SYBASE®

Installation Guide
Sybase® Adaptive Server™ Enterprise

Windows 95, 98, and NT

Version 12.0

Sybase® Adaptive Server® Enterprise

Contents

iv

About This Book

This guide, *Installing Adaptive Server Enterprise on Windows 95, 98, and NT* provides:

- An overview of the Sybase® Adaptive Server™ Enterprise installation infrastructure

- Instructions for installing and upgrading Adaptive Server, and installing Backup Server™, Monitor Server, XP Server™, jConnect™ for JDBC, Java utilities, and client products, including the Adaptive Server plug-in for Sybase Central™

- Instructions for installing optional Adaptive Server functionality, such as auditing, and sample databases, and localization information

Audience

This guide is written for Sybase System Administrators and other qualified installers who are familiar with their system's environment, networks, disk resources, and media devices.

How To Use This Book

This book contains the following chapters:

- Chapter 1, "Overview" provides product definitions and an overview of the installation process and the Adaptive Server installation infrastructure.

- Chapter 2, "Installation Requirements" provides descriptions and system-related information such as required RAM and disk space for all Adaptive Server server and client products for this release.

- Chapter 3, "Unloading Server Products from Distribution Media" describes how to unload Adaptive Server products from the distribution media to your system.

- Chapter 4, "Sybase Software Asset Management (SySAM)" provides installation instructions for Sybase Software Manager (SySAM).

- Chapter 5, "Installing Sybase Servers" describes pre-installation procedures, and how to install server components.

- Chapter 6, "Post-Installation Tasks" describes how to set environment variables and initialize features.

- Chapter 7, "Unloading Sybase PC-Client Products from Distribution Media" describes how to install Adaptive Server client products like the Adaptive Server plug-in to Sybase Central.

- Chapter 8, "Customizing Localization for Adaptive Server" provides instructions for changing the language used for server messages.

- Chapter 9, "Upgrading Sybase Servers" describes how to upgrade an existing Adaptive Server to the current release.

- Chapter 10, "Adding Optional Functionality to Adaptive Server" describes how to install additional (optional) Adaptive Server functionality such as auditing, sample databases that can be used for learning Transact-SQL®, and two-phase commit.

- Chapter 11, "Starting and Stopping Servers" describes the different methods of starting and stopping Adaptive Server, Backup Server™, and other servers.

- Chapter 12, "Troubleshooting" provides installation error messages and possible solutions to installation problems.

- Appendix A, "Preparing to Upgrade Servers with Replicated Databases" provides instructions for preparing to upgrade a pre-11.0 Adaptive Server that has replicated databases.

Related documents   The following documents comprise the Sybase Adaptive Server Enterprise documentation:

- The *Release Bulletin* for your platform – contains last-minute information that was too late to be included in the books.

  A more recent version of the 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.

- The Adaptive Server installation documentation for your platform – describes installation, upgrade, and configuration procedures for all Adaptive Server and related Sybase products.

- *What's New in Adaptive Server Enterprise?* – describes the new features in Adaptive Server version 12, the system changes added to support those features, and the changes that may affect your existing applications.

- *Transact-SQL User's Guide* – documents Transact-SQL, Sybase's enhanced version of the relational database language. This manual serves as a textbook for beginning users of the database management system. This manual also contains descriptions of the *pubs2* and *pubs3* sample databases.

- *System Administration Guide* – provides in-depth information about administering servers and databases. This manual includes instructions and guidelines for managing physical resources, security, user and system databases, and specifying character conversion, international language, and sort order settings.

- *Adaptive Server Reference Manual* – contains detailed information about all Transact-SQL commands, functions, procedures, and datatypes. This manual also contains a list of the Transact-SQL reserved words and definitions of system tables.

- *Performance and Tuning Guide* – explains how to tune Adaptive Server for maximum performance. This manual includes information about database design issues that affect performance, query optimization, how to tune Adaptive Server for very large databases, disk and cache issues, and the effects of locking and cursors on performance.

- The *Utility Programs* manual for your platform – documents the Adaptive Server utility programs, such as **isql** and **bcp**, which are executed at the operating system level.

- *Error Messages and Troubleshooting Guide* – explains how to resolve frequently occurring error messages and describes solutions to system problems frequently encountered by users.

- *Component Integration Services User's Guide* – explains how to use the Adaptive Server Component Integration Services feature to connect remote Sybase and non-Sybase databases.

- *Java in Adaptive Server Enterprise* – describes how to install and use Java classes as datatypes and user-defined functions in the Adaptive Server database.

- *Using Sybase Failover in a High Availability System* – provides instructions for using Sybase's Failover to configure an Adaptive Server as a companion server in a high availability system.

- *Using Adaptive Server Distributed Transaction Management Features* – explains how to configure, use, and troubleshoot Adaptive Server DTM Features in distributed transaction processing environments.

- *XA Interface Integration Guide for CICS, Encina, and TUXEDO* – provides instructions for using Sybase's DTM XA Interface with X/Open XA transaction managers.

- *Adaptive Server Glossary* – defines technical terms used in the Adaptive Server documentation.

- *Sybase jConnect for JDBC Programmer's Reference* – describes the jConnect for JDBC product and explains how to use it to access data stored in relational database management systems.

Other sources of information

Use the Sybase Technical Library CD and the Technical Library Product Manuals web site to learn more about your product:

- Technical Library CD contains product manuals and technical documents and is included with your software. The DynaText browser (included on the Technical Library CD) allows you to access technical information about your product in an easy-to-use format.

  Refer to the *Technical Library Installation Guide* in your documentation package for instructions on installing and starting Technical Library.

- Technical Library Product Manuals web site is an HTML version of the Technical Library CD that you can access using a standard web browser. In addition to product manuals, you'll find links to the Technical Documents web site (formerly known as Tech Info Library), the Solved Cases page, and Sybase/Powersoft newsgroups.

  To access the Technical Library Product Manuals web site, go to Product Manuals at http://sybooks.sybase.com.

Sybase certifications on the web

Technical documentation at the Sybase web site is updated frequently.

❖ **For the latest information on product certifications and/or the EBF Rollups:**

1 Point your web browser to Technical Documents at http://techinfo.sybase.com.

2 In the Browse section, click on What's Hot.

3 Select links to Certification Reports and EBF Rollups, as well as links to Technical Newsletters, online manuals, and so on.

❖ **If you are a registered SupportPlus user:**

1 Point your web browser to Technical Documents at http://techinfo.sybase.com.

2   In the Browse section, click on What's Hot.

3   Click on EBF Rollups.

   You can research EBFs using Technical Documents, and you can download EBFs using Electronic Software Distribution (ESD).

4   Follow the instructions associated with the SupportPlus^{SM} Online Services entries.

❖   **If you are not a registered SupportPlus user, and you want to become one:**

You can register by following the instructions on the Web.

To use SupportPlus, you need:

1   A Web browser that supports the Secure Sockets Layer (SSL), such as Netscape Navigator 1.2 or later

2   An active support license

3   A named technical support contact

4   Your user ID and password

❖   **Whether or not you are a registered SupportPlus user:**

You may use Sybase's Technical Documents. Certification Reports are among the features documented at this site.

1   Point your web browser to Technical Documents at http://techinfo.sybase.com

2   In the Browse section, click on What's Hot.

3   Click on the topic that interests you.

Conventions   The following style conventions are used in this manual:

•   In a sample screen display, commands you should enter exactly as shown are given in:

        `this font`

•   In a sample screen display, words that you should replace with the appropriate value for your installation are shown in:

        `this font`

•   In the regular text of this document, the names of files and directories appear in this font:

   /usr/u/sybase

- The names of programs, utilities, procedures, and commands appear in this font:

  sqlupgrade

Table 1 shows the conventions for syntax statements in this manual.

Table 1: SQL syntax conventions

Key	Definition
command	Command names, command option names, utility names, utility flags, and other keywords are in bold.
variable	Variables, or words that stand for values that you fill in, are in *italic*.
{ }	Curly braces indicate that you choose at least one of the enclosed options. Do not include braces in your option.
[ ]	Brackets mean choosing one or more of the enclosed options is optional. Do not include brackets in your option.
( )	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 to be typed as part of the command.

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 **Overview**

This chapter introduces important concepts about the installation of Adaptive Server and Adaptive Server products.

Topics covered include:

Installation Definitions

In this book, these terms are defined as follows:

- *Unload* – to copy Adaptive Server products from the distribution media to your machine, using the Studio Installer.

- *Install* – to make the Adaptive Server products fully functional by configuring various attributes.

- *Upgrade* – to configure an existing Adaptive Server to a more recent Adaptive Server version level.

- *Server* – provides a service in client/server computing. Examples include Adaptive Server, Backup Server™, Historical Server, Monitor Server, and XP Server™

- *Client* – requests a service in client/server computing. Sybase Central, PowerDynamo, PowerDesigner®, SQL Modeler™, and end-user applications are clients.

User Roles

The Adaptive Server installation and setup process defines various user roles. Different user roles have different responsibilities and privileges. These user roles clarify the way Adaptive Server is to be integrated into your system:

*   *Operating System Administrator* – The individual who maintains the operating system. This individual has superuser or "root" privileges.

*   *System Administrator* –The individual in charge of Adaptive Server system administration, creating user accounts, assigning permissions on databases, and creating new databases. At installation time, the System Administrator's login name is "sa". The "sa" login is not a UNIX login. The "sa" login is specific to Adaptive Server and is used to log in to Adaptive Server using the **isql** command.

*   *Sybase Login* – The "sybase" login is a UNIX login that owns all the Sybase installation directories and files, sets permissions on those directories and files, and performs the installation and upgrading of Adaptive Server.

Product Descriptions

Table 1-1 provides a description of the server products in your Adaptive Server package. For a description of the products on your PC-Client CD, see Figure 7-1 in Chapter 7.

