# SYBASE®

Installation Guide

# **Mirror Replication Agent™**

15.1

[ Linux, Microsoft Windows, and UNIX ]

# Contents

# About This Book

This book describes how to install Mirror 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 Mirror Replication Agent software from the Mirror Replication Agent 15.1 distribution media. Use the Installation and Setup worksheets in Chapter 1 to gather and record the connectivity and configuration information you need to set up the Mirror Replication Agent.

See Chapters 1 and 2 in the Mirror Activator *Administration Guide* for more information about the Mirror Activator system:

• An introduction to the Mirror Replication Agent system, and an overview of its topology

• Specific configuration requirements for each Mirror Replication Agent system component

Read Chapter 2, "Installing Mirror Replication Agent," to install the Mirror Replication Agent 15.1 software on a Linux, Microsoft Windows, or UNIX platform. This chapter also describes how to uninstall the software.

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

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**Related documents**

**Mirror Activator** Refer to the following documents to learn more about the Mirror Activator:

• Mirror Replication Agent *Reference Manual* – for information about all Mirror Replication Agent commands and configuration parameters, including syntax, examples, and detailed command usage notes

- Mirror Activator *Administration Guide* – for an introduction to the Mirror Activator system, and information about setting up and administering the Mirror Replication Agent and other components of the Mirror Replication Agent system

- Mirror 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 Mirror 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 Technical Library 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

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

- The Mirror 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.

    Additional information about the Java environment is available at the following URL at http://java.sun.com.

**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_setreptable authors, mark
```

• In the regular text of this document, variables or user-supplied words appear like this:

