User ID must be a valid user ID at the primary database.

Note The Maintenance User ID must not be the user ID of a primary database user who applies transactions that might need to be replicated.

Record the Maintenance User ID as item 2c (Maintenance User) and the password as item 2d (Maintenance User password) in Section 2: Replication Server parameter values for the primary database connection on the “Installation and Setup worksheet.”

Section 3: Replication Agent parameter values for Replication Server

Determine and record the values of the Replication Agent configuration parameters for the primary Replication Server. These values are used with the Replication Agent `ra_config` command when you configure the Replication Agent instance.

See the *Replication Agent Administration Guide* for more information about using the `ra_config` command for the initial configuration of Replication Agent parameters.

❖ To complete Section 3 of the Installation and Setup worksheet

- 1 Identify the name of the primary Replication Server host machine.

Record the Replication Server host machine name as item 3a (`rs_host_name`) in Section 3: Replication Agent parameter values for Replication Server on the “Installation and Setup worksheet.”

- 2 Identify the port number of the client socket port for Replication Server.

This is the port number Replication Agent uses to log in to Replication Server.

Note All port numbers have a range of 1 to 65,535.

Record the port number as item 3b (`rs_port_number`) in Section 3: Replication Agent parameter values for Replication Server on the “Installation and Setup worksheet.”

- 3 Identify the user name and password Replication Agent uses to log in to Replication Server.

This Replication Server client user ID must have connect source permission in Replication Server. See the *Replication Server Reference Manual* for more information about granting connect source permissions.

If you are not the System Administrator for the system on which you are installing the Replication Agent instance, ask your System Administrator for the correct user ID and password for the primary Replication Server.

Record the Replication Server client user ID as item 3c (*rs_username*) and the password as item 3d (*rs_password*) in Section 3: Replication Agent parameter values for Replication Server on the “Installation and Setup worksheet.”

- 4 Identify the Replication Server character set from the *RS_charset* property in the Replication Server configuration file located at:

`$SYBASE/REP-15_0/install/rssrvname.cfg`

where:

\$SYBASE is the installation directory of the Replication Server software

rssrvname is the name of the Replication Server instance.

Record the Replication Server character set as item 3e (*rs_charset*) in Section 3: Replication Agent parameter values for Replication Server on the “Installation and Setup worksheet.”

Section 4: Replication Agent parameter values for the ERSSD or RSSD

Determine and record the values of the Replication Agent configuration parameters for the ERSSD or the RSSD for the primary Replication Server.

Note Replication Agent supports connection to either ERSSD or RSSD. Because there is no difference in configuration between the two, this section refers to both RSSD and ERSSD installations as “RSSD.”

❖ To complete Section 4 of the Installation and Setup worksheet

- 1 Identify the name of the host machine on which the RSSD resides.

Record the name of the host machine as item 4a (*rssd_host_name*) in Section 4: Replication Agent parameter values for the RSSD on the “Installation and Setup worksheet.”

- 2 Identify the port number of the client socket port for the server where the RSSD resides.

Note All port numbers have a range of 1 to 65,535.

Record the port number as item 4b (*rssd_port_number*) in Section 4: Replication Agent parameter values for the RSSD on the “Installation and Setup worksheet.”

- 3 Identify the RSSD database name for the primary Replication Server.

Record the RSSD database name as item 4c (*rssd_database_name*) in Section 4: Replication Agent parameter values for the RSSD on the “Installation and Setup worksheet.”

- 4 Identify the user ID and password Replication Agent uses to access the RSSD for the primary Replication Server.

You must have a Replication Server ID and password. If you do not, contact your Replication Server System Administrator.

Record this RSSD client user ID as item 4d (*rssd_username*) and record the password as item 4e (*rssd_password*) in Section 4: Replication Agent parameter values for the RSSD on the “Installation and Setup worksheet.”

Section 5: Replication Agent parameter values for the primary data server

Determine and record the values of the Replication Agent configuration parameters for the primary data server.

❖ To complete Section 5 of the Installation and Setup worksheet

- 1 If your primary database type is Oracle, identify the *tnsnames.ora* file name that contains the connection property to the primary database and connection name for the primary data server.

Record the *tnsnames.ora* file name as item 5a (*pds_tns_filename*) and record the connection name as item 5b (*pds_tns_connection*) in Section 5: Replication Agent parameter values for the primary data server on the “Installation and Setup worksheet.”

- 2 If you are using Oracle Automatic Storage Management (ASM), identify the *tnsnames.ora* file name that contains the connection property for the ASM database. If it is the same *tnsnames.ora* file as configured in *pds_tns_filename*, you may leave *asm_tns_filename* not set. Also identify the name of the ASM data server, ASM connection, ASM username, and ASM password.

Record the *tnsnames.ora* file name as item 5c (*asm_tns_filename*), the ASM connection name as item 5d (*asm_tns_connection*), the ASM username as item 5e (*asm_username*), and the ASM password as item 5f (*asm_password* in Section 5: Replication Agent parameter values for the primary data server on “Installation and Setup worksheet.”

Note The *asm_tns_filename* is required only if the *pds_tns_filename* does not already have the ASM connection information.

- 3 If your primary database type is Microsoft SQL Server, identify the port number of the client socket port for the primary data server.

Note Port numbers have a range of 1 to 65,535.

Record the client socket port number as item 5g (*pds_port_number*) Section 5: Replication Agent parameter values for the primary data server on the “Installation and Setup worksheet.”

- 4 If your primary database type is Microsoft SQL Server, identify the name of the primary database server.

Record the primary database server name as item 5h (*pds_server_name*) in Section 5: Replication Agent parameter values for the primary data server on the “Installation and Setup worksheet.”

- 5 Identify the name of the primary database on the primary data server.

The value of the *pds_database_name* parameter can be identical to the value of *rs_source_db* (worksheet item 2b), as long as the value of the *pds_database_name* parameter exists as a valid database at the primary database server.

If your primary database server is Oracle, you must use the value of the *ORACLE_SID* system environment variable (*%ORACLE_SID%* on Microsoft Windows, or *\$ORACLE_SID* on UNIX).

Record the database name as item 5i (*pds_database_name*) in Section 5: Replication Agent parameter values for the primary data server on the “Installation and Setup worksheet.”

- 6 If your primary database server is DB2 Universal Database, identify the data source name (DSN) configured in the ODBC driver or the catalogued database alias for the primary database. The value of the data source name parameter (*pds_datasource_name*) must be the DB2 database alias that identifies the primary database.

Record the appropriate value for the data source name (DSN) as item 5j (pds_datasource_name) in Section 5: Replication Agent parameter values for the primary data server on the “Installation and Setup worksheet.”

- 7 Identify the user ID and password that Replication Agent uses to log in to the primary data server.

Note This user ID must *not* be the same as the Replication Server maintenance ID for the primary database connection.

This primary data server user ID must have several database-level privileges for the primary database. See the Replication Agent *Primary Database Guide* for more information.

Record this primary data server user ID as item 5k (pds_username) and the password as item 5l (pds_password) in Section 5: Replication Agent parameter values for the primary data server on the “Installation and Setup worksheet.”

- 8 Identify the character set of the primary database and determine the Java-equivalent character set.

For a list of valid Java character sets, see Character Encodings for J2SE 5.0 on the Java internationalization page at <http://java.sun.com/javase/technologies/core/basic/int/>.

Record the name of the equivalent Java character set as item 5m in Section 5: Replication Agent parameter values for the primary data server on the “Installation and Setup worksheet.”

- 9 For Microsoft SQL Server only. Identify the dedicated administration port number (pds_dac_port_number). For more information, see the Replication Agent *Primary Database Guide*.

Record the DAC port number as item 5n in Section 5: Replication Agent parameter values for the primary data server on the “Installation and Setup worksheet.”