Table 1-1: Product descriptions

Product	Description
Adaptive Server	The relational database server. The default unloading process includes:
	• Adaptive Server
	• Backup Server
	• Full Text Search Server
	• Monitor Server
	• XP Server
	• Adaptive Server utilities
	• Scripts and configuration files

Product	Description
Adaptive Server Plug-In to Sybase Central	Sybase Central is a common framework for managing servers. It allows you to manage Adaptive Server installations using the Sybase Central graphical management tool. You can manage Adaptive Server running on any platform from a PC that is running Windows 95/98 or Windows NT. For information on how to use Sybase Central to manage Adaptive Server, see *Managing and Monitoring Sybase Adaptive Server Enterprise*.
Adaptive Server Enterprise Monitor	An Open Server™ application that obtains performance statistics on Adaptive Server and makes those statistics available to Monitor Server client applications. Adaptive Server Enterprise Monitor (also called Monitor Server) includes: • Monitor Server for Adaptive Server Enterprise 12.0 – an Open Server application that obtains performance statistics on Adaptive Server and makes those statistics available to monitors in Sybase Central, Monitor Historical Servers, and applications built with Monitor Client-Library. Monitor Server for SQL Server 11.0.x is also available. • Adaptive Server plug-in for Sybase Central – this graphical user interface obtains Adaptive Server performance data from Monitor Server and displays the data, in real time, in tables and graphs. • Monitor Client-Library – a programming interface that provides access to Adaptive Server performance data. • Monitor Historical Server – an Open Server application that obtains performance statistics for many Adaptive Servers via Monitor Servers and records the data to specified file locations.
Backup Server	Backup Server is an Open Server-based application that manages all database backup (dump) and restore (load) operations for Adaptive Server. Backup Server: • Allows you to use up to 32 dump devices (this is called *dump striping*) in parallel to dump or load a single database or transaction log. • Allows one dump to span multiple tapes or allows multiple dumps to be made to a single tape. • Allows dumping and loading over the network to or from a device on another machine. • Provides automated determination of tape device characteristics, by using operating system commands, for a dump operation. • Supports dump and load command syntax specification for volume naming, dismount and load control, tape density, block size, tape capacity, days to retain, initialization, file naming for multi-dump volumes, and listing header or file information. Install Backup Server if you plan to back up and restore databases in Adaptive Server. Backup Server is unloaded, by default, when you unload Adaptive Server software from the distribution media. Use the srvbuild utility to set up Backup Server and to connect Backup Server and Adaptive Server through the interfaces file.

Product	Description
Language Modules (Server)	Provides system messages and date/time formats to help you localize your applications. Default installation includes the us_english language module and the following character sets:
	• cp437 – IBM CP437, U.S. code set
	• cp850 – IBM CP850, European code set
	• iso_1 – ISO 8859-1, Latin-1
	• mac – Standard Macintosh coding
	• roman8 – HP Roman-8
	Other languages for Adaptive Server and Sybase client products are French, German, and Japanese. Language modules for Spanish, Korean, Brazilian Portuguese, and Simplified Chinese are also available for Adaptive Server only.
	For more information on server language modules and character sets, see Chapter 8, "Customizing Localization for Adaptive Server".
Language Modules (Connectivity)	Provides messages and support files for running Open Client™ applications in various languages.
jConnect™ for JDBC 4.2	Provides a Java database connectivity (JDBC) driver that works with both Sun and Microsoft virtual machines (VM). For more information jConnect for JDBC, see the jConnect product page at http://www.sybase.com/products/internet/jconnect/.
jConnect for JDBC 5.2	Provides a Java database connectivity (JDBC) driver that works with both Sun and Microsoft virtual machines (VM). For more information jConnect for JDBC, see the jConnect product page at http://www.sybase.com/products/internet/jconnect/.
jConnect Documentation	Contains the *Sybase jConnect for JDBC Programmer's Reference*.
Java utilities	Includes:
	• The Cascade Gateway – A gateway that acts as a proxy to provide a path to the database server if it is running on a different host from the Web Server.
	• jisql – A graphical Transact-SQL editor written in Java that replaces SQL Advantage.
	• Ribo – A utility that captures, translates, and displays the Tabular Data Stream (TDS) protocol flowing between a TDS client and a TDS server.
ODBC Driver	Allows Windows NT client applications to access Adaptive Server data.
Open Client	Provides libraries and utilities for developing any Open Client application.
XP Server	An Open Server application that manages and executes extended stored procedures (ESPs) from within Adaptive Server. ESPs provide a method for calling procedural language functions from within Adaptive Server.
	XP Server is unloaded, by default, when you unload Adaptive Server software from the distribution media. Use the srvbuild utility to set up XP Server and to connect XP Server and Adaptive Server through the interfaces file.

4

Installation and Setup Utilities

Table 1-2 lists the Adaptive Server installation and setup utilities you can use to unload, install, upgrade, or customize Adaptive Server and its product.

Table 1-2: Installation and setup utilities

Tool or Process	Name	Description
Setup executable program	setup	The executable program used to initiate the Studio Installer utility.
		Also configures servers after downloading, if you choose to do so; automatically configures Historical Server.
Installation program or Studio Installer utility	Studio Installer	The installation program that downloads programs and files from media, such as CD, to the target computer.
Server Config utility	syconfig	An installation tool used to configure Adaptive Server, Monitor Server, Backup Server, and XP Server.
		When running syconfig in a language other than English, all user input must be in a character set supported by U.S. English (no diacritical marks).
Server batch utility	sybatch	A command-line utility used to create Adaptive Server, Monitor Server, and Backup Server, based on a resource file.
Editor program	dsedit	A program used to edit the *sql.ini* file and configure directory services.

Environment Variables

It is crucial to the operation of Sybase products that the system environment variables be set correctly.

Environment variables are set in the user's environment by running the *sybase.bat* in the *%SYBASE%\%SYBASE_ASE%\bin* directory. The installation instructions in this guide explain when to set these variables.

- DSLISTEN – Defines the name Adaptive Server uses to listen for client connections if no name is given during the Adaptive Server start-up. If DSLISTEN is not set, and no name is given during the Adaptive Server start-up, the Adaptive Server name defaults to the server name given at installation.

- DSQUERY – Defines the Adaptive Server name that client programs try to connect to if no Adaptive Server is specified with a command-line option. If DSQUERY is not set, and you do not supply the Adaptive Server name with a command-line option, clients attempt to connect to the server name given at installation.

5

- SYBASE – Defines the path of the Sybase installation directory. The installation program sets up the variable SYBASE to point to the release directory specified during installation.

- SYBASE_ASE – Defines the subdirectory directory of the Adaptive Server components.

- SYBASE_OCS – Defines the subdirectory to which the Open Client is set.

- SYBASE_ FTS – Defines the subdirectory for the full-text search components.

- SYBASE_SYSAM – Points to the license-management software directory.

- LM_LICENSE_FILE – Points to the *license.dat* file in the *SYBASE_SYSAM/licenses/* directory.

- PATH – Specifies which directory paths to search for executables and dynamic link libraries (DLLs). The Sybase executables are in the *bin %SYBASE%\product_name* directory. The Sybase DLLs are in the SYSDLL directory. The installation program appends these paths to the current PATH environment variable.

  Warning! Keep all Sybase DLLs in the directories in which they were installed. To avoid possible confusion about current DLLs, do not keep multiple versions of Sybase DLLs on your machine.

- TEMP – Defines the location used by the installation program to write files temporarily during the installation process. The installation process frees the disk space after installation is completed

- CLASSPATH – Defines the Adaptive Server plug-in location. The default location value is:*c:\sybase\asep\monclass.zip; c:\sybase\asep\3pclass.zip*

- INCLUDE –Specifies which directory to set to or append for Open Client.

- LIB – Is appended with *lib* directory for Open Client.

Sybase Installation Directory

The Sybase installation directory structure is created by the installation process. Adaptive Server is placed in the directory you indicate when you run the Studio Installer. Table 0-2 illustrates part of the Adaptive Server installation directory structure.

The Adaptive Server installation directory contains executable files and administrative tools, which are added as each product is installed.

Table 1-3: Installation directory for %SYBASE%

Directory	Subdirectory	Subdirectory
\ASE-12_0		
	\bin	
	\debugger	
	\dll	\debug
	\ini	
	\init	\bsrv
		\logs
		\sqlsrv
	\install	\spr
	\sample	\esp
		\histsrvr
		\JavaSql
		\server
	\scripts	
	\upgrade	
\charsets		
\collate	\Meta-inf	
	\unicode	
\data	\Meta-inf	
\dll	\Meta-inf	
\FTS-12_0		
\ini		
\installed		
\Installer	\bin	
	\lib	
\jConnect-docs	\docs	
	\Meta-inf	
\jConnect-4_2	\classes	
	\docs	
	\devclasses	
	\gateway	
	\Meta-inf	
	\sample	
	\sp	
	\tools	

Directory	Subdirectory	Subdirectory
\jConnect-5_2	\classes	
	\devclasses	
	\docs	
	\gateway2	
	\Meta-inf	
	\sample2	
	\sp	
	\tools	
\jre-1_1-NT386	\bin	
	\lib	\security
\jutils-2_0	\cascade	
	\jisql	
	\Meta-inf	
	\ribo	\doc
\locales	\english	
	\message	
	Meta-inf	
	\unicode	
\OCS-12_0	\bin	
	\dll	
	\include	
	\ini	
	\install	
	\lib	
	\Meta-inf	
	\sample	
\SQLRemote	\bin	
	\dll	
	\scripts	
\SYSAM-1_0	\bin	
	\licenses	
\Sysdll	\Meta-inf	
	\Windows95	
	\WindowsNT	

> Warning! Do not change the installation directories when installing InfoMaker.

Windows NT Registry

The installation program creates Registry entries for Adaptive Server. The Registry identifies the locations of the application and system objects and services.