```
pdb_setreptable table_name, mark
```

where *table_name* is the variable you should replace.

- In the regular text of this document, names of programs, utilities, procedures, and commands appear like this:

  Use the pdb_setreptable command to mark a table for replication.

- 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/MA-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, Mirror Replication Agent command names are *not* case sensitive. For example, RA_CONFIG, Ra_Config, and ra_config 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 Mirror 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.

Mirror Activator 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.

The online help for this product is also provided in HTML, which you can navigate using a screen reader.

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**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.

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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.

CHAPTER 1          **Preparing for Installation**

This chapter describes the Mirror Replication Agent system requirements, and other information you need to know *before* you install the Mirror Activator 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 | 7 |
| Completing the Installation and Setup worksheet | 10 |
| Installation and Setup worksheet | 19 |

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

## Reviewing installation requirements

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

- SySAM license requirements

- System requirements

- Requirements for installing with the graphical user interface

• Team skill requirements

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**Note** If you are migrating from Mirror Replication Agent version 12.6 or 15.0 to version 15.1, see the Mirror Replication Agent *Primary Database Guide* for database-specific details on migration.

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# SySAM license requirements

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

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**Note** When you install Mirror Replication Agent, the SySAM license manager is automatically installed.

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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

SySAM checks licenses for the following Mirror Activator components:

• Mirror Replication Agent

• Replication Server, which is described in the Replication Server *Installation Guide*

• For Oracle and Microsoft SQL Server: Enterprise Connect Data Access (ECDA) Option, which is described in the ECDA installation guides

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**Note** Before version 12.5, ECDA option for Oracle was sold as an individual product named "DirectConnect™ for Oracle." You will see the name "DirectConnect" used in the software and in documents, including this document.

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SySAM-enabled products can obtain licenses using one of two models:

• Unserved license model – gets licenses directly from the license file.

- Served license model – gets licenses from a license server to distribute to one or more machines.

Each license model requires different SySAM components.

The basic components of SySAM are:

- A license file

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

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

## Selecting a license type before installing Mirror Replication Agent

> **Note** Some products or specific license types may not allow you to choose a license model. If this occurs, use the license model dictated by the product or license type. For example, tools products purchased under a floating license type require that you use a served license model.

Before you install Mirror Replication Agent, you must decide whether to configure an unserved license or a served license. During installation, you may choose either option. In either case, license files called *license-mrx.lic* and *license-ecda.lic* are installed in *$SYBASE/SYSAM-2_0/licenses* (UNIX) or *%SYBASE%\SYSAM-2_0\licenses* (Windows).

The Mirror Activator components and their licenses are described as follows:

- The *license-mrx.lic* file contains a valid SySAM license for Mirror Replication Agent component.

- The *license-ecda.lic* file contains a valid SySAM license file for the ECDA component. If ECDA has been installed in a different directory than Mirror Replication Agent. this file must be copied to the *$SYBASE/SYSAM-2_0/licenses* (UNIX) or *%SYBASE%\SYSAM-2_0\licenses* (Windows) directory of the ECDA installation.

- For the Replication Server component, you must obtain a Mirror Activator license from the SPDC Web site.

# 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

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

- Adaptive Server Enterprise (ASE)
- Oracle
- Microsoft SQL Server database with Mirror Replication Agent running *only* on Microsoft Windows

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

## Java Runtime Environment (JRE)

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

Operating system patch levels must be current to support Java 1.5. 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 Mirror Replication Agent 15.1 software requires one of the platforms
and operating system versions that are listed in the Mirror Replication
Agent 15.1 *Release Bulletin*.

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**Note**  A Mirror Replication Agent must be installed on a machine from
which it can directly access the *transaction* logs of the primary database,
or a mirror copy of those *transaction* logs.

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## Accommodating the RASD

Each Mirror Replication Agent instance uses an embedded Adaptive
Server® Anywhere database to manage its Mirror 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
Mirror 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 Mirror Replication Agent will shut
down and suspend replication. To prevent this, you must provide adequate
disk space on the Mirror Replication Agent host machine to accommodate
the initial size of the RASD, as well as some potential growth.

See the Mirror Activator *Administration Guide* for more information
about the RASD.

**JDBC driver**

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

# Requirements for installing with the graphical user interface

The standard installation procedure for Mirror 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 Mirror 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 Mirror 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 Mirror Replication Agent software will be installed.

**Note** You can also use the installation program wizard in console mode to install Mirror Replication Agent from an operating system command prompt, without a GUI environment. See "Installing in console mode" on page 39 for more information.

# Team skill requirements

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

*Table 1-1: Mirror Replication Agent installation skill requirements*

| Role | Skill set |
|------|-----------|
| Operating System Administrator | • Understanding of Linux, Sun Solaris, HP-UX, AIX, or Windows operating system<br><br>• Knowledge of standards and conventions at the installation site |