Section 6: Replication Server parameter values for the replicate data server

Determine and record the values of the parameters for the replicate data server. These values are used in the materialization step.

❖ **To complete Section 6 of the Installation and Setup worksheet**

- 1 Identify the name of the replicate data server host machine.
Record the host machine name as item 6a (replicate host name) in Section 6: Replication Server parameter values for the replicate data server on the “Installation and Setup worksheet.”
- 2 Identify the name of the replicate database on the replicate data server.
Record the database name as item 6b (replicate database name) in Section 6: Replication Server parameter values for the replicate data server on the “Installation and Setup worksheet.”
- 3 If you will be replicating DDL commands, determine the user ID and password that Replication Server uses to log in to the replicate database to apply DDL commands. This user ID can *not* be the same as the Replication Server maintenance user defined in the replicate connection.

Record the DDL user name as item 6c (ddl_username) and the DDL password as item 6d (ddl_password) in Section 6: Replication Server parameter values for the replicate data server on the “Installation and Setup worksheet.”

Installation and Setup worksheet

Make a copy of this worksheet for each Replication Agent instance you install. Fill out the worksheet before you install the Replication Agent software.

See the Replication Agent *Reference Guide* for detailed descriptions of Replication Agent commands, options, and parameters.

Section 1: Replication Agent administration information

Item	Description	Example value	Your value
1a	Replication Agent instance type This identifies the type of primary database the Replication Agent instance works with.	oracle	

Item	Description	Example value	Your value
1b	Replication Agent instance name This name must be unique among all Replication Agent 15.1 instances.	ra_sales_instance	
1c	admin_port This is the client socket port number for the Replication Agent administration port. Note Check with your System Administrator to determine which port numbers are available. The port number must be unique (not used by any other application on the Replication Agent host machine). Check with your System Administrator to determine which port numbers are available. Note Replication Agent for Oracle and Replication Agent for Microsoft SQL Server each require two port numbers. The additional one is for the RASD. By default, Replication Agent assigns the RASD port— <i>admin port + 1</i> . This number must also be unique.	10000	
1d	Location of the interfaces file. Use this item only if you plan to use the isql utility or Replication Manager to administer the Replication Agent instance.	<ul style="list-style-type: none"> • On UNIX: <i>\$\$SYBASE/interfaces</i> • On Microsoft Windows: <i>%SYBASE%\ini\sql.ini</i> 	
1e	admin_user This is the administrative user ID you use to log in to the Replication Agent instance. The default value is sa.	admin_user	
1f	admin_pw This is the administrative password you use to log in to the Replication Agent instance. The default value is an empty string ("").	admin_pw	

Section 2: Replication Server parameter values for the primary database connection

Item	Description	Example value	Your value
2a	<p>rs_source_ds</p> <p>This is a data server name representing the primary data server to which Replication Server connects.</p> <p>This value is specified in the Replication Server create connection command used to create the Replication Agent connection in the primary Replication Server.</p> <hr/> <p>Note This name can be the name of the Replication Agent instance.</p>	ra_sales_instance	
2b	<p>rs_source_db</p> <p>This is a database name representing the primary database to which Replication Server connects.</p> <p>This value is specified in the Replication Server create connection command used to create the Replication Agent connection in the primary Replication Server.</p> <hr/> <p>Note This name can be any name that helps you identify this as the connection to the primary database. For example, it can be the same name as the pds_database_name.</p>	sales_db	
2c	<p>Maintenance User</p> <p>This is the Replication Server Maintenance User ID associated with the connection to the primary database.</p> <p>Replication Server requires a Maintenance User ID for every database connection. This value is used in the create connection command when you create the connection to the primary database.</p> <hr/> <p>Note This user ID must be valid at the primary database.</p>	maint_user	
2d	<p>Maintenance User password</p> <p>This is the Replication Server Maintenance User password associated with the connection to the primary database.</p>	maint_pwd	

Section 3: Replication Agent parameter values for Replication Server

Item	Description	Example value	Your value
3a	rs_host_name This is the name of the Replication Server host machine.	rs_host	
3b	rs_port_number This is the port number Replication Agent uses to log in to Replication Server. Check with your System Administrator to determine which port numbers are available.	1111	
3c	rs_username This is the Replication Server client user ID that Replication Agent uses to log in to the primary Replication Server. This user ID must have connect source authority in the Replication Server. Note The value for the rs_username parameter must not be the same as the value for the pdb_maint_user parameter (item 2c).	rauser	
3d	rs_password This is the Replication Server client user password that Replication Agent uses.	rapwd	

Item	Description	Example value	Your value
3e	<p>rs_charset</p> <p>This is the character set that Replication Agent uses when creating LTL commands for Replication Server. It must match Replication Server's character set, defined by the RS_charset property in the Replication Server configuration file (<i>(\$SYBASE/REP-15_0/install/rssrvname.cfg)</i>).</p> <hr/> <p>Note Setting this property to anything other than the character set of the primary Replication Server causes it to incorrectly do character set conversion of the LTL commands it receives from Replication Agent. Only if this value is different from the RA_JAVA_DFLT_CHARSET value (which should match the primary database's character set) will Replication Agent do character set conversion on the character data being replicated. Character set conversion slows performance.</p> <hr/>	<ul style="list-style-type: none"> On UNIX: iso_1 On Windows: cp850 	

Section 4: Replication Agent parameter values for the RSSD

Item	Description	Example value	Your value
4a	<p>rssd_host_name</p> <p>This is the name of the host machine on which the RSSD of the primary Replication Server resides.</p>	as_host	
4b	<p>rssd_port_number</p> <p>This is the client socket port number for the RSSD data server.</p>	1111	
4c	<p>rssd_database_name</p> <p>This is the database name of the RSSD of the primary Replication Server.</p>	rsdb_RSSD	
4d	<p>rssd_username</p> <p>This is the RSSD client user ID that Replication Agent uses to access the RSSD of the primary Replication Server.</p>	rssd_user	
4e	<p>rssd_password</p> <p>This is the RSSD client password that Replication Agent uses.</p>	rssd_pass	

Section 5: Replication Agent parameter values for the primary data server

Item	Description	Example value	Your value
5a	pds_tns_filename	/path1/tnsnames.ora	
	<p>Note This value is for Oracle only.</p> <p>The fully-qualified file name identifying the Oracle <i>tnsnames.ora</i> file that contains connection properties for the primary Oracle data server.</p>		
5b	pds_tns_connection	SALES_DB_CONN	
	<p>Note This value is for Oracle only.</p> <p>The Oracle connection name that identifies the primary database connection in the Oracle <i>tnsnames.ora</i> file</p>		
5c	asm_tns_filename	/path2/tnsnames.ora	
	<p>Note This value is for Oracle only.</p> <p>Identifies the Oracle <i>tnsnames.ora</i> filename where the ASM connection information is located.</p> <p>If this is the same <i>tnsnames.ora</i> file as configured in <i>pds_tns_filename</i>, you can leave this parameter unset.</p> <p>Note Set this parameter only if the redo logs of your primary Oracle are under Automatic Storage Management.</p>		
5d	asm_tns_connection	+ASM1_CONN	
	<p>Note This value is for Oracle only.</p> <p>Identifies the Oracle ASM connection name found in the <i>tnsnames.ora</i> file.</p> <p>Note Set this parameter only if the redo logs of your primary Oracle are under Automatic Storage Management.</p>		

Item	Description	Example value	Your value
5e	asm_username	sys as sysdba	
	Note This value is for Oracle only.		
	Identifies the Oracle user name to be used when connecting to the ASM server.		
	Note Set this parameter only if the redo logs of your primary Oracle are under Automatic Storage Management.		
5f	asm_password	change_on_install	
	Note This value is for Oracle only.		
	Password for Oracle ASM access for the user specified in the asm_username.		
	Note Set this parameter only if the redo logs of your primary Oracle are under Automatic Storage Management.		
5g	pds_port_number	1111	
	Note This value is for Microsoft SQL Server only.		
	This is the client socket port number for the primary database gateway server.		
5h	pds_server_name	doc_23	
	Note This value is for Microsoft SQL Server only.		
	This is the name of the Microsoft SQL Server primary database server.		