The installation program creates the following Registry entries:

*   *\\HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\server_name*

*   *\\HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\SQLServer*

*   *\\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\ Session Manager\Environment*

*   *\\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\ SYBSQL_server_name*

*   *\\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\ SYBBCK_server_name_BS*

*   *\\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\ SYBMON_server_name_MS*

*   *\\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\ SYBHIS_server_name_HS*

*   *\\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\ SYBXPS_server_name_XP*

Client/Server Communication (the Interfaces File)

Adaptive Server communicates with other Adaptive Servers, Open Server applications (such as Backup Server), and client software on your network. Clients can talk to one or more servers, and servers can communicate with other servers by remote procedure calls.

For Sybase products to interact with one another, each product needs to know where the others reside on the network. This information is stored in an interfaces file named *sql.ini* on Windows platforms, located in the $SYBASE installation directory. After your Adaptive Server or client software is installed, it can connect with any server on the network that is listed in the interfaces file.

The interfaces file is like an address book. It lists the name and address of every known server. When you are using a client program, and you want to connect with a particular server, the client program looks up the server name in the interfaces file and connects to that server, as shown in Figure 0-1. You can supply the name of the server by using the DSQUERY environment variable.

On TCP/IP networks, the port number gives clients a way to identify the Adaptive Server to which they want to connect. It also tells Adaptive Server where to listen for incoming connection attempts from clients. Adaptive Server uses a single port for these two services (referred to as *query service* and *listener service*).

On SPX networks, the socket number gives clients and servers a way to identify each other.

Figure 1-1: Communicating with a server
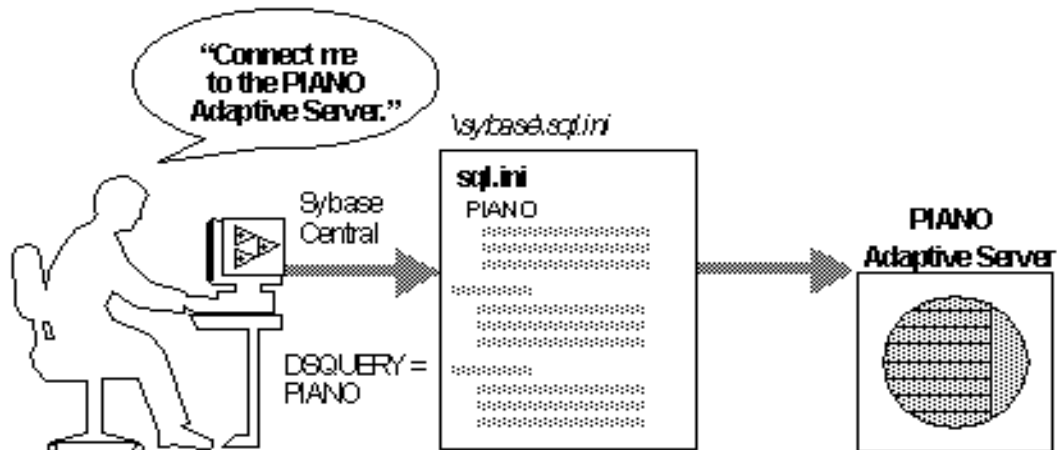
During installation, Studio Installer adds entries to the *sql.ini* file for the new Adaptive Server, Backup Server, Monitor Server, Historical Server, or XP Server.

For instructions on using **dsedit** to modify existing interfaces file entries or create new interfaces file entries for existing servers, see *Configuring Adaptive Server Enterprise for Windows NT*.

Note You can use Windows NT Directory Replication to replicate *sql.ini* in multiple locations. See the Microsoft documentation for information. You can also use directory services, which are stored in the Registry.

Adaptive Server Devices and System Databases

Devices are files or portions of a disk that are used to store databases and database objects. You can initialize devices, using raw disk partitions (for production systems) or operating system files (for nonproduction uses).

Adaptive Server requires the following devices:

*   *master device* – to store system databases.

*   *sysprocsdev* device – to store system procedures.

The master and *sysprocsdev* devices are created when you create a new Adaptive Server.

master Device

The master device contains the following databases:

*   *master* – controls the operation of Adaptive Server as a whole and stores information about all users, user databases, devices, objects, and system table entries. The *master* database is contained entirely on the master device and cannot be expanded onto any other device.

*   *model* – provides a template for new user databases. The *model* database contains required system tables, which are copied into a new user database with the **create database** command.

*   *tempdb* – the work area for Adaptive Server. Each time Adaptive Server is started the *tempdb* database is cleared and rebuilt from the *model* database.

- The sample databases are stored on the master device at installation, but should be moved to a user-defined device after installation. For more information, see "Sample Databases" on page 14.

  Note For recovery purposes, Sybase recommends that you do not create other system or user databases or user objects on the master device.

sybsystemdb Device and Database

For new installations it also contains the *sybsystemdb* database. The *sybsystemdb* device stores the *sybsystemdb* database, which stores information about transactions in progress, and which is also used during recovery.

See Chapter 9, "Upgrading Sybase Servers" for instructions on how to create the *sybsystemdb* device and database for two-phase commit and Data Transfer Management.

Note For recovery purposes, it is recommended that you do not create other system or user databases or user objects on the master device.

The sample databases are stored on the master device at installation, but should be moved to a user-defined device after installation. For information on the sample databases, see "Optional Devices and Databases" on page 14.

sysprocsdev Device

The *sybprocsdev* devices stores the sybsystemprocs database, which contains most of the Sybase-supplied system procedures. System procedures are a collection of SQL statements and flow-of-control statements that perform system tasks; for example, **sp_configure**.

The system procedures that are needed during recovery situations are stored in the *master* database.

Note *sysprocsdev* is the default system name for this device. However, it is frequently referred to as the *sybsystemprocs* device, since it stores the *sybsystemprocs* database.

Optional Devices and Databases

The following devices and databases are needed only if you configure Adaptive Server for optional functionality, like auditing or two-phase commit transactions.

sybsecurity Device and Database

The *sybsecurity* device stores the *sybsecurity* database and the auditing system procedures with which you can configure auditing for your system.

The auditing system records system security information in an Adaptive Server audit trail. You can use this audit trail to monitor the use of Adaptive Server or system resources.

Install auditing using the **auditinit** utility. The *sybsecurity* device is created as part of the auditing installation process.

See Chapter 10, "Adding Optional Functionality to Adaptive Server" for instructions on how to configure Adaptive Server for auditing.

The auditing system is discussed in more detail in the *System Administration Guide*.

Sample Databases

The *pubs2* and *pubs3* databases are sample databases provided as a learning tool for Adaptive Server. The *pubs2* sample database is used for most of the examples in the Adaptive Server documentation; other examples use the *pubs3* database. Both are available in U.S. English versions of Adaptive Server.

The *interpubs* database contain French and German data. *jpubs* contains Japanese data.

For information about installing the sample databases, see Chapter 10, "Adding Optional Functionality to Adaptive Server".

For information on the contents of these sample databases, see the *Transact-SQL User's Guide*.

dbccdb Database

The database consistency checker (**dbcc**) provides commands for checking the logical and physical consistency of a database. The *dbccdb* database stores the results of **dbcc** when **dbcc checkstorage** or **dbcc** check verifying are used.

dbcc checkstorage records configuration information for the **target database**, operation activity, and the results of the operation in the *dbccdb* database. Stored in the database are **dbcc** stored procedures for creating and maintaining *dbccdb* and for generating reports on the results of **dbcc checkstorage** operations.

Information on installing *dbccdb* is located in the chapter "Checking Database Consistency," in the *System Administration Guide*.

What's Next?

Do any of the following:

- For Adaptive Server product descriptions, and server and database specifications, see Chapter 2, "Installation Requirements".

- For information on unloading software from the distribution media, see Chapter 3, "Unloading Server Products from Distribution Media".

- For information on Sybase Software Asset Management, see Chapter 4, "Sybase Software Asset Management (SySAM)".

- To install Adaptive Server 12.0, see Chapter 5, "Installing Sybase Servers".

- To upgrade from a previous version to Adaptive Server 12.0, see Chapter 9, "Upgrading Sybase Servers"

CHAPTER 2   Installation Requirements

This chapter covers:

Name	Page
System Requirements	17
Product Disk Space Requirements	20
Language Module Sizes	21
Adaptive Server Specifications	21
What's Next?	24

For easier installation, make a copy of this chapter, so you have the requirements information available as you perform the pre-installation, installation, or upgrade procedures.

System Requirements

Table 2-1 shows the required release-level, RAM, and network-protocol requirements for Adaptive Server. See the release bulletin for the latest information on required system patches.

Table 2-1: System requirements for Adaptive Server

Platform and Operating System	Release Level	RAM Required	Network Protocol
Windows NT	4.0, (Service Pack #4, or later)	42MB	TCP, IPX/SPX Named Pipes

Table 2-2 shows the system requirements for installing jConnect for JDBC.

***Table 2-2: System requirements for jConnect
on Windows NT and Windows 95/98***

Hardware	PC with 486 or greater Intel processor
Operating system	Windows NT 3.5.1 or later, or Windows 95/98 (supporting Java VM version 1.1)
Free disk space	10MB for default options
Java Developer's Kit	Sun's JDK 1.1.x or later, or Microsoft's jView
Database	• Adaptive Server Enterprise (SQL Server System 10, version 10.0.2, through Adaptive Server Enterprise 12.x); or • Sybase SQL Anywhere 5.5.23 or later, running Open Server Gateway™ dbos50; or • Sybase SQL Anywhere Studio 6.0* **Note** Some features in jConnect version 4.2 and 5.2 require Adaptive Server Enterprise 12.x or later: • Support for outer join syntax • Support for Sybase Failover in high availability systems ("HA Failover") • Implementation of a DynamicClassLoader (or Adaptive Server Anywhere 6.x and later) • Support for distributed transaction management — Java Transaction API (JTA), and Java Transaction Service (JTS) For more information on these features, see the *Sybase jConnect for JDBC Programmer's Reference*.
Web browser	Any browser that supports JDK 1.1.x or later, such as Netscape 4.0.x, Internet Explorer 4.0.x, or HotJava 1.x
Other Sybase products (optional)	Adaptive Server IQ, OmniConnect™, DirectConnect™
IDE (optional)	Any Java application development environment, such as PowerJ™, Visual J++, Symantec Cafe, or Borland Latte
Web server (optional)	For jConnect's TDS-tunnelling servlet, any Web server that supports the HTTPS protocol and javax.servlet interfaces

> **Note** A free evaluation version of SQL Anywhere Studio 6.0 (includes Adaptive
> Server Anywhere 6.0) is available from Sybase at
> http://www.sybase.com/products/anywhere/sqlanyform.html.
> The Open Server Gateway and the required DLLs are no longer needed with Sybase
> SQL Anywhere Studio version 6.0 and later.