| Disk Replication System Administrator | Knowledge of the disk replication system, including:<br><br>• Platform and device configuration<br><br>• Operation and administration tasks |
| Communications Administrator | • Understanding of connectivity and communication protocols used at your site, such as TCP/IP<br><br>• Understanding of your site's network configuration<br><br>• Ability to design, establish, test, and troubleshoot remote communications between the primary database, Mirror Replication Agent, and Replication Server |
| Replication Server Administrator | • Understanding of Replication Server and the replication system environment<br><br>• Replication Server administrator privileges |
| ECDA Administrator | • Understanding of ECDA and data access from heterogeneous databases<br><br>• ECDA administrator privileges |
| Primary Database Administrator | • Understanding of the primary database<br><br>• Primary database administrator privileges |

# Reviewing the installation process

Installing Mirror 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 an ASE, Oracle, or a Microsoft SQL Server database in an enterprise network.

***Table 1-2: Setting up a Sybase replication system***

| Step | To do this | Refer to |
|------|-----------|----------|
| 1 | *Install the primary data server.*<br><br>The primary data server is the source of transactions to be replicated. | • Primary data server documentation<br><br>• Vendor documentation or Web site for the primary data server |
| 2 | *Install the connectivity drivers for the primary database server.*<br><br>*For Oracle* and *Microsoft SQL Server*: You must install the correct JDBC driver for your primary database server.<br><br>*For ASE*: The JDBC driver is installed as part of the normal Mirror Replication Agent installation process. | • "Setting up connectivity to the primary database" on page 32 in this manual<br><br>• Vendor documentation or Web site for the primary data server |
| 3 | *Implement Disk replication system and devices.*<br>This includes:<br><br>• Designing the disk mirroring system<br><br>• Installing appropriate hardware or software<br><br>• Establishing active mirroring of the Oracle redo logs | Disk replication system vendor and device vendor documentation |
| 3 | *Prepare to install Mirror Replication Agent.*<br><br>• Review installation requirements and the installation procedure for Mirror Replication Agent.<br><br>• Complete the "Installation and Setup worksheet" on page 19. | • Chapter 1, "Setup and Configuration," in the Mirror Activator *Administration Guide*<br><br>• Mirror Replication Agent *Release Bulletin* |
| 4 | *Install the Mirror Replication Agent software.*<br><br>Mirror Replication Agent for ASE, Microsoft SQL Server, and Oracle must be installed on a machine from which it can directly access the *transaction* logs of the primary database, or a mirror copy of those transaction logs. | "Installing the Mirror Replication Agent software" on page 34 in this guide |

| Step | To do this | Refer to |
|------|-----------|----------|
| 5 | *Install Replication Server and create connections.*<br><br>**Note**  If you do not use an embedded RSSD (ERSSD) you will need to install an ASE to be used for the RSSD.<br><br>This includes:<br>• Designing the replication system<br>• Installing Replication Server and its RSSD<br>• Defining connections from Replication Server to the RSSD and routes between Replication Servers<br>• Defining connections using DirectConnect when replicating to a non-Sybase database | • Sybase installer documentation<br>• Replication Server documentation<br>• ECDA documentation |
| 6 | *For Microsoft SQL Server and Oracle*: *Install ECDA.*<br>This includes:<br>• Installing the ECDA option<br>• Defining connections using ECDA when replicating to a non-Sybase database | • Sybase installer documentation<br>• ECDA documentation |
| 7 | *Configure Replication Server and primary data server connections.*<br>This includes:<br>• Creating a Replication Server database connection to the primary data server<br>• Creating a Replication Server login for the Mirror Replication Agent instance<br>• Configuring Mirror Replication Agent parameters<br>• Testing connections between the Mirror Replication Agent and the primary Replication Server, and between the Mirror Replication Agent and the primary data server | Mirror Activator *Administration Guide*, Chapter 3, "Administering Sybase Mirror Replication Agent" |
| 8 | *Set up the Mirror Replication Agent instance.*<br>This includes:<br>• Creating the Mirror Replication Agent system objects in the primary database<br>• Marking primary objects for replication | Mirror Activator *Administration Guide*, Chapter 2, "Setup and Configuration" |

| Step | To do this | Refer to |
|------|-----------|----------|
| 9 | *Prepare for replication.*<br><br>Refer to the checklist to verify that all the replication system components are in place before you start replication. | Mirror Activator *Administration Guide,* Chapter 2, "Setup and Configuration" |
| 10 | *Verify your replication system using Mirror Replication Agent test scripts (optional).*<br><br>Use the test scripts provided with Mirror Replication Agent to set up a test environment and verify replication from a primary database to a replicate database. | Mirror Replication Agent *Primary Database Guide,* the chapter for your primary data server |
| 11 | *Materialize subscriptions to primary data.*<br><br>For each subscription, this process:<br><br>• Validates and activates the subscription<br><br>• Populates tables in the replicate database so they are synchronized with the primary database before you start replication | • Replication Server documentation<br><br>• Mirror Activator *Administration Guide*, Appendix A, "Materializing Subscriptions to Primary Data" |
| 12 | *Start replication.*<br><br>Put the Mirror Replication Agent instance in the *Replicating* state. | Mirror Replication Agent *Administration Guide*, Chapter 2, "Setup and Configuration" |

# Completing the Installation and Setup worksheet

The "Installation and Setup worksheet" on page 19 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 Mirror 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 Mirror 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: Mirror Replication Agent administration information

Identify the Mirror Replication Agent instance name, the administration port number, and the other administration information, and record it on the worksheet.

❖ **To complete Section 1 of the Installation and Setup worksheet**

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

Instance types are:

- ase – Adaptive Server

- oracle – Oracle Database Server

- mssql – Microsoft SQL Server

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

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

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

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

If you are not the System Administrator for the system on which you are installing the Mirror Replication Agent instance, ask your System Administrator which port number you should use for the Mirror 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: Mirror Replication Agent administration information on the "Installation and Setup worksheet."