Item	Description	Example value	Your value
5i	<p>pds_database_name</p> <p>This is the name of the primary database on the primary database server.</p> <p>Replication Agent uses this value to determine which database is the primary database.</p> <hr/> <p>Note For Oracle, use the \$ORACLE_SID. For Microsoft SQL Server and for UDB, use the actual name of the primary database.</p> <hr/>	sales_db	
5j	<p>pds_datasource_name</p> <hr/> <p>Note This value is for DB2 Universal Database only.</p> <hr/> <p>This is the data source name (DSN) of the ODBC driver or the catalogued database alias for the primary database.</p>	sales_db_alias	
5k	<p>pds_username</p> <p>This is the user ID that Replication Agent uses to log in to the primary database.</p>	pds_user	
5l	<p>pds_password</p> <p>This is the password for pds_username.</p>	pds_pw	
5m	<p>This is the Java-equivalent of the primary database character set.</p> <hr/> <p>Note Unless you want to override the default character set that the JVM finds on your system, you do <i>not</i> need to explicitly set the character set-related environment variable, RA_JAVA_DFLT_CHARSET. However, the system default character set must match the character set of the primary database.</p> <hr/>	<ul style="list-style-type: none"> • On UNIX: ISO8859_1 • On Windows: Cp850 	
5n	<p>pds_dac_port_number</p> <hr/> <p>Note This value is for Microsoft SQL Server only.</p> <hr/> <p>The dedicated administration connection port number that Replication Agent uses to connect to the primary database during the server-level initialization of the primary data server.</p>	1348	

Section 6: Replication Server parameter values for the replicate data server

Item	Description	Example value	Your value
6a	<p>Replicate host name</p> <p>The name of the host machine on which the replicate data server resides.</p> <p>You need this name when you create subscriptions. See the Replication Server documentation for more information.</p>	rds_host	
6b	<p>Replicate database name</p> <p>This is the name of the replicate database on the replicate database server.</p> <p>You need this name when you create subscriptions. See the Replication Server documentation for more information.</p>	replicate_db	
6c	<p>ddl_username</p> <hr/> <p>Note This value is for Oracle and Microsoft SQL Server only.</p> <hr/> <p>This is the replicate database client user ID that Replication Server uses to log in to the replicate database to apply DDL commands.</p> <p>This user ID must have authority in the replicate database to create any schema or issue any DDL command replicated from the primary database.</p> <p>The Replication Agent sends this ID and password to Replication Server together with any DDL command executed at the primary database.</p> <hr/> <p>Note The value for the ddl_username must <i>not</i> be the same as the value of the maintenance user defined in Replication Server for the replicate connection.</p> <hr/>	scott	
6d	<p>ddl_password</p> <hr/> <p>Note This value is for Oracle and Microsoft SQL Server only.</p> <hr/> <p>This is the replicate database client user password that Replication Server uses with the value for ddl_username.</p> <hr/>	tiger	

See also

The following Replication Agent and Replication Server guides contain more information about installation and configuration:

- The Replication Agent *Administration Guide* for more information about the initial configuration of Replication Agent parameters for Replication Server.
- The Replication Agent *Primary Database Guide* for more information about the initial configuration of the primary database you are replicating.
- The Replication Agent *Reference Manual* for more general information about the use of the `ra_config` command.
- The Replication Server *Reference Manual* for more information about Replication Server commands and parameters.

Installing Replication Agent

This chapter describes how to install Sybase Replication Agent version 15.1 software on a Linux, Microsoft Windows, or UNIX platform, and how to create, configure, and start up a Replication Agent instance.

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Note In this document, Linux is treated as a UNIX platform, unless the specific context requires a distinction.

Before you begin

Complete the following pre-installation tasks *before* you install the Replication Agent 15.1 software:

- Read the Replication Agent Release Bulletin.
- Plan for system requirements.
- Verify the system environment.
- Complete the Installation and Setup worksheet.

The following sections describe each pre-installation task.

Read the Replication Agent Release Bulletin

Read the Replication Agent 15.1 *Release Bulletin* for current information about specific requirements of Replication Agent.

The Replication Agent *Release Bulletin* provides:

- Product information that might not be included in the Replication Agent guides, such as known issues and documentation updates.
- Additional information about installing and setting up the Replication Agent that was not available until after the software and documentation was released.

Note If you are upgrading from an earlier version of Replication Agent, see the Replication Agent *Primary Database Guide* for database-specific information.

Plan for system requirements

Installing Replication Agent requires adequate disk space and RAM on the Replication Agent host machine. The Replication Agent host also requires network connectivity to the primary database and the Replication Server, and local access to the log devices.

Be aware of the following installation requirements:

- Replication Agent for Microsoft SQL Server must be installed on a Microsoft Windows host from which it can directly access the primary Microsoft SQL Server transaction logs.
- Replication Agent for Oracle must be installed on a UNIX or Microsoft Windows host from which it can directly access the primary Oracle redo logs.
- Replication Agent for IBM DB2 Universal Database (UDB) must be installed on the same UNIX or Microsoft Windows host as the UDB server or the UDB Administration Client.

See “System requirements” on page 3 for more information about:

- Platform and operating system requirements
- Memory, disk space, and media device requirements
- Compatibility with other Sybase products

See the Replication Agent 15.1 *Release Bulletin* for additional current information about system requirements.

Verify the system environment

Before you install the Replication Agent 15.1 software, verify the following in your Sybase Replication Agent system environment:

- Primary database
Verify that the primary data server and primary database are online and configured properly for your production systems. For more information, refer to the documentation provided by your database software vendor.
- Replication Server
Verify that the Replication Server is installed, configured, and running. For more information, refer to the Replication Server installation and configuration guides for your platform.

Complete the Installation and Setup worksheet

Complete the Installation and Setup worksheet in Chapter 1, “Preparing for Installation.” The worksheet organizes the Replication Agent configuration parameter values that you need to set up and configure a Replication Agent instance.

See “Completing the Installation and Setup worksheet” on page 9 for detailed instructions.

Setting up connectivity to the primary database

Replication Agent connects to primary data servers using a JDBC driver that implements the JDBC 3.0 standard.

You must install the correct connectivity driver for your primary database environment before installing Replication Agent.

In general, JDBC drivers are available with client/server products for your database server. Contact your Database Administrator if you are not sure that the correct driver is installed.

The following sections contain procedures for setting up the JDBC drivers for primary data servers.

Note Only one version of a vendor's JDBC driver should be in the CLASSPATH. If more than one version is in the CLASSPATH, Replication Agent will have problems connecting to the primary database.

DB2 UDB client

Replication Agent for IBM DB2 Universal Database (UDB) must be installed on the same UNIX or Microsoft Windows host as the UDB server or the UDB Administration Client. Replication Agent requires access to UDB JDBC drivers and UDB API libraries.

Note The DB2 JDBC driver is effectively a JDBC/ODBC bridge. For each primary database, you must configure an ODBC data source name (DSN) in the DB2 client software.

If the Replication Agent is installed on the same host machine as the DB2 Universal Database primary data server, a separate DB2 client is not required for connectivity.

If the Replication Agent host machine is not the same as the DB2 Universal Database host, you must install the DB2 Administration Client on the Replication Agent host machine.

For information on installing the DB2 Administration Client on your Replication Agent host machine, see the IBM publication, *DB2 Universal Database and DB2 Connect, Installation and Configuration Supplement*.