Client products are supported on Windows NT, Windows 98, and Windows 95.
Table 2-3 lists the RAM required for client products.

Table 2-3: RAM requirements for client products

Product	RAM Required
Adaptive Server plug-in for Sybase Central	12MB (Windows 95) 16MB (Windows NT)
Monitor Client-Library	16MB (32MB recommended)
Open Client/C	16MB
jConnect for JDBC 4.2	16MB
jConnect for JDBC 5.2	16MB
jutils (Cascade, jisql, Ribo)	N/A

Product Disk Space Requirements

Table 2-4: list the disk space requirement for each product.

Product	RAM Required
Adaptive Server	42MB
jConnect 4.2	4MB
jConnect 5.2	4MB
jutilities (Cascade Gateway, jisql, Ribo)	1.5MB
jConnect Documentation	.5MB
Open Client/C	16MB
OmniConnect	32MB
Monitor Client Library	16MB 32MB recommended
Monitor Server	32MB
Monitor Historical Server	32MB
Adaptive Server plug-in for Sybase Central	12MB
11.5.1 Monitor Server for Sybase SQL Server™ 11.0.x	32MB
SQL Remote 6.0.2	
Standard Full Text Search Specialty Data Store 11.9.2	64MB
XA 12.0 SDK	370KB
InfoMaker 7.0	32MB
SQL Modeler 6.1.4	16MB
Adaptive Server or SQL Remote plug-in for Sybase Central	12MB

Table 2-5 shows the installation requirements for the Adaptive Server plug-in for Sybase Central.

Table 2-5: Installation requirements for plug-in

Operating System	Disk Space
Windows NT 4.0 or Windows 95/98 Service Pack 3 or later	12MB

Language Module Sizes

Table 2-6 lists the sizes for the Adaptive Server and Open Client Language modules.

Table 2-6: Language module sizes

Language	Size of Adaptive Server Language Module	Size of Open Client Language Module
Brazilian Portuguese	6.5MB	1.2MB
Chinese (simplified)	2MB	1.2MB
Chinese (traditional)	2MB	1.2MB
French	6.5MB	1.5MB
German	6.5MB	1.5MB
Japanese	4.5MB	1.2MB
Korean	2MB	1.2MB
Spanish	6.5MB	1.2MB

Adaptive Server Specifications

This section provides system specifications for Adaptive Server on Windows NT.

Table 2-7: Adaptive Server specifications on Windows NT

Memory Specifications		
Minimum RAM required for Adaptive Server	42MB	21,504 2K pages.
Minimum RAM per additional user	63K	With default stack size, packet size, and user log cache size. This value depends on the connection needs. See the *System Administration Guide* for information about configuring memory.

Default memory per additional user	402K	with Java enabled.
	102K	with Java disabled.
		Note Java is enabled by default.
Number of logins	64K	
Number of users	48K	
Default user stack size	46,080	

Database Specifications

Databases per Adaptive Server	32,767	Practical limit is approximately 100.
Default database size	2MB	Minimum 2MB.
Maximum database size	2^{42} (4TB)	
Maximum size of a database device	2^{35} 32GB	
Maximum number of database devices per server	256	
Maximum number of segments per database	31	
master database	6MB	Minimum required for a new installation.
	7MB	Minimum required for an upgrade.
model database	2MB	Minimum required for a new installation.
	3MB	Minimum required for an upgrade.
tempdb database	2MB	Minimum required for a new installation.
	3MB	Minimum required for an upgrade.
sybsystemdb database	4MB	Minimum required for an upgrade
	20MB	Recommended. Approximately 25% of the database should be data storage, and 75% should be log storage.
sybsystemprocs database	80MB	Recommended for a new installation or an upgrade.

pubs2 database	2MB	Minimum required for a new installation.
	4MB	Minimum required for an upgrade.
pubs3 database	2MB	Minimum required for a new installation.
	4MB	Minimum required for an upgrade.
interpubs database	2MB	Minimum required for a new installation.
	3MB	Minimum required for an upgrade.
jpubs database	2MB	Minimum required for a new installation.
	3MB	Minimum required for an upgrade.

Table Specifications

User objects per database	2^{31} - 100	
Columns per table	250	
Indexes per table	250 (one clustered)	
Rows per table	Limited by available storage	Maximum 2^{31} - 1.
Maximum user data per row	1960 bytes	
Maximum number of data bytes per text/image page	1800 bytes	
Columns per composite index	31	
Bytes per index key	600	
Creation of clustered index	Free space needed on segment is 1.2 times *table size*	For sorted data, approximately 20% of the table size needed.
Characters per database object name	30	

Query Specifications

Maximum number of tables in a *union* query	256	
Maximum number of databases participating in one transaction	16	Includes database where transaction began, all databases changed during the transaction, and *tempdb*, if it is used for results or worktables.

23

Practical number of databases participating in one query	16	Includes each occurrence of each database queried and *tempdb*, if it is used for results or worktables.
Maximum number of tables participating in a query	64	Maximum of 50 user tables, including result tables, tables referenced by views (the view itself it not counted) correlations and self-joins. Maximum of 14 work tables.
Maximum number of tables with referential integrity constraints for a query	192	
System Specifications		
Number of buffers and procedure buffers	Configurable	Limited by amount of RAM and maximum size of shared memory segment.
Minimum memory required per stored procedure	2K	
Maximum number of parameters per stored procedure	255	

What's Next?

To unload Adaptive Server software to your system, see Chapter 3, "Unloading Server Products from Distribution Media".

CHAPTER 3 **Unloading Server Products from Distribution Media**

This chapter describes how to unload Adaptive Server Enterprise server products from the Sybase distribution media onto your system.

Topics covered include:

Pre-Unloading Tasks

This section describes tasks that you need to complete for:

• Adaptive Server Enterprise products

• jConnect 4.2, 5.2, and Java utilities

Adaptive Server Enterprise products

1 Read the release bulletins for the latest information on the products (Adaptive Server, Monitor Server, and so on) that you are unloading.

Your Sybase product shipment includes printed release bulletins; they are also available

at http://www.sybase.com

2 Create a "sybase" account on your system to perform all unloading tasks. The operating system administrator usually sets up this account, as this requires "root" privileges.

3 Log in to the machine as the "sybase" user.

It is important to maintain consistent ownership and privileges for all files and directories. A single user—the Sybase System Administrator with read, write, and execute permissions—should perform all unload, installation, upgrade, and setup tasks.

The "sybase" user must have permission privileges from the top (or root) of the disk partition or operating system directory down to the specific physical device or operating system file.

4   Verify that the directory location for the Sybase installation has sufficient space to accommodate unloading the software.

Space requirements for Adaptive Server Enterprise products are listed in Chapter 2, "Installation Requirements".

Note As part of the installation, the Studio Installer sets most of the environments variables needed for Adaptive Server products. However, the Studio Installer does not set jConnect or Java utility environment variables—you must set them manually using the instructions in "Setting jConnect Environment Variables" on page 76.

---

jConnect 4.2, 5.2, and Java utilities

Before you install jConnect version 4.2, 5.2, jisql, or Ribo:

1   Install the Java Development Kit (JDK). You can download the current JDK from Sun's Java Software Web site:

  at http://java.sun.com/products/index.html

then install it using the *JDK Installation Instructions*.

You can also run the installer using jView, which you can download from:

  at http://www.microsoft.com/java/download.htm

When you install jConnect 5.2, you receive JDBC 2.0 compatible classes, regardless of what JDK (1.1.x or 1.2) version you use. The following table lists the JDK and jConnect versions necessary to develop applications that are compliant with different versions of JDBC.

If you are developing...	Use JDK Version...	Use jConnect Version
JDBC 1.x applications/servlets	1.1.x or compatible browser	jConnect 4.x
JDBC 2.x applications/servlets	1.2.x or compatible browser	jConnect 5.x

2   Set the JAVA_HOME environment variable.

After installing the JDK, define the JAVA_HOME environment variable to point to the JDK installation directory. For example, if you installed JDK 1.2 (Java 2) the setting might look like:

```
%JAVA_HOME%\jdk1.2
```

See your operating system documentation for further instructions.

If You Are Unloading for an Upgrade

To unload components for the purpose of upgrading a product:

1   Back up all existing Sybase installations. Unloading into an existing Sybase installation directory overwrites the previous installation.

2   If you are unloading Monitor Server for SQL Server 11.0.x, verify that you have write permissions on the current Monitor Server files. The files are:

   •   *%SYBASE%\%SYBASE_ASE%\bin\monserver*

   •   *%SYBASE%\%SYBASE_ASE%\scripts\installmon*

3   If you are migrating applications from one version of jConnect to another, see Chapter 5, "Migrating jConnect Applications," in the *jConnect for JDBC Programmer's Reference* for instructions. Table 3-1 shows which upgrade paths require you to change and recompile the source code.

Table 3-1: Upgrade paths that require recompiling

Upgrading From jConnect Version	To jConnect Version				
	4.0	*4.1*	*4.2*	*5.0*	*5.2*
3.0	No changes required	No changes required	No changes required	Changes Required	Changes Required
4.0	N/A	No changes required	No changes required	Changes Required	Changes Required
4.1	N/A	N/A	No changes required	Changes Required	Changes Required
4.2	N/A	N/A	N/A	Changes Required	Changes Required
5.0	N/A	N/A	N/A	N/A	No changes required

Studio Installer

The Studio Installer is Java-based and uses XML input. It loads and installs all Sybase components across all platforms.