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**Note** Mirror Replication Agent requires two port numbers. The additional one is for the RASD. By default, Mirror Replication Agent assigns the RASD port: *admin port +1*. This number must also be unique on the Mirror Replication Agent host machine.

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

Use this item only if you plan to use the isql or jisql utility or Replication Manager. Replication Manager is not included in the Mirror Replication installation, but is included with Replication Server.

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

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

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

See the Mirror Activator *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: Mirror 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, using the following criteria:

• Replication Server connects to the primary database through the Mirror Replication Agent instance, so the data server name can be the name of the Mirror 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 the 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**  By default, transactions executed by the Maintenance User ID in the Primary database are not replicated. Therefore, 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: Mirror Replication Agent parameter values for Replication Server

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

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

❖ **To complete Section 3 of the Installation and Setup worksheet**

1   Identify the name of the Replication Server host machine.

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

3   Identify the user name and password Mirror 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 Mirror 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: Mirror Replication Agent parameter values for Replication Server on the "Installation and Setup worksheet."

4   Identify Replication Server's character set and record it as item 3e.

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

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

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

**Note**  Mirror 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: Mirror 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: Mirror 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: Mirror Replication Agent parameter values for the RSSD on the "Installation and Setup worksheet."

4   Identify the user ID and password Mirror 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: Mirror Replication Agent parameter values for the RSSD on the "Installation and Setup worksheet."

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

Determine and record the values of the Mirror 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 ASE, identify the ASE interfaces file that contains the connection properties for the primary data server.

Record the ASE *interfaces* file name as item 5a (pds_interfaces_file) and record the connection name as item 5b (pds_server_name) in Section 5: Mirror Replication Agent parameter values for the primary data server on the "Installation and Setup worksheet."

2   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 5c (pds_tns_filename) and record the connection name as item 5d (pds_tns_connection) in Section 5: Mirror Replication Agent parameter values for the primary data server on the "Installation and Setup worksheet."

3    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 connection, ASM username,
      and ASM password.

      Record the *tnsnames.ora* file name as item 5e (asm_tns_filename), the
      ASM connection name as item 5f (asm_tns_connection), the ASM
      username as item 5g (asm_username), and the ASM password as item
      5h (asm_password) in Section 5: Mirror 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.

4    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 5i (pds_port_number) in
      Section 5: Mirror Replication Agent parameter values for the
      primary data server on the "Installation and Setup worksheet."

5    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 5j
      (pds_server_name) in Section 5: Mirror Replication Agent parameter
      values for the primary data server on the "Installation and Setup
      worksheet."

6    If your primary database type is Microsoft SQL Server, 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.

      Record the database name as item 5k (pds_database_name) in Section
      5: Mirror Replication Agent parameter values for the primary data
      server on the "Installation and Setup worksheet."

7   Identify the user ID and password that Mirror 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 Mirror Replication Agent *Primary Database Guide* for more information.

Record this primary data server user ID as item 5l (pds_username) and the password as item 5m (pds_password) in Section 5: Mirror 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/intl/.

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

9   If your primary database is Microsoft SQL Server, identify the dedicated administrative connection port number (pds_dac_port_number). For more information, see the Mirror Replication Agent *Primary Database Guide*.

Record the DAC port number as item 5o in Section 5: Mirror 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.

---

**Note**  Additional information about the DDL user, its usage and permissions required, can be found in the primary database guide.

---

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 Mirror Replication Agent instance you install. Fill out the worksheet before you install the Mirror Replication Agent software.

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

## Section 1: Mirror Replication Agent administration information

| Item | Description | Example value | Your value |
|------|-------------|---------------|------------|
| 1a | Mirror Replication Agent instance type<br><br>This identifies the type of primary database the Mirror Replication Agent instance works with. | ase, oracle, mssql | |
| 1b | Mirror Replication Agent instance name<br><br>This name must be unique among all Mirror Replication Agent instances. | ma_sales_instance | |
| 1c | admin_port<br><br>This is the client socket port number for the Mirror Replication Agent administration port.<br><br>The port number must be unique (not used by any other application on the Mirror Replication Agent host machine). Check with your System Administrator to determine which port numbers are available.<br><br>**Note** Mirror Replication Agent requires two port numbers. The additional one is for the RASD. By default, Mirror Replication Agent assigns the RASD port—*admin port +1*. This number must be unique. | 10000 | |
| 1d | Location of the interfaces file<br><br>Use this item only if you plan to use the isql utility or Replication Manager to administer the Mirror Replication Agent instance.<br><br>**Note** If $SYBASE points to the MA-15_1 directory, there is no interfaces file ($SYBASE/interfaces file will not exist). The $SYBASE in the example must be for the ASE installation, or another location that contains an entry for the ASE server to be connected to. | • On UNIX:<br>*$SYBASE/interfaces*<br><br>• On Microsoft Windows:<br>*%SYBASE%\ini\sql.ini* | |
| 1e | admin_user<br><br>This is the administrative user ID you use to log in to the Mirror Replication Agent instance.<br><br>The default value is sa. | admin_user | |