❖ To set up connectivity to a DB2 UDB server

- 1 When you install a DB2 client on a UNIX platform, you need to source *db2cshrc* to correctly set all required DB2 environment variables. Except on HP Itanium, if your DB2 installation is 64 bit, you must customize the script to point to the 32-bit client libraries. See the Replication Agent *Primary Database Guide* for more information.

Add the following to the *.login* file of the user account that starts and stops the Replication Agent instance:

```
source /path_name/sql1lib/db2cshrc
```

where *path_name* is the path where you installed the DB2 client. You must log out and log back in for this change to take effect, or issue the command `source .login` after the change.

Note When you install a DB2 client on Microsoft Windows, the installation program modifies all required environment variables automatically.

- 2 For each primary database (regardless of platform), you must configure an ODBC data source name (DSN) in the DB2 client software. Make a note of the *database name* and *datasource name* when you configure the data source.

Be sure to record the database name and datasource name in the following Replication Agent configuration parameters:

- `pds_database_name` – primary database name
- `pds_datasource_name` – cataloged database alias or the ODBC data source name for the primary database

Oracle and Microsoft SQL Server JDBC drivers

JDBC drivers for Oracle and Microsoft SQL Server databases are provided by the database vendors. If the JDBC driver for your database is not already installed, obtain the appropriate driver from the vendor's Web site.

- For the JDBC driver for Oracle at http://technet.oracle.com/software/tech/java/sqlj_jdbc/content.html
- For the JDBC driver for Microsoft SQL Server at <http://www.microsoft.com/downloads> and search for "SQL Server 2005 JDBC driver."

❖ **To set the CLASSPATH environment variable**

- 1 Install the JDBC driver on the host machine on which Replication Agent resides or where Replication Agent can access it.
 - 2 **Note** Replication Agent for Microsoft SQL Server must be installed on Microsoft Windows.
-

Add the location of the JDBC driver to the CLASSPATH environment variable.

- For UNIX: (Microsoft SQL Server is not available on UNIX)
Add the following to the *.login* file of the user account that is used to start and stop the Replication Agent instance:

```
setenv CLASSPATH /path_name/driver:$CLASSPATH
```

where:

- *path_name* is the name of the path where you installed the JDBC driver.
- *driver* is the name of the JDBC driver.
(For Oracle, it is *ojdbc14.jar*)

You must log out and log back in for this change to take effect, or issue the command `source .login` after the change.

- For Microsoft Windows:
Go to Start | Settings | Control Panel | System | Environment, and add the following to the existing CLASSPATH environment variable, using the semicolon (;) as the path separator, or create the path in the User Variables panel:

```
drive:\path_name\driver
```

where:

- *drive* is the drive letter.
- *path_name* is the name of the path where you installed the JDBC driver.
- *driver* is the name of the JDBC driver:
 - For Oracle, the name is *ojdbc14.jar*
 - For Microsoft SQL Server, the name is *sqljdbc.jar*.

Click Apply, then OK.

- 3 On the Oracle host machine, the Oracle primary server must be running the Transparent Network Substrate (TNS) Listener Service. See the Oracle networking document for more information about TNS.

Installing the Replication Agent software

The Replication Agent 15.1 software is distributed on the Replication Agent 15.1 distribution media. See the Replication Agent *Release Bulletin* for the current distribution media catalog numbers.

The following are installation requirements for the databases:

- Replication Agent for Microsoft SQL Server must be installed on a Microsoft Windows host machine from which it can directly access the primary Microsoft SQL Server transaction logs.
- Replication Agent for Oracle must be installed on a UNIX or Microsoft Windows host from which it can directly access the primary Oracle redo logs.
- Replication Agent for IBM DB2 Universal Database (UDB) must be installed on the same UNIX or Microsoft Windows host as the UDB server or the UDB Administration Client.

The following sections describe how to install the Replication Agent 15.1 software on a Linux, Microsoft Windows, or UNIX platform, using the installation program:

- “Installing with the GUI wizard” on page 36
- “Installing in console mode” on page 40

All procedures give you the following installation options:

- *Typical* – The Replication Agent software product will be installed with the recommended products and features.
- *Custom* – From a list of all products and features on the CD, you can select the specific products and features that you want to install.

The following products and features are included on the Replication Agent 15.1 distribution media:

- Replication Agent 15.1
- SySAM 2.0 (the Sybase Software Asset Management license manager)

If you encounter problems during the installation, see “Installation troubleshooting” on page 48.

Installing with the GUI wizard

This installation procedure uses the installation program wizard in GUI mode (the GUI wizard), which requires one of the following:

- A GUI environment (with a display, keyboard, and pointing device) on the Replication Agent host machine, or
- A remote machine configured to provide a GUI environment for the Replication Agent host machine.

See “Installing in console mode” on page 40 for information about installing the Replication Agent software in an interactive text (or console) mode.

❖ To install Replication Agent with the GUI wizard

- 1 Log in to the Replication Agent host machine using an operating system user account with authority to start, stop, and administer the Replication Agent instance (for example, the “sybase” user).
- 2 Close all non-essential applications, and minimize any open windows.
- 3 Insert the Replication Agent 15.1 distribution CD in the CD-ROM drive.
- 4 Start the installation program GUI wizard:
 - On Microsoft Windows platforms, the installation program GUI wizard should start automatically.

If the GUI wizard does not start automatically, select Start | Run, and enter the following in the Open box:

```
x:\setup.exe
```

where *x*: is your CD-ROM drive.

You can also start the GUI wizard from Microsoft Windows Explorer by double-clicking the *setup.exe* file icon.

- On UNIX platforms, enter the following at the command prompt:

```
cd /cdrom
./setup
```

- 5 Click Next to continue.

Note You can click Cancel to exit the GUI wizard and stop the installation at any point before it is complete.

- 6 Select your geographic location in the license agreement and copyright notice window.
- 7 Read the Sybase license agreement and select “I agree.”

Note You must agree to the terms of the software license before you can continue the installation.

Click Next to continue.

- 8 Specify an installation directory in the Destination window.

The default installation directory is:

- Existing `%SYBASE%` or `c:\sybase` on Microsoft Windows platforms
- Existing `$SYBASE` or `/opt/sybase` on UNIX platforms

Click Next to accept the default installation directory, or do one of the following:

- Click Browse to select an installation directory in the file browser, and then click Next, or
- Enter a directory name in the Destination Directory box, and then click Next.

If you enter a directory name that does not exist, the installation program prompts:

```
The directory does not exist.
Do you want to create it?
```

Click Yes to create the installation directory you specified.

If the directory you specified (either by default or by entering a directory name) exists, the installation program prompts:

```
You have chosen to install into an existing
```

directory. Any older versions of the products you choose to install that are detected in this directory will be replaced. Do you want to continue with installation into this directory?

If you click Yes and the products were installed with the installation program, then the installation program determines the correct course of action.

Note On Microsoft Windows platforms, if you are prompted to overwrite a DLL, click Yes *only* if the version of the new DLL is newer than the one the installation program is attempting to overwrite.

9 Select the type of installation from the two options:

- Typical
- Custom

Typical If you choose Typical, the installation program displays the following products and features:

- Replication Agent 15.1
- SySAM License Server
- SySAM License Utilities

Custom If you choose Custom, the installation program displays the same products and features as the Typical installation list, with check boxes that allow you to select the specific products and features you want to install.

- Replication Agent 15.1
- SySAM License Server
- SySAM License Utilities

After you select the products and features for a Custom installation and click Next, the installation program displays the products and features you selected.

10 Click Next to continue.

The installation program installs the components in the installation directory you specified, and displays an installation progress indicator.

If errors occur during the installation, the installation program displays error messages. In the event of an installation error, exit the installation program wizard to correct the cause of the error, then restart the installation program. For more information, see “Installation troubleshooting” on page 48.

If the software is installed successfully, the installation program displays a window confirming the successful installation.

Click Next.

- 11 The SySAM License Server window opens and displays this prompt:

Will the licenses be obtained from the License Server?