The Studio Installer creates the target directory (if necessary) and unloads all the selected components into that directory.

There are three options for unloading Sybase components from the distribution media via the Studio Installer: the default GUI (graphical user interface) mode, a NOGUI mode, or by a *cmdfile*.

After the unload is complete, you can install and configure the components by following the instructions in Chapter 5, "Installing Sybase Servers".

Note Windows 95 systems must have version 4.00.95b to run the Studio Installer. For Windows NT, version 4.0 is required.

Unloading Components with Studio Installer: GUI Mode

This section describes how to install Adaptive Server components on the Primary Network Node. Information on installing Adaptive Server and PC-client components in the networked enterprise are discussed in Chapter 4, "Sybase Software Asset Management (SySAM)".

The installation procedure assumes that:

*   You have completed the list of tasks in "Pre-Unloading Tasks" on page 25.

*   The target computer meets the requirements outlined in Chapter 2, "Installation Requirements".

At the end of the installation, you can verify the product installation. However, you may need to perform additional configuration procedures before you can use the products.

Note As part of the installation, the Studio Installer sets most of the environments variables needed for Adaptive Server products. However, the Studio Installer does not set jConnect or Java utility environment variables— you must set them manually using the instructions in Chapter 6, "Post-Installation Tasks".

Warning! If any Sybase executables or DLLs are loaded into memory, and the installation program tries to overwrite any of the files that are in use, the installation program exits without warning. Close any Sybase products in use and restart the installation.

During the installation process, the computer must be rebooted. After rebooting, the computer accesses the CD for additional data. For this reason, the CD must remain in the CD-ROM drive during reboot, and the CD-ROM drive should be on the installation machine.

To unload Server components:

1   Log on to your Windows NT-based computer using an account with Windows NT administrator privileges.

2   Close any open applications or utilities, including currently installed Sybase products, to free up system resources.

3   Insert the Server CD in the CD-ROM drive.

4   Be sure that the drive on which you install the products has enough disk space for the products being installed, and at least 2.4MB extra disk space for the installation program.

    Additionally, be sure the TEMP environment variable and *x.temp* directory on Windows 95/98 and the *x:\winnt\temp* directory on Windows NT exist. The installation program uses the extra space and directory to write files temporarily during the installation. The installation program frees this space after the installation is complete.

5   The Studio Installer should start automatically. If it does not, click Start, choose Run, and enter:

        x:\setup.exe

29

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

> **Note** Do not use *My Computer* to locate and start the *setup.exe* file. Using this path may result in unexpected behavior.

6   Select the type of installation to be performed. Backup Server, Monitor Server, and XP Server are unloaded, by default, with Adaptive Server.

   • *Standard Install* – installs the default components a user needs.

   • *Full Install* – installs every component on the CD.

   • *Customized Install* – allows you to select which components to install. Certain components will automatically be installed if they are required to run other selected components.

7   Enter the target directory. If the target directory does not already exist, the Studio Installer prompts you to create it. Click Yes to proceed.

> **Note** If you select Customized Install, the next window is the Component Selection screen, which allows you to specify which components to install.
>
> Components that would be installed in a standard installation appear with a check in the check box to the left of the product name. You may select or deselect components from this list. Components with subcomponents have a More... button enabled. Clicking this button allows you to select or deselect subcomponents.

8   Click Next to launch the Summary screen.

The Summary screen displays every component that will be installed by the Studio Installer. Disk space required for each selected component is also shown, along with the available disk space.

> **Note** If the target directory does not have enough free space, the available-space information will appear in red. Clicking Next without sufficient hard disk space results in an error and stops the installation.

9   Click Next to continue the installation. The Studio Installer unloads the components from the CD and displays a progress indicator.

> **Warning!** If you are prompted to overwrite any DLLs loaded in memory, select No.

If no component has been selected, the Studio Installer generates an error message and stops the installation. Click Back to select components, or Cancel to cancel the installation procedure.

Note Optionally, you may select Save from the Summary screen to save all the installation information into a *cmdfile* to proceed with the installation in a non-interactive, silent install. (See "Unloading Components in cmdfile" on page 35.)

---

10 When prompted to reboot the computer, leave the CD in the CD-ROM drive and select Yes.

If any components selected to be installed require a license, the Sybase Software Asset Management (SySAM) screen displays and prompts you for certification information at this time. If you install any components without the appropriate license information, only Adaptive Server 12.0 without licensed features is enabled.

SySAM License Manager

1 The Studio Installer prompts: "Do you have a Sybase Software Asset Management Certificate to register?"

- Click Yes to enter license information from the Sybase Software Asset Management Certificate. Proceed to step 2.

- Click No if you do not have licenses for optional Adaptive Server features.The installer prompts: "Have you registered Sybase Software Asset Management Certificates at a central license host?"

    Note You are not prompted for further licensing information, and you will not be able to use any optional features in Adaptive Server if you select No at this point.

- Click No. See "Installing SySAM Software in Your Enterprise" on page 44 for information about configuring client machines to access Adaptive Server licenses from the primary network node.

    The Studio Installer leads you through the installation of Adaptive Server. Proceed to Chapter 5, "Installing Sybase Servers"

2 Enter information from the Sybase License Certificate for each Adaptive Server feature you have purchased:

- **Order Number:** Enter your Sybase order number.

- **Feature Name:** Enter the name of the Adaptive Server feature. Valid Adaptive Server feature names are: **ASE_SERVER**, **ASE_JAVA**, **ASE_HA**, **ASE_DTM**, and **ASE_ASM**.

  See Table 4-1 on page 40 for a description of features.

- **Feature Count:** Enter your license count number.

- **Software Version:** Enter the Adaptive Server software version.

- **Authorization Code:** Enter the license key for the purchased feature.

Note Entries are case sensitive. Enter the values exactly as they appear on the Sybase Software Asset Management Certificate. See Chapter 4, "Sybase Software Asset Management (SySAM)" for detailed information about using the license manager.

3 Click More. . . if you have purchased additional licensed features. The installer records the information for the current feature in the license file and prompts you to enter information for an additional feature.

4 Click Continue Install after you have entered information from all of the Sybase License Certificates you have purchased. The installer records all license information and prompts you to configure the components you have installed.

Note If you encounter problems, check the installation log file to see a record of the installation process. The file is located in *%Sybase%\ASE-12_0\installer.log*.

Unloading with Studio Installer: NOGUI Mode

To unload components in a NOGUI environment, perform all pre-installation preparation steps as described; however, replace the window-based Studio Installer instructions ("Unloading Components with Studio Installer: GUI Mode" on page 28) with these instructions.

There are several arguments you can use when you run Studio Installer from the command line. The syntax is:

```
setup.exe -argument
```

- **-debug**:

Use this argument to display output normally sent to the *Installer.log*.

- **-f** *filename*

  Use this argument to provide the filename of the file that contains all the input you want to use for a silent installation.

  Before using this argument, you must create a file containing all the installation inputs (target directory, components to be installed, and so on).

- **-c**

  Use this argument run the installer without the graphical user interface. The Studio Installer prompts the user for the required user input.

- **-trace**

  Use this argument to print more detailed information to the *Installer.log*, which is useful for tracking abnormal executions of installations.

- **-version**

  Use this argument to obtain version information for the installer. Do not use any other arguments when using this argument.

After you have unloaded the software from the distribution media ("Studio Installer" on page 27), you can proceed with the installation of Adaptive Server in a non-interactive environment.

Complete the following steps:

1   At the prompt, type:

    ```
    cd x:\
    .run.bat -nogui
    ```

    where *x:* is the letter of the CD-ROM drive.

2   Select the type of install to perform.

    - Full Install

    - Standard Install

    - Cancel

3   From the prompt, enter the installation directory (the default is *\tmp\sybase*).

4   From the prompt, enter the installation directory (the default is *c:\sybase*).

5   Select one of the following:

    - Continue – to continue.

33

- Previous Menu– to return to the previous screen.

- Cancel – to terminate the installation procedure.

6   After unloading the server components, reboot the machine.

7   The installer prompts: "Have you registered Sybase Software Asset
Management Certificates at a central license host?"

If Yes, enter the following information about the primary network node
from which this machine will be checking out licenses:

- **License Manager Host** is the host name of the primary network node
on which you installed the asset management software.

- **License Manager Port** is an unused port number on the primary
network node. The local Adaptive Server uses this port number to
contact the primary network node when checking out licenses.

For information on licensing features, seeChapter 4, "Sybase Software Asset
Management (SySAM)".

Completing the Unload Process

1   Follow the directions on the screen.

- Chapter 5, "Installing Sybase Servers"

2   The **syconfig** utility launches and the Configure Sybase Servers screen
displays these options for Adaptive Server:

- Create Adaptive Server (see Chapter 5, "Installing Sybase Servers").

- Configure Adaptive Server (see Chapter 5, "Installing Sybase
Servers").

- Remove Adaptive Server (see Chapter 6, "Post-Installation Tasks").

- Upgrade Adaptive Server (see Chapter 9, "Upgrading Sybase
Servers").

For information about the **syconfig** utility, see the Utilities Guide for your
platform.

3   When you finish configuring the servers, exit **syconfig** and return to the Studio Installer.

Note If you do not exit the utility, the Studio Installer is left in a suspended state.

---

4   Check the installation log file to see a record of the installation process. The server log file is located in:

%SYBASE%\Installer.log

For the PC-client, the log file is in:

%SYBASE%\Installer.log

Unloading Components in *cmdfile*

To unload components by means of a *cmdfile*, you must begin in GUI mode. To begin the unload process:

1   Verify that you are logged in with administrator privileges and that your environment is set up as described in the "Pre-Unloading Tasks" on page 25.