| 1f | admin_pw<br><br>This is the administrative password you use to log in to the Mirror Replication Agent instance.<br><br>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 | rs_source_ds<br><br>This is a data server name representing the primary data server to which Replication Server connects.<br><br>This value is specified in the Replication Server create connection command used to create the Mirror Replication Agent connection in the primary Replication Server. | ma_sales_instance | |
| 2b | rs_source_db<br><br>This is a database name representing the primary database to which Replication Server connects.<br><br>This value is specified in the Replication Server create connection command used to create the Mirror Replication Agent connection in the primary Replication Server.<br><br>**Note**  This name can be any name that helps you identify this as the connection to the primary database. | sales_db | |
| 2c | Maintenance User<br><br>This is the Replication Server Maintenance User ID associated with the connection to the primary database.<br><br>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.<br><br>**Note**  This user ID must be valid at the primary database. | maint_user | |
| 2d | Maintenance User password<br><br>This is the Replication Server Maintenance User password associated with the connection to the primary database. | maint_pwd | |

## Section 3: Mirror Replication Agent parameter values for Replication Server

| Item | Description | Example value | Your value |
|------|-------------|---------------|------------|
| 3a | rs_host_name<br><br>This is the name of the Replication Server host machine. | rs_host | |

| Item | Description | Example value | Your value |
|------|-------------|---------------|------------|
| 3b | rs_port_number<br><br>This is the port number Mirror 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<br><br>This is the Replication Server client user ID that Mirror Replication Agent uses to log in to the primary Replication Server.<br><br>This user ID must have connect source authority in the Replication Server.<br><br>**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<br><br>This is the Replication Server client user password that Mirror Replication Agent uses. | rapwd | |
| 3e | rs_charset<br><br>This is the character set that Mirror Replication Agent uses when creating LTL commands for Replication Server. It must match Replication Server's character set.<br><br>**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 Mirror 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 Mirror Replication Agent do character set conversion on the character data being replicated. Character set conversion slows performance. | • On UNIX:<br>iso_1<br>• On Windows:<br>cp850 | |

## Section 4: Mirror Replication Agent parameter values for the RSSD

| Item | Description | Example value | Your value |
|------|-------------|---------------|------------|
| 4a | rssd_host_name | as_host | |
| | This is the name of the host machine on which the RSSD of the primary Replication Server resides. | | |
| 4b | rssd_port_number | 1111 | |
| | This is the client socket port number for the RSSD data server. | | |
| | **Note**  Check with your System Administrator to determine which port numbers are available. | | |
| 4c | rssd_database_name | rsdb_RSSD | |
| | This is the database name of the RSSD of the primary Replication Server. | | |
| 4d | rssd_username | rssd_user | |
| | This is the RSSD client user ID that Mirror Replication Agent uses to access the RSSD of the primary Replication Server. | | |
| 4e | rssd_password | rssd_pass | |
| | This is the RSSD client password that Mirror Replication Agent uses. | | |

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

| Item | Description | Example value | Your value |
|------|-------------|---------------|------------|
| 5a | pds_interfaces_file | • On UNIX: *$SYBASE: /sybase/ASE-15_0 /interfaces* | |
| | **Note**  This value is for ASE only. | | |
| | A valid ASE interfaces file that contains the connection properties to the primary ASE data server. | • On Microsoft Windows: *%SYBASE%\ini\sql.ini* | |

| Item | Description | Example value | Your value |
|------|-------------|---------------|------------|
| 5b | pds_server_name | ase_server | |
| | **Note** This value is for ASE only. | | |
| | The ASE connection name that identifies the primary database connection in the ASE *pds_interfaces_file*. | | |
| | If you are configuring an ASE cluster, use the cluster server name. | | |
| 5c | pds_tns_filename | /path1/tnsnames.ora | |
| | **Note** This value is for Oracle only. | | |
| | The fully-qualified file name identifying the Oracle *tnsnames.ora* file that contains connection properties for the primary Oracle data server. | | |
| 5d | pds_tns_connection | SALES_DB | |
| | **Note** This value is for Oracle only. | | |
| | The Oracle connection name that identifies the primary database connection in the Oracle *tnsnames.ora* file | | |
| 5e | asm_tns_filename | /path2/tnsnames.ora | |
| | **Note** This value is for Oracle only. | | |
| | Identifies the Oracle *tnsnames.ora* filename where the ASM connection information is located. | | |
| | If this is the same *tnsnames.ora* file as configured in pds_tns_filename, you can leave this parameter unset. | | |
| | **Note** Set this parameter only if the redo logs of your primary Oracle are under Automatic Storage Management. | | |

| Item | Description | Example value | Your value |
|------|-------------|---------------|------------|
| 5f | asm_tns_connection | +ASM1 | |
| | **Note**  This value is for Oracle only. | | |
| | Identifies the Oracle ASM connection name found in the *tnsnames.ora* file. | | |
| | **Note**  Set this parameter only if the redo logs of your primary Oracle are under Automatic Storage Management. | | |
| 5g | 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. | | |
| 5h | 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. | | |
| 5i | pds_port_number | 1111 | |
| | This is the client socket port number for the primary database gateway server. | | |
| 5j | pds_server_name | production_server | |
| | **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 |
|------|-------------|---------------|------------|
| 5k | pds_database_name<br><br>This is the name of the primary database on the primary database server.<br><br>Mirror Replication Agent uses this value to determine which database is the primary database.<br><br>**Note** For Microsoft SQL Server use the actual name of the primary database. | sales_db | |
| 5l | pds_username<br><br>This is the user ID that Mirror Replication Agent uses to log in to the primary database. | pds_user | |
| 5m | pds_password<br><br>This is the password for pds_username. | pds_pw | |
| 5n | RA_JAVA_DFLT_CHARSET<br><br>This is the Java-equivalent of the primary database character set.<br><br>**Note** Unless you want to override the default character set that the JVM finds on your system, you do *not* 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. | • On UNIX:<br>  ISO8859_1<br><br>• On Windows:<br>  Cp850 | |
| 5o | pds_dac_port_number<br><br>**Note** This value is for Microsoft SQL Server only.<br><br>The dedicated administrative connection port number that Mirror Replication Agent uses to connect to the primary database during the server-level initialization of the primary data server. | 1348 | |