- Select Yes, if you have a preexisting SySAM network license server installed.

Enter the host name and the port number of the license server.

- Select No, if you do not have a SySAM license server installed and are going to use a local license file. A message displays telling you to download the license file.

Click Next.

- 12 The SySAM notification window prompts you to configure your server for e-mail notification. When configuration is enabled, you receive information about license management events that require attention. Select Yes and either accept the default values that are supplied, or enter values for the following (from your worksheet):

- SMTP server host name
- SMTP server port number
- E-mail return address
- Recipients of the notification
- Message severity level of an event that will trigger e-mail. Your choices are:
 - Informational
 - Warning
 - Error

If you choose not to have e-mail alerts or severity messages logged, select No.

Click Next.

- 13 Click Finish to complete the installation and close the installation program.

To verify that the software components were installed correctly, see “Verifying the installation” on page 53.

Post-installation task

After you complete the Replication Agent software installation, you must set up the SYBASE environment on the Replication Agent host machine. For more information, see “Setting up the SYBASE environment” on page 49.

Installing in console mode

You can install the Replication Agent software in an interactive text (or console) mode, using the same steps as those described in “Installing with the GUI wizard” on page 36, except that:

- You invoke the installation program wizard at the command prompt, using the `-console` option, and
- You use only the keyboard to select all of the installation options.

This installation procedure uses the installation program wizard in console mode, which requires either:

- A display and keyboard on the Replication Agent host machine, or
- A display and keyboard on a remote machine configured to control the Replication Agent host machine.

Note This installation procedure does *not* require a pointing device or a GUI environment to install the Replication Agent software.

See “Installing with the GUI wizard” on page 36 for information about installing the Replication Agent software in a GUI environment.

❖ To install the Replication Agent in console mode

- 1 Log in to the Replication Agent host machine using an operating system user account with authority to start, stop, and administer the Replication Agent instance (for example, the “sybase” user).

- 2 Close all non-essential applications, and minimize any open windows.
- 3 Insert the Replication Agent 15.1 distribution CD in the CD-ROM drive.

Note If the installation program GUI wizard starts automatically on a Microsoft Windows platform, click Cancel to exit the GUI wizard.

- 4 Open an operating system command window, and set the CD-ROM drive as the current drive.
- 5 Start the installation program wizard in console mode:

- On Microsoft Windows:

```
setup -console
```

- On UNIX:

```
./setup -console
```

The installation program wizard starts and displays the Welcome message.

- 6 Follow the remaining wizard prompts to install the Replication Agent 15.1 software.

See “Installing with the GUI wizard” on page 36 for a description of all of the wizard prompts.

The installation program installs the components in the installation directory you specified, and displays an installation progress indicator.

If errors occur during the installation, the installation program displays error messages. In the event of an installation error, exit the installation program wizard to correct the cause of the error, and then restart the installation program. For more information, see “Installation troubleshooting” on page 48.

If the software is installed successfully, the installation program displays a message confirming the successful installation.

To verify that the software components were installed correctly, see “Verifying the installation” on page 53.

Post-installation task After you complete the Replication Agent software installation, you must set up the SYBASE environment on the Replication Agent host machine. For more information, see “Setting up the SYBASE environment” on page 49.

Using a response file for installation

A response file contains responses to all of the installation program wizard prompts. You can install the Replication Agent 15.1 software using a response file in either console mode or silent mode.

The following sections describe how to use a response file for installation:

- Creating a response file
- Installing in console mode with a response file
- Installing in silent mode

Creating a response file

There are two ways to create a response file:

- Edit a *template* file that contains default responses to all of the wizard prompts.
- Record the actual responses to the installation program wizard prompts, while the wizard runs in either GUI mode or console mode.

Note Recording responses to the installation program wizard installs the Replication Agent software, and then generates the template file *after* the installation is complete.

You can create a template file without running the installation program wizard (and installing the software) by invoking the installation program wizard at the command prompt with the `-options-template` option.

You can record your responses to the installation program wizard in either GUI mode or console mode, while installing the software, by invoking the installation program wizard at the command prompt with the `-options-record` option.

Use one of the following procedures to create a response file.

❖ To create a response file from a template

- 1 Log in to the Replication Agent host machine using an operating system user account with authority to start, stop, and administer the Replication Agent instance (for example, the “sybase” user).
- 2 Close all non-essential applications, and minimize any open windows.
- 3 Insert the Replication Agent 15.1 distribution CD in the CD-ROM drive.

Note If the installation program GUI wizard starts automatically on a Microsoft Windows platform, click Cancel to exit the GUI wizard.

- 4 Open an operating system command window, and set the CD-ROM drive as the current drive.
- 5 Invoke the installation program wizard at the command prompt, using the `-options-template` option:

- On Microsoft Windows:

```
setup -options-template RAX.resp
```

where *RAX.resp* is the full path to the response (template) file you want to create.

Note There is no space in the `-options-record` string.

- On UNIX:

```
./setup -options-template RAX.resp
```

where *RAX.resp* is the full path to the response (template) file you want to create.

Note There is no space in the `-options-template` string.

The installation program creates a template response file with the name you specified. The template file contains the default responses for each wizard prompt.

- 6 Use your preferred text editor to edit the template file, and record the values you want to use to install the Replication Agent software.

❖ **To create a response file by recording a GUI installation**

- 1 Log in to the Replication Agent host machine using an operating system user account with authority to start, stop, and administer the Replication Agent instance (for example, the “sybase” user).
- 2 Close all non-essential applications, and minimize any open windows.
- 3 Insert the Replication Agent 15.1 distribution CD in the CD-ROM drive.

Note If the installation program GUI wizard starts automatically on a Microsoft Windows platform, click Cancel to exit the GUI wizard.

- 4 Open an operating system command window, and set the CD-ROM drive as the current drive.
- 5 Invoke the installation program wizard at the command prompt, using the `-options-record` option:

- On Microsoft Windows:

```
setup -options-record RAX.resp
```

where *RAX.resp* is the full path to the response (template) file you want to create.

Note There is no space in the `-options-record` string.

- On UNIX:

```
./setup -options-record RAX.resp
```

where *RAX.resp* is the full path to the response (template) file you want to create.

Note There is no space in the `-options-record` string.

The installation program wizard starts in GUI mode, and it captures all of the prompt responses in a file with the name you specified.

See “Installing with the GUI wizard” on page 36 for a description of all of the wizard prompts.

In the event of an installation error, exit the installation program wizard to correct the cause of the error, and then restart the installation program. For more information, see “Installation troubleshooting” on page 48.

❖ **To create a response file by recording a console installation**

- 1 Log in to the Replication Agent host machine using an operating system user account with authority to start, stop, and administer the Replication Agent instance (for example, the “sybase” user).
- 2 Close all non-essential applications, and minimize any open windows.
- 3 Insert the Replication Agent 15.1 distribution CD in the CD-ROM drive.

Note If the installation program GUI wizard starts automatically on a Microsoft Windows platform, click Cancel to shut down the GUI wizard.

- 4 Open an operating system command window, and set the CD-ROM drive as the current drive.
- 5 Invoke the installation program wizard at the command prompt, using the `-console` and `-options-record` options:

- On Microsoft Windows:

```
setup -console -options-record RAX.resp
```

where *RAX.resp* is the full path to the response (template) file you want to create.

Note There is no space in the `-options-record` string.

- On UNIX:

```
./setup -console -options-record RAX.resp
```

where *RAX.resp* is the full path to the response (template) file you want to create.

Note There is no space in the `-options-record` string.

The installation program wizard starts in console mode, and it captures all of the prompt responses in a file with the name you specified.

See “Installing with the GUI wizard” on page 36 for a description of all of the wizard prompts.

In the event of an installation error, exit the installation program wizard to correct the cause of the error, then restart the installation program. For more information, see “Installation troubleshooting” on page 48.