2   Insert the Server CD in the CD-ROM drive.

3   The Studio Installer should start automatically. If it does not, click Start, choose Run, and enter:

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

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

Note Do not use *My Computer* to locate and start the *setup.exe* file. Using this path may result in unexpected behavior.

---

4   Select the type of installation to be performed. Backup Server, Monitor Server, and XP Server are unloaded, by default, with Adaptive Server.

   •   Standard Install – A standard install installs all the components necessary for most users.

   •   Full Install – A full install installs every component on the CD.

- • Customized Install – A customized install allows you to select which components to install. Certain components will automatically be installed if they are required to run other selected components.

5 Select a new installation directory, or accept the default.

Note If you select Customized Install, the next window is the Component Selection screen, which allows you to specify which components to install.

Components that would be installed in a standard installation appear with a check in the check box to the left of the product name. You may select or deselect components from this list. Components with subcomponents have a More... button enabled. Clicking this button allows you to select or deselect subcomponents.

---

6 Click Save.

7 Specify a directory. The component information is automatically generated when saving to the *cmdfile*. You may rename the *cmdfile*.

8 After the information is written to the *cmdfile*, the installer returns you to the GUI. Click Cancel, then Yes, to exit the Studio Installer and terminate the installation

9 To complete the installation using the *cmdfile*, go a command-line prompt at the CD-ROM drive and enter:

- • run.bat -f *path/filename*

where *path* is the full path to the *cmdfile*, and *name* is the name of the *cmdfile*.

10 After the unload process, the system automatically reboots.

11 Check the installation log file to see a record of the installation process. The server log file is located in:

%SYBASE%\Installer.log

The PC-client log file is in:

%SYBASE%\Installer.log

For information on licensing features, see Chapter 4, "Sybase Software Asset Management (SySAM)".

What's Next?

You have successfully unloaded Adaptive Server and its products onto your system. To determine your next step, see the following table:

To Do This	See
Perform a first-time configuration of: • Adaptive Server • Backup Server • Monitor Server • XP Server	Chapter 5, "Installing Sybase Servers"
Install client products	Chapter 7, "Unloading Sybase PC-Client Products from Distribution Media"
Upgrade an existing Adaptive Server	Chapter 9, "Upgrading Sybase Servers"
Configure and use Historical Server	*Sybase Adaptive Server Enterprise Monitor Historical Server User's Guide*
Configure and use Monitor Client-Library	*Sybase Adaptive Server Enterprise Monitor Client-Library Programmer's Guide*

Sybase Software Asset Management (SySAM)

This chapter describes how to license optional Adaptive Server features, and add new licenses to existing servers using Sybase Software Asset Management (SySAM).

Topics covered are:

What Is SySAM?

SySAM is a licensing mechanism that:

- Provides System Administrators with a means to monitor their site's use of Sybase products and optional features, and

- Grants access to select Sybase products and features.

Adaptive Server 12.0 uses SySAM to license optional features.

Adaptive Server Features Licensed Through SySAM

Table 4-1 describes the Adaptive Server features that are licensed using SySAM.

Table 4-1: Licensed Adaptive Server features

Feature Name	License Name	Description
Adaptive Server	ASE_SERVER	The basic Adaptive Server Enterprise product, without optional features.
High Availability	ASE_HA	Adaptive Server failover capabilities for high availability environments.
Distributed Transaction Management	ASE_DTM	Distributed transaction management features, including the Adaptive Server version 12.0 XA interface.
Java in Adaptive Server	ASE_JAVA	Java and XML classes in Adaptive Server databases.
Advanced Security Mechanisms	ASE_ASM	Network-based authentication and encryption using DCE and CyberSafe.

Note The basic Adaptive Server Enterprise license must be registered before any of the optional features can be enabled.

How Does SySAM Work?

SySAM "checks out" licensed features to users, and checks them back in when they are no longer needed. The basic components of SySAM are:

- One or more Adaptive Server products with SySAM support

- One or more license files

- Asset management software, which consists of a license management daemon and a Sybase daemon

Figure 4-1 shows the relationship between these components.

Adaptive Server Check-Out Procedure

When you boot Adaptive Server 12.0, it attempts to locate a license file named *%SYBASE%\%SYBASE_SYSAM%\licenses\license.dat* on the Windows NT system. If the file does not exist, Adaptive Server looks for the license file specified in the environment variable **LM_LICENSE_FILE**

The license file contains a pointer to the SySAM software, or to a remote machine on which SySAM is running. SySAM consists of two daemons—the license management daemon, **lmgrd**, and the **SYBASE** daemon—and utilities to manage licensing activities, **lmutil**. The daemons handle requests to check in or check out licensed features, as shown in Figure 4-1.

Figure 4-1: SySAM Components
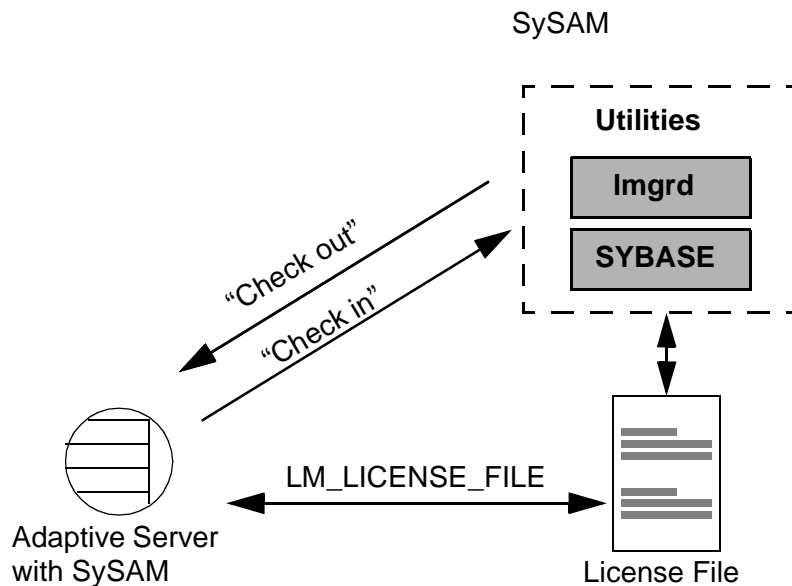
Using information in the license file, Adaptive Server connects to SySAM and attempts to check out a license for the base Adaptive Server product, ASE_SERVER. If the ASE_SERVER license is checked out successfully, Adaptive Server continues to boot and attempts to check out any optional features enabled in *server_name.cfg*.

If Adaptive Server is configured to use optional features, such as distributed transaction management or high availability, it attempts to check out licenses for those features during the boot-up process. If a license is not available for an optional feature, Adaptive Server still starts, but the feature cannot be used.

41

Types of SySAM Systems

The basic components of SySAM can be arranged for a single standalone Adaptive Server, or for a collection of servers on a network.

Standalone System

In standalone systems, SySAM components reside on the same computer that runs Adaptive Server. Standalone SySAM systems can license either Adaptive Server or Adaptive Server with optional features.

Standalone System with Optional Features

In a standalone system where you have licensed optional Adaptive Server features, *all* of the SySAM components shown in Figure 4-1 reside on a single machine. The license file points directly to the asset management software, which runs on the same machine as Adaptive Server.

Standalone System with No Optional Features

In a standalone installation where no optional Adaptive Server features are used, you do not need to run the asset management software. See Figure 4-2. In this system, the license file contains all license information for ASE_SERVER. Adaptive Server obtains the base license from the local license file and *does not* attempt to contact the license daemon software. No optional features can be used in this configuration.
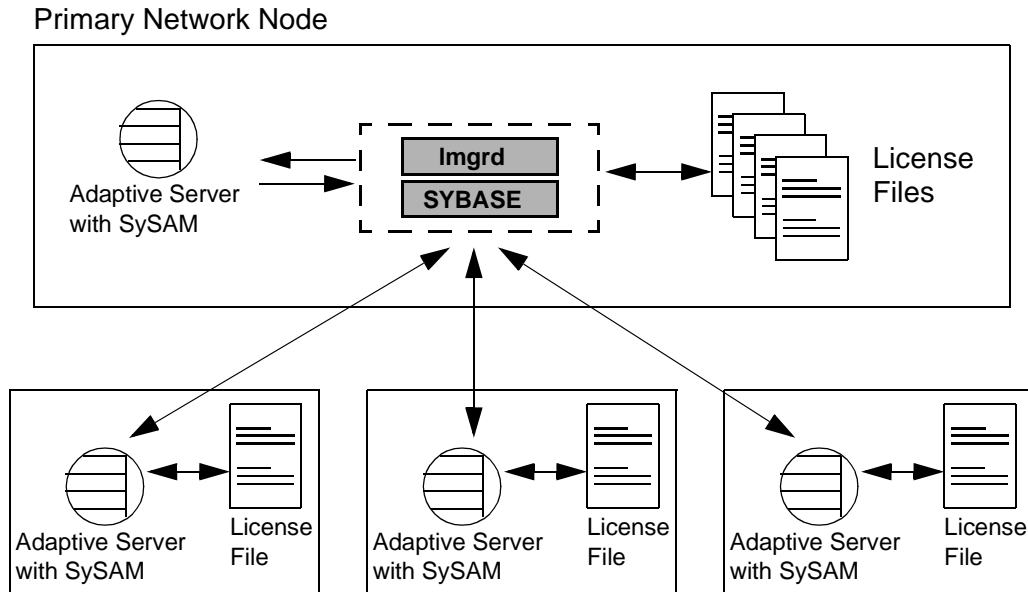
Figure 4-2: Standalone system without optional features
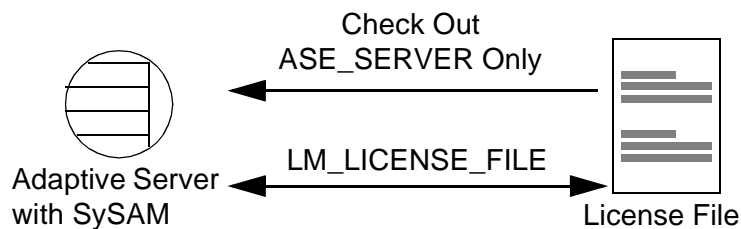
Network System

In a network system, a single machine called the **primary network node** runs SySAM. The software on the primary network node handles check in/check out requests from all other Adaptive Server instances in the system, as shown in Figure 4-3.