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

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

See also
The following Mirror Replication Agent guides contain more information about installation and configuration:

- The Mirror Activator *Administration Guide*, for more information about the initial configuration of Mirror Replication Agent parameters for Replication Server.

- The Mirror Replication Agent *Primary Database Guide*, for more information about the initial configuration of the primary database you are replicating.

- The Mirror Replication Agent *Reference Guide*, 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.

CHAPTER 2     **Installing Mirror Replication Agent**

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

| Topic | Page |
|---|---|
| Before you begin | 29 |
| Setting up connectivity to the primary database | 32 |
| Installing the Mirror Replication Agent software | 34 |
| Setting up the SYBASE environment | 49 |
| Uninstalling the Mirror Replication Agent software | 49 |
| Verifying the installation | 53 |
| Setting up the Mirror Activator System | 54 |

**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 Mirror Replication Agent 15.1 software:

- Read the 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 release bulletin

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

The Mirror Replication Agent *Release Bulletin* provides:

*   Product information that might not be included in the Mirror Replication Agent guides, such as known issues and documentation updates

*   Additional information about installing and setting up Mirror Replication Agent that was not available until after the software and documentation was released

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

## Plan for system requirements

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

Be aware of the following installation requirements:

*   Mirror Replication Agent for ASE must be installed on the same UNIX or Microsoft Windows host from which it can directly access the ASE transaction logs or mirror copies of the transaction logs.

*   Mirror 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.

*   Mirror 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.

See "System requirements" on page 4 for more information about:

*   Platform and operating system requirements

- Memory, disk space, and media device requirements

- Compatibility with other Sybase products

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

## Verify the system environment

Before you install the Mirror Replication Agent 15.1 software, verify the following in your Mirror 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.

**Note** Mirror Replication Agent is not dependent on Replication Server or the primary data server for installation. However, it is dependent on them for configuration of an instance.

## Complete the Installation and Setup worksheet

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

See "Completing the Installation and Setup worksheet" on page 10 for detailed instructions.

# Setting up connectivity to the primary database

Mirror 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 Mirror 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; otherwise, Mirror Replication Agent may have problems connecting to the primary database.

## ASE JDBC driver

The ASE JDBC driver (jConnect) is installed and configured with the installation of the Mirror Replication Agent software.

## 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, you need to obtain the appropriate driver from the vendor's Web site and then set the CLASSPATH environment variable:

❖ **To obtain the latest Oracle 10.2 driver for JDK 1.4**

1   Select one of these links to the Oracle Database 10g Release 2 drivers:

• 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."

2   Select the *ojdbc14.jar* classes for use with JDK 1.4 and JDK 1.5.

❖ **To set the CLASSPATH environment variable**

1 Install the JDBC driver on the host machine on which Mirror Replication Agent resides or where Mirror Replication Agent can access it.

---

**Note** Mirror Replication Agent for Microsoft SQL Server must be installed on Microsoft Windows.

---

2 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 Mirror 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 Mirror Replication Agent software

The Mirror Replication Agent 15.1 product is distributed on the Mirror Replication Agent 15.1 distribution media. See the Mirror Replication Agent release bulletin for the current distribution media catalog numbers.

The following are installation requirements for the databases:

*   Mirror Replication Agent for ASE must be installed on a UNIX or Microsoft Windows host from which it can directly access the primary transaction logs.

*   Mirror 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.

*   Mirror 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.

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

*   "Installing with the GUI wizard" on page 35

*   "Installing in console mode" on page 39

All procedures give you the following installation options:

*   *Typical* – The Mirror 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 Mirror Activator 15.1 distribution media:

- Mirror 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 47.

---

**Note**  For information about installing Replication Server and ECDA software, which is included on separate distribution media in the Mirror Activator 15.1 solution package for each platform, see the Replication Server and ECDA installation and configuration guides for your platform.

---

## 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 Mirror Replication Agent host machine, or

- A remote machine configured to provide a GUI environment for the Mirror Replication Agent host machine.

See "Installing in console mode" on page 39 for information about installing the Mirror Replication Agent software in an interactive text (or console) mode.

❖  **To install Mirror Replication Agent with the GUI wizard**

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

2  Close all nonessential applications, and minimize any open windows.

3  Insert the Mirror 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 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:

- *%SYBASE%* or *c:\sybase* on Microsoft Windows platforms

- *$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, the installation program compares the files in the new installation with the files in the existing directory. If older files are found they are replaced. If newer files are found, you are prompted and must decide whether to keep or replace the newer files. Sybase recommends that you do not replace the newer files.

**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 two options:

   •   Typical

   •   Custom

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

   •   Mirror Replication Agent 15.1

   •   SySAM License Server

   •   SySAM License Utilities

   **Custom**  If you choose Custom, the installation program displays the products and features with check boxes that allows you to select the specific products and features that you want to install.

   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 47.

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 licenses be obtained from the License
Server?
```