Installing in console mode with a response file

A console mode installation using a response file allows you to accept all of the defaults as you move through an interactive text installation, because all of the default values are supplied by the response file.

Follow the same steps as you would for a standard console mode installation, but invoke the installation program wizard at the command prompt as follows:

- On Microsoft Windows:

```
setup -console -options RAX.resp  
-W SybaseLicense.agreeToLicense=true
```

where *RAX.resp* is the full path to the response file.

- On UNIX:

```
./setup -console -options RAX.resp  
-W SybaseLicense.agreeToLicense=true
```

where *RAX.resp* is the full path to the response file.

Note The `-W SybaseLicense.agreeToLicense=true` command option makes your agreement with the Sybase License Agreement the default option in the console mode installation.

See “Installing with the GUI wizard” on page 36 for a description of all of the wizard prompts.

In the event of an installation error, exit the installation program wizard to correct the cause of the error, then restart the installation program. For more information, see “Installation troubleshooting” on page 48.

To verify that the software components were installed correctly, see “Verifying the installation” on page 53.

Post-installation task

After you complete the Replication Agent software installation, you must set up the SYBASE environment on the Replication Agent host machine. For more information, see “Setting up the SYBASE environment” on page 49.

Installing in silent mode

The installation program silent mode, sometimes referred to as an “unattended installation,” allows you to install the software with a response file to set default values, without any interaction required on your part.

Follow the same steps as you would for a standard console mode installation, but invoke the installation program wizard at the command prompt as follows:

- On Microsoft Windows:

```
setupConsole -silent -options RAX.resp  
-W SybaseLicense.agreeToLicense=true
```

where *RAX.resp* is the full path to the response file.

Warning! When you run a silent installation, Sybase recommends that you use the *setupConsole.exe* executable, which runs in the foreground. The normal *setup.exe* executable runs in the background, giving you the false impression that the installation has terminated immediately, without a completion status. This could result in duplicate installation attempts.

- On UNIX:

```
./setup -silent -options RAX.resp  
-W SybaseLicense.agreeToLicense=true
```

where *RAX.resp* is the full path to the response file.

Note The `-W SybaseLicense.agreeToLicense=true` command option makes your agreement with the Sybase License Agreement the default option in the silent mode installation.

In the event of an installation error, see “Installation troubleshooting” on page 48.

To verify that the software components were installed correctly, see “Verifying the installation” on page 53.

Post-installation task

After you complete the Replication Agent software installation, you must set up the SYBASE environment on the Replication Agent host machine. For more information, see “Setting up the SYBASE environment” on page 49.

Installation troubleshooting

If you encounter errors during installation, invoke the installation program wizard with the `-is:log` option to record the installation errors in a log file. After the wizard runs, check the log file to view a record of the installation process.

You can record installation errors with the installation program wizard in either GUI or console mode (with or without a response file), and in silent mode.

Use the following procedure to record an installation log file with the installation program wizard in GUI mode.

❖ **To record an installation log file**

- 1 Log in to the Replication Agent host machine using an operating system user account with authority to start, stop, and administer the Replication Agent instance (for example, the “sybase” user).
- 2 Close all non-essential applications, and minimize any open windows.
- 3 Insert the Replication Agent 15.1 distribution CD in the CD-ROM drive.

Note If the installation program GUI wizard starts automatically on a Microsoft Windows platform, click Cancel to exit the GUI wizard.

- 4 Open an operating system command window, and set the CD-ROM drive as the current drive.
- 5 Invoke the installation program wizard at the command prompt, using the `-is:log` option:

- On Microsoft Windows:

```
setup -log # @ALL -is:log RAX_err.log
```

where *RAX_err.log* is the full path to the installation error log file you want to create.

- On UNIX:

```
./setup -log # @ALL -is:log RAX_err.log
```

where *RAX_err.log* is the full path to the installation error log file you want to create.

Note You can use the `-is:log` option, along with the `-console` or `-silent` options, to record an installation log file in non-GUI wizard modes.

- 6 Follow the wizard prompts to install the Replication Agent software.

See “Installing with the GUI wizard” on page 36 for a description of all of the wizard prompts.

The installation program attempts to install the software, and creates an installation log file with the name you specified.

- 7 After the wizard exits, examine the contents of the installation log file and the *log.txt* file in the installation directory to determine the cause of the errors.

Setting up the SYBASE environment

After you install the Replication Agent 15.1 software, and *before* you start the Replication Agent or run any Replication Agent utilities, you must set up the SYBASE environment on the Replication Agent host machine.

Setting up the SYBASE environment sets the value of an environment variable (%SYBASE% on Microsoft Windows platforms and \$SYBASE on UNIX platforms) to point to the Replication Agent installation directory.

❖ To set up the SYBASE environment

- 1 Log in to the Replication Agent host machine using an operating system user account with authority to start, stop, and administer the Replication Agent instance (for example, the “sybase” user).

2 At the command prompt, execute the *SYBASE* batch or script file:

- On Microsoft Windows:

```
c:\path\SYBASE
```

where *path* is the Sybase installation directory. For example:

```
c:\sybase\SYBASE
```

- On UNIX:

```
source $SYBASE/SYBASE.csh
```

where *\$SYBASE* is the path to the Replication Agent installation directory.

Uninstalling the Replication Agent software

The installation program includes an *Uninstall* wizard that removes the Replication Agent 15.1 software and its related components.

You can run the Uninstall wizard in either GUI mode or console mode. Sybase recommends that you use the GUI mode.

The installation program removes only the files and directories for the products and features that you select in the Uninstall wizard. However, some files (such as log and configuration files) are left intact for administrative purposes, even if you choose to uninstall all of the products and features.

Note The installation program does *not* remove the root installation directory (*%SYBASE%* or *\$SYBASE*) nor the *SYSAM-2_0* directory and its subdirectories.

Uninstalling on a Microsoft Windows platform

Before uninstalling the Replication Agent software, you must:

- Log in to the Replication Agent host machine using an account with administrator privileges.

- Shut down all Replication Agent instances and all other processes for the components you are uninstalling.

Use one of the following procedures to uninstall the Replication Agent software on a Microsoft Windows platform.

❖ **To uninstall in GUI mode on Microsoft Windows platforms**

- 1 Choose one of the following methods to start the Uninstall wizard in GUI mode:

- From the Start menu, select Settings | Control Panel | Add/Remove Programs.
- Enter the following at the command prompt:

```
%SYBASE%\uninstall\RAX-15_1\uninstaller
```

- Click Start | Run and then enter:

```
%SYBASE%\uninstall\RAX-15_1\uninstaller
```

- In Microsoft Windows Explorer, double-click the *uninstaller.exe* file icon.

The Uninstall wizard window opens.

- 2 Click Next.
- 3 Select the products and features that you want to uninstall from the list of installed products and features, then click Next.

The default option is *all* installed products and features.

- 4 Verify the summary information, then click Next.

The installation program removes the files and directories associated with the products and features you selected.

- 5 Click Finish.

Note You may be prompted to decide whether to remove shared files. Sybase recommends that you do *not* remove shared files.

❖ **To uninstall in console mode on Microsoft Windows platforms**

- 1 Open an operating system command window.
- 2 Set the Sybase installation directory as the current directory:

```
cd %SYBASE%
```

where `%SYBASE%` is the path to the Replication Agent installation directory.

- 3 Invoke the Uninstall wizard at the command prompt, using the `-console` option:

```
uninstall\RAX-15_1\uninstaller -console
```

The Uninstall wizard displays the Welcome window.

- 4 Follow the remaining Uninstall wizard prompts to uninstall the Replication Agent software.

Note You may be prompted to decide whether to remove shared files. Sybase recommends that you do *not* remove shared files.

Uninstalling on a UNIX platform

Before uninstalling the Replication Agent software, you must:

- Log in to the Replication Agent host machine using an account with administrator privileges.
- Shut down all Replication Agent instances and all other processes for the components you are uninstalling.