Figure 4-3: Network system

Primary Network Node

In a network system, the license files for remote Adaptive Server installations contain only pointers to the primary network node. Servers check out individual licenses using the license files and asset management software that reside on the primary network node.

Setting Up Adaptive Server with SySAM

The steps required to enable SySAM to track the functionality of Adaptive Server depend on the type of asset management system you want to use and on the Adaptive Server features you have purchased. Table 4-2 guides you through the setup process.

Table 4-2: Steps for setting up Adaptive Server for use with SySAM

If You Want To Use:	And You Have Purchased:	Follow These Instructions:
Standalone Asset Management	• Adaptive Server base product, but • *No* additional licensed features	"Installing SySAM Software in Your Enterprise" on page 44
	• Adaptive Server base product, and • One or more licensed Adaptive Server features	1 "Installing SySAM Software in Your Enterprise" on page 44 2 "Starting the SySAM" on page 45

43

If You Want To Use:	And You Have Purchased:	Follow These Instructions:
Network Asset Management	• Adaptive Server base product, with or without additional, licensed features	1 "Installing SySAM Software in Your Enterprise" on page 44 2 "Starting the SySAM" on page 45 3 "Installing SySAM Software in Your Enterprise" on page 44

Installing SySAM Software in Your Enterprise

Whether you want to run a networked software asset management system or a standalone system with licensed Adaptive Server features, you must first enable the asset management software (SySAM) that was installed during the installation of Adaptive Server.

SySAM is already enabled if you licensed the Sybase Adaptive Server and other registered components during the unloading as described in Chapter 3, "Unloading Server Products from Distribution Media".

You must manually enable SySAM if:

• You elected not to register licensed products during the installation, or

• You are adding additional component licenses after the initial installation of Adaptive Server.

Use the instructions in this section to install additional Adaptive Servers with SySAM in a network asset management system.

Before You Begin

Before you begin installing additional Adaptive Servers in a network asset management system, make sure you have the printed Sybase License Certificates that contain your Adaptive Server and options key information.

• Make sure you have installed Adaptive Server and the asset management software on the primary network node. See Chapter 3, "Unloading Server Products from Distribution Media".

• Make sure that the asset management software is running on the primary network node. See "Starting the SySAM" on page 45.

• Collect the following information:

- The host name of the primary network node.

- An unused port number on the primary network server node.

- The remote directory of the network server node on which the asset management software has been installed.

- The printed Sybase License Certificates for all of the optional features you have purchased for this server.

Starting the SySAM

If you are using networked software asset management system, you must run the software on the primary network node before installing additional servers.

Starting the Software Automatically

If you followed the unloading and licensing instructions in Chapter 3, "Unloading Server Products from Distribution Media", SySAM starts automatically if you choose to configure the server while in the Studio Installer.

NT Instructions   The Studio Installer installs SySAM as a Windows NT service, and starts it automatically as part of installation. For a production system, the asset management software should be set to start automatically when you restart your computer.

To start the SySAM service:

1   From the Windows taskbar, click Start | Programs | Sybase | SySAM. This will launch the asset manager.

2   First you are prompted: "Do you have a Sybase Asset Management Certificate to register?"

Answer Yes if this is the primary network node and you have your certificate available.

Answer No if you did not purchase optional feature licenses. Adaptive Server will continue the installation, but no additional features will be enabled.

3   If you answer yes to the previous question you are prompted to enter the following:

- License Manager Host – provide the name of the primary network node.

45

  • License Manager Port Number – the port number of the primary network node.

4   Click OK.

5   The software will prompt you for the following certification information:

  • Order Number

  • Feature Name

  • Feature Count

  • Software Version

  • Authorization Code

6   Click More until all certificates have been entered. Click Done when all certificates have been entered.

Note To designate a special account that the service should use for logging in to the system, refer to the Windows NT online help or the Windows NT printed documentation.

---

7   Click Exit.

Starting the Software Manually

If you did not use the SySAM utility to license Sybase server products during the unload process, you will need to start the asset management software manually:

  •

  • First, run:

```
%SYBASE%\SYSAM-1_0\sysam-1_0.bat
```

  • Then go to *%SYBASE%\%SYBASE_SYSAM\bin*, and run:

```
sysam.bat %sybase%\SYSAM-1_0
```

Verifying the Software is Running

When the **lmgrd** daemon starts, it automatically starts up the **SYBASE** daemon. After you reboot your workstation or manually start **lmgrd**, verify that the license management software is actually running on the system. Use:

```
%Sybase%\SYSAM-1_0\bin\lmutil lmstat -c
```

Make sure that both **lmgrd** and **SYBASE** are running, i.e. "up" before you continue the installation or start Adaptive Server.

Enabling SySAM Features

Before enabling SySAM software, unload the server components to the client machine. See Chapter 3, "Unloading Server Products from Distribution Media" for installation instructions.

After the server components have been unloaded, follow these steps to enable SySAM features on client machines:

1   Verify that the licensing software is running. See"Verifying the Software is Running" on page 46.

2   After the components are copied, the installer prompts: "Do you have Sybase Software Asset Management Certificates to register?"

   Click No. (The certificates should already be registered at the primary network node before installation of the Adaptive Server software on the enterprise client).

3   The installer prompts: "Have you registered Sybase Software Asset Management Certificates at a central license host?"

   Click Yes.

4   Enter the following information about the primary network node from which this machine will be checking out licenses:

   •   **License Manager Host** is the host name of the primary network node on which you installed the asset management software.

   •   **License Manager Port** is an unused port number on the primary network node. The local Adaptive Server uses this port number to contact the primary network node when checking out licenses.

5   Click OK to continue the installation of Adaptive Server and PC-Client components.

   See the Chapter 7, "Unloading Sybase PC-Client Products from Distribution Media" if you need help configuring installed components.

Adding Adaptive Server Features

To add features for which you have licenses:

1 Enable the new feature. See "Adding Additional Licenses" on page 48.

2 Shut down Adaptive Server. See Chapter 11, "Starting and Stopping Servers".

3 Enter additional feature licenses by using the SySAM license manager, **lmgr**. See "Adding Additional Licenses" on page 48.

4 Reread the license file. See "Adding Additional Licenses" on page 48.

5 Restart Adaptive Server. See Chapter 11, "Starting and Stopping Servers".

This section describes how to update the license file to enable Adaptive Server features.

Adding Additional Licenses

If you install additional components that require licenses, you need to update your license information.

To add additional licenses to SySAM:

1 Log on to the primary network node (server) that hosts the SySAM services.

2 From the Windows Start menu, select Programs | Sybase | SySAM.

3 Click Yes when prompted: "Do you have Sybase Software Asset Management Certificates to register?" The SySAM License Manager screen prompts you for:

- Order Number

- Feature Name

- Feature Count

- Software Version

- Authorization Code

Click More until you have entered all available licenses. Click Done.

4 Because you are adding additional licenses to an existing file, you must notify the license daemons of the changes. Before you issue the reread command:

- Verify that SySAM is running:

  %SYBASE%\%SYBASE_SYSAM%\bin\lmutil lmstat -c

- Shut down the server to which you are adding the new license. See Chapter 11, "Starting and Stopping Servers".

5 From a command-line prompt, enter:

    %SYBASE%\SYSAM-1_0\bin\lmutil lmreread

6 If you encounter problems with new licenses, check the *lmgrd.log* file in the *%SYBASE%\%SYBASE_SYSAM%\bin* directory to see that they were properly appended to the license file.

Adding a License to a Pre-Existing Server

To upgrade a base-level Adaptive Server to a fully licensed product, you must update license information and reread the license file.

1 From the Windows taskbar, select Start | Programs | Sybase | SySAM.

2 Click Yes at the prompt: "Do you have Sybase Software Asset Management Certificates to register?"

3 At the SySAM License Manager input screen, for each product enter:

- Order Number
- Feature Name
- Feature Count
- Software Version
- Authorization Code

4 Click More until you have entered all available licenses.

5 Click Done, and exit the Studio Installer.

6 Go to command-line prompt and enter:

    %SYBASE%\SYSAM-1_0\bin\lmutil lmreread

The license manager reads the new license information and enables the licensed features.

7 Shut down and restart the server. See Chapter 11, "Starting and Stopping Servers".

8   If necessary, check the *lmgrd.log* file if you encounter problems.

%SYBASE%\%SYBASE_SYSAM%\log\lmgrd.log

Starting Adaptive Server with SySAM features

When you start Adaptive Server, it automatically tries to check out a license for ASE_SERVER. Adaptive Server attempts to check out licenses for each configured optional feature.

Optional features, such as distributed transaction management, can be turned on or off using **sp_configure** parameters. Table 4-3 lists the parameters used to configure optional features.

Table 4-3: Configuration parameters for optional features

Feature Name	License Name	Configuration Parameter
High Availability	ASE_HA	enable HA
Distributed Transaction Management	ASE_DTM	enable xact coordination enable DTM
Java in Adaptive Server	ASE_JAVA	enable java
Advanced Security Mechanisms	ASE_ASM	use security services

By default, the configuration parameters for optional features are set to 0 (off). To enable an optional feature, use **sp_configure** to set its configuration parameter to 1, and reboot Adaptive Server. During the boot sequence, Adaptive Server attempts to check out licenses for all configured features.

Note Some features require additional preparation before you can use them. For more information, see Chapter 10, "Adding Optional Functionality to Adaptive Server".