- If you answer Yes, copy the license file *license-mrx.lic* file to the *SYSAM-2_0/licenses* directory of your SySAM license server.

- If you answer No, no further action is needed. The Mirror Replication Agent will use the installed license (*license-mrx.lic*) as it was installed in *$SYBASE/SYSAM-2_0/licenses*.

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:

  - 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 Mirror Replication Agent software installation,
you must complete the following post-installation task:

•    Set up the SYBASE environment on the Mirror Replication Agent
host machine. For more information, see "Setting up the SYBASE
environment" on page 49.

## Installing in console mode

You can install the Mirror 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 35, 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 Mirror Replication Agent host
machine, or

•    A display and keyboard on a remote machine configured to control
the Mirror Replication Agent host machine.

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

See "Installing with the GUI wizard" on page 35 for information about
installing the Mirror Replication Agent software in a GUI environment.

❖ **To install the Mirror Replication Agent in console mode**

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

2 Close all non-essential applications, and minimize any open windows.

3 Insert the Mirror 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 Mirror Replication Agent 15.1 software.

See "Installing with the GUI wizard" on page 35 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 47.

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 tasks

After you complete the Mirror Replication Agent software installation, you must complete the following post-installation task:

- Set up the SYBASE environment on the Mirror Replication Agent host machine. See "Setting up the SYBASE environment" on page 49 for more information.

## Using a response file for installation

A response file contains responses to all of the installation program wizard prompts. You can install the Mirror 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 Mirror 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 Mirror Replication Agent host machine using an operating system user account with authority to start, stop, and administer the Mirror Replication Agent instance (for example, the "sybase" user).

2 Close all non-essential applications, and minimize any open windows.

3 Insert the Mirror 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 *MA.resp*

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

    Note that there is no space in the -options-template string.

- On UNIX:

        ./setup -options-template *MA.resp*

    where *MA.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 Mirror Replication Agent software.

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

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

2   Close all non-essential applications, and minimize any open windows.

3   Insert the Mirror 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 MA.resp
```

where *MA.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 MA.resp
```

where *MA.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 35 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 installation program. For more information, see "Installation troubleshooting" on page 47.

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

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

2 Close all non-essential applications, and minimize any open windows.

3 Insert the Mirror 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 MA.resp
```

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

Note that there is no space in the -options-record string.

• On UNIX:

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

where *MA.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 35 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 47.

## 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 MA.resp
        -W SybaseLicense.agreeToLicense=true
    ```

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

*   On UNIX:

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

    where *MA.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 35 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 47.

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

Post-installation tasks

After you complete the Mirror Replication Agent software installation, you must complete the following post-installation task:

* Set up the SYBASE environment on the Mirror Replication Agent host machine. See "Setting up the SYBASE environment" on page 49 for more information.

## 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.exe -silent -options MA.resp
    -W SybaseLicense.agreeToLicense=true
```

where *MA.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 MA.resp
    -W SybaseLicense.agreeToLicense=true
```

where *MA.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.

---

If an error occurs during installation, see "Installation troubleshooting" on page 47.

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

Post-installation tasks

After you complete the Mirror Replication Agent software installation, you must complete the following post-installation task:

• Set up the SYBASE environment on the Mirror Replication Agent host machine. See "Setting up the SYBASE environment" on page 49 for more information.

## 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 Mirror Replication Agent host machine using an operating system user account with authority to start, stop, and administer the Mirror Replication Agent instance (for example, the "sybase" user).

2    Close all non-essential applications, and minimize any open windows.

3    Insert the Mirror 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 *MA_err.log*

           where:

           •    -log # @ALL causes installation debug information to be
                written to *$SYBASE/log,txt* file.

           •    *MA_err.log* is the full path to the installation error log file
                you want to create.

      •    On UNIX:

                ./setup -log # @ALL -is:log *MA_err.log*

           where *MA_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 Mirror Replication Agent
      software.

      See "Installing with the GUI wizard" on page 35 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
      (*MA-err.log* file as specified in step 5) 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 Mirror Replication Agent 15.1 software and *before* you start the Mirror Replication Agent or run any Mirror Replication Agent utilities, you must set up the SYBASE environment on the Mirror 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 Mirror Replication Agent installation directory.

❖  **To set up the SYBASE environment**

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

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

  •   On Microsoft Windows:

```
c:\%SYBASE%\SYBASE
```

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

  •   On UNIX:

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

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

# Uninstalling the Mirror Replication Agent software

The installation program includes an *Uninstall* wizard that removes the Mirror 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*), or the *SYSAM-2_0* directory and its subdirectories.

## Uninstalling on a Windows platform

Before uninstalling the Mirror Replication Agent software, you must:

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

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

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

❖ **To uninstall in GUI mode on 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\MA-15_1\uninstaller
    ```

- Click Start | Run and then enter:

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

- In 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 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 Mirror Replication Agent installation directory.

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

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

The Uninstall wizard displays the Welcome window.

4   Follow the remaining Uninstall wizard prompts to uninstall the Mirror 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 Mirror Replication Agent software, you must:

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

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

Use one of the following procedures to uninstall the Mirror 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/MA-15_1/uninstaller
```

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

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

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

The Uninstall wizard displays the Welcome window.

4   Follow the remaining Uninstall wizard prompts to uninstall the Mirror 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 Mirror Replication Agent installation directory (*%SYBASE%* on Microsoft Windows platforms and *$SYBASE* on UNIX platforms) for the Mirror Replication Agent 15.1 software, and other specific software that the Mirror Replication Agent requires.

## SYBASE environment scripts

The installation program creates SYBASE environment scripts that set the SYBASE environment variable for the Mirror Replication Agent host machine. These scripts allow you to run the Mirror 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 Mirror Replication Agent host machine.

---

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

---

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

# Setting up the Mirror Activator System

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

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

# Glossary

This glossary describes Mirror 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**.