Use one of the following procedures to uninstall the Replication Agent software on a UNIX platform.

❖ To uninstall in GUI mode on UNIX platforms

- 1 Invoke the Uninstall wizard at the command prompt:

```
$$SYBASE/uninstall/RAX-15_1/uninstaller
```

where `$$SYBASE` is the path to the Replication Agent installation directory.

The Uninstall wizard window opens.

- 2 Click Next.
- 3 Select the products and features that you want to uninstall from the list of installed products and features, then click Next.

The default option is *all* installed products and features.

- 4 Verify the summary information, then click Next.

The installation program removes the files and directories associated with the products and features you selected.

- 5 Click Finish.

Note You may be prompted to decide whether to remove shared files. Sybase recommends that you do *not* remove shared files.

❖ **To uninstall in console mode on UNIX platforms**

- 1 Open an operating system command window.
- 2 Set the Sybase installation directory as the current directory:

```
cd $SYBASE
```

where `$SYBASE` is the path to the Replication Agent installation directory.

- 3 Invoke the Uninstall wizard at the command prompt, using the `-console` option:

```
uninstall/RAX-15_1/uninstaller -console
```

The Uninstall wizard displays the Welcome window.

- 4 Follow the remaining Uninstall wizard prompts to uninstall the Replication Agent software.

Note You may be prompted to decide whether to remove shared files. Sybase recommends that you do *not* remove shared files.

Verifying the installation

The installation program creates subdirectories in the Replication Agent installation directory (`%SYBASE%` on Microsoft Windows platforms and `$SYBASE` on UNIX platforms) for the Replication Agent 15.1 software, and other specific software that the Replication Agent requires.

SYBASE environment scripts

The installation program creates SYBASE environment scripts that set PATH and other environment variables on the Replication Agent host machine. These scripts allow you to run the Replication Agent software and its utilities from any directory on the host machine.

The SYBASE environment scripts are created in the Sybase installation directory and named as follows:

- *SYBASE.bat* on Microsoft Windows platforms
- *SYBASE.sh* or *SYBASE.csh* on UNIX platforms

You can use these scripts to permanently set the environment variables, or you can use them to temporarily change environment variables by running (or sourcing) the scripts each time you log in to the Replication Agent host machine.

Note On Microsoft Windows platforms, the installation program sets up the SYBASE environment variable automatically when you install the Replication Agent software.

For more information, see “Setting up the SYBASE environment” on page 49.

What's next

Refer to the Sybase Replication Agent *Administration Guide* for information about creating a Replication Agent instance, and setting up the Sybase Replication Agent system.

Note If you are upgrading from an earlier version of Replication Agent, see the Replication Agent *Primary Database Guide* for database-specific details.

Glossary

This glossary describes Sybase Replication Agent terms used in this book.

Adaptive Server

The brand name for Sybase relational database management system (RDBMS) software products.

- *Adaptive Server Enterprise* manages multiple, large relational databases for high-volume online transaction processing (OLTP) systems and client applications.
- *Adaptive Server IQ* manages multiple, large relational databases with special indexing algorithms to support high-speed, high-volume business intelligence, decision support, and reporting client applications.
- *Adaptive Server Anywhere* manages relational databases with a small DBMS footprint, which is ideal for embedded applications and mobile device applications.

See also **DBMS** and **RDBMS**.

atomic materialization

A materialization method that copies subscription data from a primary database to a replicate database in a single, atomic operation. No changes to primary data are allowed until the subscription data is captured at the primary database. See also **bulk materialization** and **nonatomic materialization**.

BCP utility

A bulk copy transfer utility that provides the ability to load multiple rows of data into a table in a target database. See also **bulk copy**.

bulk copy

An Open Client interface for the high-speed transfer of data between a database table and program variables. It provides an alternative to using SQL insert and select commands to transfer data.

bulk materialization

A materialization method whereby subscription data in a replicate database is initialized outside of the replication system. You can use bulk materialization for subscriptions to table replication definitions or function replication definitions. See also **atomic materialization** and **nonatomic materialization**.

client	In client/server systems, the part of the system that sends requests to servers and processes the results of those requests. See also client application .
client application	Software that is responsible for the user interface, including menus, data entry screens, and report formats. See also client .
commit	An instruction to the DBMS to make permanent the changes requested in a transaction. See also transaction . Contrast with rollback .
DAC	An abbreviation for the Microsoft SQL Server 2005 dedicated administrative connection. It is a special diagnostic connection for administrators when standard connections to the server are not possible.
data client	A client application that provides access to data by connecting to a data server. See also client , client application , and data server .
data distribution	A method of locating (or placing) discrete parts of a single set of data in multiple systems or at multiple sites. Data distribution is distinct from data replication, although a data replication system can be used to implement or support data distribution. Contrast with data replication .
data replication	The process of copying data to remote locations, and then keeping the replicated data synchronized with the primary data. Data replication is distinct from data distribution. Replicated data is stored copies of data at one or more remote sites throughout a system, and it is not necessarily distributed data. Contrast with data distribution . See also transaction replication .
data server	A server that provides the functionality necessary to maintain the physical representation of a table in a database. Data servers are usually database servers, but they can also be any data repository with the interface and functionality a data client requires. See also client , client application , and data client .
database	A collection of data with a specific structure (or schema) for accepting, storing, and providing data for users. See also data server , DBMS , and RDBMS .
database connection	A connection that allows Replication Server to manage the database and distribute transactions to the database. Each database in a replication system can have only one database connection in Replication Server. See also Replication Server and route .
datatype	A keyword that identifies the characteristics of stored information on a computer. Some common datatypes are: char, int, smallint, date, time, numeric, and float. Different data servers support different datatypes.

DBMS	An abbreviation for <i>database management system</i> , a computer-based system for defining, creating, manipulating, controlling, managing, and using databases. The DBMS can include the user interface for using the database, or it can be a stand-alone data server system. Compare with RDBMS .
disaster recovery	A method or process used to restore the critical business functions interrupted by a catastrophic event. A disaster recovery (or business continuity) plan defines the resources and procedures required for an organization to recover from a disaster, based on specified recovery objectives.
ERSSD	An abbreviation for embedded <i>Replication Server System Database</i> , which manages replication system information for a Replication Server. See also Replication Server .
failback	A procedure that restores the normal user and client access to a primary database, after a failover procedure switched access from the primary database to a replicate database. See also failover .
failover	A procedure that switches user and client access from a primary database to a replicate database, particularly in the event of a failure that interrupts operations at the primary database, or access to the primary database. Failover is an important fault-tolerance feature for systems that require high availability. See also failback .
function	A Replication Server object that represents a data server operation such as insert, delete, or begin transaction. Replication Server distributes operations to replicate databases as functions. See also function string .
function string	A string that Replication Server uses to map a function and its parameters to a data server API. Function strings allow Replication Server to support heterogeneous replication, in which the primary and replicate databases are different types, with different SQL extensions and different command features. See also function .
gateway	Connectivity software that allows two or more computer systems with different network architectures to communicate.
inbound queue	A stable queue managed by Replication Server to spool messages received from a Replication Agent. See also outbound queue and stable queue .
interfaces file	A file containing information that Sybase Open Client and Open Server applications need to establish connections to other Open Client and Open Server applications. See also Open Client and Open Server .