**ASE**  *ASE (Adaptive Server Enterprise)* manages multiple, large relational databases for high-volume online transaction processing (OLTP) systems and client applications.

**atomic materialization**  A materialization method that copies subscription data from a primary database to a standby 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 standby 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**. |
| **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 **disk replication** and **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 *database management system*, 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 *Replication Server System Database*, 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 standby database. See also **failover**. |
| **failover** | A procedure that switches user and client access from a primary database to a standby 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 standby 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 standby 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 Mirror 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, Mirror 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 *Java Database Connectivity*. JDBC is the standard communication protocol for connectivity between Java clients and data servers. See also **data server** and **Java**. |
| **JRE** | An abbreviation for *Java Runtime Environment*. 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 Mirror 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 standby database. Specifically, latency is the time elapsed between committing an original transaction in the primary database and committing the replicated transaction in the standby database. |
| | In disk replication, latency is the time elapsed between a disk write operation that changes a block or page on a primary device and the disk write operation that changes the replicated block or page on a mirror (or standby) device. |
| | See also **disk replication** and **transaction replication**. |
| **LOB** | An abbreviation for *large object*, 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 Mirror Replication Agent that interacts with the primary database and mirror log devices to capture transactions for replication. See also **Log Transfer Interface** and **Log Transfer Manager**. |
| **Log Transfer Interface** | An internal component of the Mirror Replication Agent that interacts with Replication Server to forward transactions for distribution to a standby database. See also **Log Reader** and **Log Transfer Manager**. |
| **Log Transfer Manager** | An internal component of the Mirror Replication Agent that interacts with the other Mirror Replication Agent internal components to control and coordinate Mirror Replication Agent operations. See also **Log Reader** and **Log Transfer Interface**. |
| **Maintenance User** | A special user login name in the standby 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 standby database, initializing the standby database so that the Mirror Replication Agent system can begin replicating transactions. See also **atomic materialization**, **bulk materialization**, and **non-atomic materialization**. |
| **Mirror Activator** | Mirror Activator is a Sybase software solution that allows you to combine the benefits of transaction replication and disk replication, thereby eliminating the disadvantages of using either system alone in a disaster recovery solution. |
| **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 standby databases. Contrast with **atomic materialization**. See also **bulk materialization**. |
| **ODBC** | An abbreviation for *Open Database Connectivity*, 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**. |

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| **outbound queue** | A stable queue managed by Replication Server to spool messages to a standby 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 **Mirror Replication Agent**, **primary database**, and **Replication Server**. |
| **primary database** | The database that contains the data to be replicated to another database (the standby 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 *active database*. Contrast with **standby 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 *active site* or *main site*. See also **primary database** and **standby 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** | In a replication system, a state in which all updates have been propagated to their destinations. Some Mirror Replication Agent and Replication Server commands require that you first quiesce the replication system. |
| | 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. |
| | This term is interchangeable with *quiesced* and *in quiesce*. See also **quiesce**. |
| **RASD** | An abbreviation for *Mirror Replication Agent System Database*. 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 *Replication Command Language*, the command language used to manage Replication Server. |

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| **RDBMS** | An abbreviation for *relational database management system*, 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**. |
| **replicated data** | A set of data that is replicated from a primary database to a standby database by a replication system. See also **primary database**, **replication system**, and **standby database**. |
| **replicated transaction** | A primary transaction that is replicated from a primary database to a standby database by a transaction replication system. See also **primary database**, **primary transaction**, **standby database**, and **transaction replication**. |
| **Mirror 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 standby 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 **Mirror Replication Agent**. |
| **RSSD** | An abbreviation for *Replication Server System Database*, 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 *Structured Query Language*, a non-procedural programming language used to process data in a relational database. ANSI SQL is an industry standard. See also **transaction**. |

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| **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 standby 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**. |
| **standby data** | The data managed by a standby database, which is the destination (or target) of a replication system. See also **data replication** and **standby database**. |
| **standby database** | A database that contains data replicated from another database (the primary database) through a replication system. The standby database is the database that receives replicated data in a replication system. Sometimes called the *replicate database*. Contrast with **primary database**. See also **standby data**. |
| **standby site** | The location or facility at which standby data servers and standby databases are deployed to support disaster recovery, and normal business operations during scheduled downtime at the primary site. Sometimes called the *alternate site* or *replicate site*. Contrast with **primary site**. See also **standby database**. |
| **subscription** | A request for Replication Server to maintain a replicated copy of a table, or a set of rows from a table, in a standby 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. Mirror Replication Agent reads the transaction log to identify and acquire the transactions to be replicated from the primary database. See also **Mirror 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 standby database. See also **data replication** and **disk replication**. |

**transactional
consistency**     A condition in which all transactions in the primary database are applied in the
                  standby 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**.

# Index

## V

variables, environment   53
verifying installation   53
versions
   databases supported   4, 6

## W

**-W** installation wizard option   45, 46–47
worksheet, installation and setup   19–27