isql	An interactive SQL client application that can connect and communicate with any Sybase Open Server application, including Adaptive Server, Replication Agent, and Replication Server. See also Open Client and Open Server .
Java	An object-oriented programming language developed by Sun Microsystems. A platform-independent, “write once, run anywhere” programming language.
Java VM	The Java Virtual Machine. The Java VM (or JVM) is the part of the Java Runtime Environment (JRE) that is responsible for interpreting Java byte codes. See also Java and JRE .
JDBC	An abbreviation for <i>Java Database Connectivity</i> . JDBC is the standard communication protocol for connectivity between Java clients and data servers. See also data server and Java .
JRE	An abbreviation for <i>Java Runtime Environment</i> . The JRE consists of the Java Virtual Machine (Java VM or JVM), the Java Core Classes, and supporting files. The JRE must be installed on a machine to run Java applications, such as the Replication Agent. See also Java VM .
LAN	An abbreviation for “local area network,” a computer network located on the user’s premises that covers a limited geographical area (usually a single site). Communication within a local area network is not subject to external regulations; however, communication across the LAN boundary can be subject to some form of regulation. Contrast with WAN .
latency	In transaction replication, the time it takes to replicate a transaction from a primary database to a replicate database. Specifically, latency is the time elapsed between committing an original transaction in the primary database and committing the replicated transaction in the replicate database. See also transaction replication .
LOB	An abbreviation for <i>large object</i> , a type of data element that is associated with a column that contains extremely large quantities of data.
Log Reader	An internal component of the Replication Agent that interacts with the primary database log devices to capture transactions for replication. See also Log Transfer Interface and Log Transfer Manager .
Log Transfer Interface	An internal component of the Replication Agent that interacts with Replication Server to forward transactions for distribution to a replicate database. See also Log Reader and Log Transfer Manager .

Log Transfer Manager	An internal component of the Replication Agent that interacts with the other Replication Agent internal components to control and coordinate Replication Agent operations. See also Log Reader and Log Transfer Interface .
Maintenance User	A special user login name in the replicate database that Replication Server uses to apply replicated transactions to the database. See also Replication Server .
materialization	The process of copying the data from a primary database to a replicate database, initializing the replicate database so that the Sybase Replication Agent system can begin replicating transactions. See also atomic materialization , bulk materialization , and non-atomic materialization .
nonatomic materialization	A materialization method that copies subscription data without a lock on the primary database. Changes to primary data are allowed during data transfer, which may cause temporary inconsistencies between the primary and replicate databases. Contrast with atomic materialization . See also bulk materialization .
ODBC	An abbreviation for <i>Open Database Connectivity</i> , an industry standard communication protocol for clients connecting to data servers. See also JDBC .
Open Client	A Sybase product that provides customer applications, third-party products, and other Sybase products with the interfaces needed to communicate with Open Server applications. See also Open Server .
Open Client application	An application that uses Sybase Open Client libraries to implement Open Client communication protocols. See also Open Client and Open Server .
Open Server	A Sybase product that provides the tools and interfaces required to create a custom server. See also Open Client .
Open Server application	A server application that uses Sybase Open Server libraries to implement Open Server communication protocols. See also Open Client and Open Server .
outbound queue	A stable queue managed by Replication Server to spool messages to a replicate database. See also inbound queue and stable queue .
primary data	The version of a set of data that is the source used for replication. Primary data is stored and managed by the primary database. See also Replication Agent , primary database , and Replication Server .

primary database	The database that contains the data to be replicated to another database (the replicate database) through a replication system. The primary database is the database that is the source of replicated data in a replication system. Sometimes called the <i>active database</i> . Contrast with replicate database . See also primary data .
primary key	The column or columns whose data uniquely identify each row in a table.
primary site	The location or facility at which primary data servers and primary databases are deployed to support normal business operations. Sometimes called the <i>active site</i> or <i>main site</i> . See also primary database and replicate site .
primary table	A table used as a source for replication. Primary tables are defined in the primary database schema. See also primary data and primary database .
primary transaction	A transaction that is committed in the primary database and recorded in the primary database transaction log. See also primary database , replicated transaction , and transaction log .
quiesce	To cause a system to go into a state in which further data changes are not allowed. See also quiescent .
quiescent	<p>In a replication system, a state in which all updates have been propagated to their destinations. Some Replication Agent and Replication Server commands require that you first quiesce the replication system.</p> <p>In a database, a state in which all data updates are suspended so that transactions cannot change any data and the data and log devices are stable.</p> <p>This term is interchangeable with <i>quiesced</i> and <i>in quiesce</i>. See also quiesce.</p>
RASD	An abbreviation for <i>Replication Agent System Database</i> . Information in the RASD is used by the primary database to recognize database structure or schema objects in the transaction log.
RCL	An abbreviation for <i>Replication Command Language</i> , the command language used to manage Replication Server.
RDBMS	An abbreviation for <i>relational database management system</i> , an application that manages and controls relational databases. Compare with DBMS . See also relational database .
relational database	A collection of data in which data is viewed as being stored in tables, which consist of columns (data items) and rows (units of information). Relational databases can be accessed by SQL requests. See also SQL .

replicate data	A set of data that is replicated from a primary database to a replicate database by a replication system. See also primary database , replication system , and replicate database .
replicate database	A database that contains data replicated from another database (the primary database) through a replication system. The replicate database is the database that receives replicated data in a replication system. Sometimes called the <i>replicate database</i> . Contrast with primary database. See also replicate data .
replicate site	The location or facility at which replicate data servers and replicate databases are deployed to support normal business operations during scheduled downtime at the primary site. Sometimes called the <i>alternate site</i> or <i>replicate site</i> . Contrast with primary site. See also replicate database .
replicated transaction	A primary transaction that is replicated from a primary database to a replicate database by a transaction replication system. See also primary database , primary transaction , replicate database , and transaction replication .
Replication Agent	An application that reads a primary database transaction log to acquire information about data-changing transactions in the primary database, processes the log information, and then sends it to a Replication Server for distribution to a replicate database. See also primary database and Replication Server .
replication definition	A description of a table or stored procedure in a primary database, for which subscriptions can be created. The replication definition, maintained by Replication Server, includes information about the columns to be replicated and the location of the primary table or stored procedure. See also Replication Server and subscription .
Replication Server	The Sybase software product that provides the infrastructure for a robust transaction replication system. See also Replication Agent .
RSSD	An abbreviation for <i>Replication Server System Database</i> , which manages replication system information for a Replication Server. See also Replication Server .
replication system	A data processing system that replicates data from one location to another. Data can be replicated between separate systems at a single site, or from one or more local systems to one or more remote systems. See also disk replication and transaction replication .
rollback	An instruction to a database to back out of the changes requested in a unit of work (called a transaction). Contrast with commit . See also transaction .

SQL	An abbreviation for <i>Structured Query Language</i> , a non-procedural programming language used to process data in a relational database. ANSI SQL is an industry standard. See also transaction .
stable queue	A disk device-based, store-and-forward queue managed by Replication Server. Messages written into the stable queue remain there until they can be delivered to the appropriate process or replicate database. Replication Server provides a stable queue for both incoming messages (the inbound queue) and outgoing messages (the outbound queue). See also database connection , Replication Server , and route .
subscription	A request for Replication Server to maintain a replicated copy of a table, or a set of rows from a table, in a replicate database at a specified location. See also replication definition and Replication Server .
table	In a relational DBMS, a two-dimensional array of data or a named data object that contains a specific number of unordered rows composed of a group of columns that are specific for the table. See also database .
transaction	A unit of work in a database that can include zero, one, or many operations (including insert, update, and delete operations), and that is either applied or rejected as a whole. Each SQL statement that modifies data can be treated as a separate transaction, if the database is so configured. See also SQL .
transaction log	Generally, the log of transactions that affect the data managed by a data server. Replication Agent reads the transaction log to identify and acquire the transactions to be replicated from the primary database. See also Replication Agent , primary database , and Replication Server .
transaction replication	A data replication method that copies data-changing operations from a primary database transaction log to a replicate database. See also data replication .
transactional consistency	A condition in which all transactions in the primary database are applied in the replicate database, in the same order that they were applied in the primary database.
WAN	An abbreviation for “wide area network,” a system of local-area networks (LANs) connected together with data communication lines. Contrast with LAN .

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