•   For information about configuring Adaptive Server as a companion server in a high availability system, see *Using Sybase Failover in a High Availability System.*

•   For information about configuring Adaptive Server with Distributed Transaction, see *Using Adaptive Server Distributed Transaction Management Features.*

Troubleshooting SySAM

When you boot Adaptive Server with SySAM support, problems acquiring licenses or contacting the asset management software appear in the Adaptive Server error log file, *lmgrd.log* (*%SYBASE%\%SYBASE_SYSAM%\log*).

Table 4-4 describes the SySAM error messages and suggests ways to correct common problems.

Table 4-4: SySAM error messages

Message	Description	Action
Use license file *filename*.	This message identifies the license file that Adaptive Server uses.	This is a normal start-up message; no action is required.
Feature *feature_name* is not licensed.	There is no license available for the specified optional feature.	You must purchase and install a valid license for the feature before it can be used. See Chapter 3, "Unloading Server Products from Distribution Media".
There is no valid license for ASE server product. Server is booting with all the optional features disabled.	Adaptive Server cannot find a valid license file, or it cannot contact the asset management software to check out an ASE_SERVER license.	When Adaptive Server cannot check out an ASE_SERVER license, the server boots but does not enable any optional features. If you have purchased an ASE_SERVER license, make sure it has been installed. Also, make sure the license file exists and has been defined in LM_LICENSE_FILE.
License manager initialization fails.	The asset management software did not initialize.	Use "Starting the SySAM" on page 45.
Feature *feature_name* is over drafted *n* times.	All licenses for the specified feature have already been checked out by other servers.	Adaptive Server enables the optional feature, even though all available licenses have been used by other servers. Contact your authorized Sybase reseller to purchase an additional license for the feature.
Warning: there is no valid license for ASE_JAVA and therefore feature JAVA is not initialized.	There is no license available for the configured feature.	Adaptive Server does not enable the optional feature until it can obtain a valid license. Purchase and install a license for the feature. Contact your authorized Sybase reseller.
Warning: there is no valid license for ASE_ASM and therefore feature ASM is not initialized.	There is no license available for the configured feature.	Adaptive Server does not enable the optional feature until it can obtain a valid license. Purchase and install a license for the feature. Contact your authorized Sybase reseller.
Warning: ASE_HA does not have a valid license and therefore is not initialized.	There is no license available for the configured feature.	Adaptive Server does not enable the optional feature until it can obtain a valid license. Purchase and install a license for the feature. Contact your authorized Sybase reseller.

51

Message	Description	Action
Warning: ASE_DTM does not have a valid license and therefore is not initialized.	There is no license available for the configured feature.	Adaptive Server does not enable the optional feature until it can obtain a valid license. Purchase and install a license for the feature. Contact your authorized Sybase reseller.

Authorization Code Input Error

When you purchase licenses for Sybase Adaptive Server products, you are issued a Sybase Software Asset Management Certificate. The certificate has the following information for each product:

- Order Number

- Feature Name

- Feature Count

- Software Version

- Authorization Code

- Product Description

```
123456789123123456789123123456789123123456789123
```

This information is used by SySAM to build the license file, with new licensed features appended to the end of the file. Here is a sample license file:

```
SERVER server1 ANY 4100
VENDOR SYBASE \server_name\sybase\SYSAM-1_0\bin\licenses

USE_SERVER

INCREMENT ASE_SERVER SYBASE 12.0 PERMANENT 1000
123456789123 SN=10001 OVERDRAFT=10000 ck=0

INCREMENT ASE_JAVA SYBASE 12.0 PERMANENT 1000
123456789123 SN=10001 OVERDRAFT=10000 ck=0

INCREMENT ASE_DTM SYBASE 12.0 PERMANENT 1000
123456789123 SN=10001 OVERDRAFT=10000 ck=0

INCREMENT ASE_HA SYBASE 12.0 PERMANENT 1000
123456789123 SN=10001 OVERDRAFT=10000 ck=0

INCREMENT ASE_ASM SYBASE 12.0 PERMANENT 1000
123456789123 SN=10001 OVERDRAFT=10000 ck=0
```

- *ASE_<FEATURE>* is the feature name, such as ASE_SERVER, ASE_JAVA, etc.

- *12.0* is the version number.

- *Feature Count* immediately follows the license type, *PERMANENT*.

- *SN=10001* is the Order Number.

- *OVERDRAFT= ###* is the maximum licenses that can be checked out.

- *123456789123* is a 12-digit number representing the authorization code.

The authorization code is case sensitive. If you make a mistake while entering the authorization code, correct it by accessing the license file with a text editor, making the necessary changes, and saving the file.

The file is located in *%SYBASE%\%SYBASE_SYSAM\licenses/license.dat*.

 Warning! Tampering with any portion of the licenses file other than the authorization code invalidates the license.

What's Next?

Some references that may help you get started using your new Adaptive Server are:

- *System Administration Guide*

- *Transact-SQL User's Guide* to learn how to write queries

For information on developing a backup and recovery plan and backing up and restoring user databases, see the *System Administration Guide*.

Monitor Server requires some additional configuration after installation. See the *Adaptive Server Enterprise Monitor Server User's Guide*.

For information on using extended stored procedures, see the *Transact-SQL User's Guide*.

For information on expanding the functionality to your Adaptive Server, see Chapter 10, "Adding Optional Functionality to Adaptive Server".

For information on localizing your Adaptive Server, see Chapter 8, "Customizing Localization for Adaptive Server".

CHAPTER 5 **Installing Sybase Servers**

This chapter provides instructions for installing a new Adaptive Server, Backup Server and Monitor Server.

Topics covered include:

Overview

After you have unloaded the product files, you are ready to install one or more of the following Sybase servers:

- Adaptive Server

- Backup Server

- Full-Text Search (FTS) engine

- Monitor Server

The basic process for installing Sybase servers is:

1   Perform the pre-installation tasks as described in "Pre-Installation Tasks" on page 56.

2   Perform the installation using any of the methods described in "Installation Methods" on page 58.

3   Perform the post-installation tasks as described in Chapter 6, "Post-Installation Tasks".

55

Pre-Installation Tasks

Before installing the Sybase servers:

1   Read the "Special Installation Instructions" section in the release bulletin.

2   Verify that your operating system meets the release-level, RAM, and network-protocol requirements.

    These requirements are fully documented in Chapter 2, "Installation Requirements" and in the release bulletin.

3   Install operating system patches, if required.

    Required operating system patches are described in the release bulletin for the product.

4   Adjust shared memory segments.

    Depending on the number and types of devices you use for backup (dump) and recovery (load), you may need to adjust the shared memory segment parameter in the operating system configuration file to accommodate concurrent Backup Server processes. The default number of shared memory segments available for process attachments is 6.

5   Determine the location, type, and size of each database device.

    You must provide this information during the installation of Adaptive Server. Devices are operating system files or portions of a disk (called raw partitions) used to store databases and database objects. For details, see "Determining the Location, Type, and Size of a Database Device" on page 56.

6   Review the SySAM procedures and plan your SySAM configuration using Chapter 4, "Sybase Software Asset Management (SySAM)".

Determining the Location, Type, and Size of a Database Device

Adaptive Server requires several database devices. Table 5-1 below shows baseline values for each of the devices. See the release bulletin for any last-minute changes to these values.

Table 5-1: Adaptive Server database devices

Device	Purpose	Minimum Size	Recommended Size
master	Stores system databases	25MB	30MB
sysprocsdev (also called the *sybsystemprocs* device)	Stores the *sybsystemprocs* database	80MB	80MB (plus any space for holding stored procedures that you have created)
sybsystemdb	Transaction processing	4MB	5 – 20MB
sybsecurity (optional)	Required for auditing	0–5MB	7MB; more for specialized auditing

To choose a raw partition:

1   Determine which raw partitions are available.

2   Determine the sizes of the raw partitions.

3   From the list of available raw partitions, select a raw partition for each device, based on the size recommendations in Table 5-1 on page 57.

4   Verify with the operating system administrator that the partition you have chosen is available.

5   Make sure the "sybase" user has read and write privileges to the raw partition.

Note For more information on choosing a raw partition, see your operating system documentation.

6   If you have not unloaded the Adaptive Server software from the CD onto your system, complete the procedures in Chapter 3, "Unloading Server Products from Distribution Media".

Installing Server Components

This section describes how to install Adaptive Server version 12.0. Follow the instructions in this section to install Adaptive Server, Backup Server, or Monitor Server.

Be sure that you are logged in as "sybase", and that you have performed the "Pre-Installation Tasks" on page 56.

Installation Methods

Use any of the following methods to install Sybase Servers:

*   Studio Installer – use the Studio Installer to calls the installer utility to install servers and customize them for a production environment. Fully customizing a server at installation time reduces the need to make changes later. The Studio Installer is described in Chapter 3, "Unloading from Distribution Media".

*

*   You can access directly the installation utility **syconfig**, in the *%SYBASE%\%SYBASE_ASE%/bin* directory to configure a new server, upgrade your existing server, and change the default language of the server.

*   Resource file – First use the Studio Installer to unload the server components, then run the **sybatch** utility to install Adaptive Server and Backup Server for additional sites that require identical servers. Also allows installation in environments in which X-Windows is not available. You cannot install Monitor Server and XP Server using resource files.

Setting Environment Variables

After exiting the Studio Installer, you must set some environment variables before you can configure and run Adaptive Server and other components successfully.

Studio Installer unloads two files containing environment variables in:

*   *%SYBASE%\SYBASE.bat*

*   *%SYBASE%\%SYBASE_ASE%\ASE-12_0.bat*

To set the environment variables, you must modify the component's RUN environment using the variables in the *SYBASE.bat* and *ASE-12_0.bat* files.

Note For instructions on setting jConnect environment variables, see the documentation for jConnect.

Installation – Adaptive Server

The following procedure assumes that you have completed the procedures in the section "Pre-Installation Tasks" on page 56. To continue installing Adaptive Server, complete the following procedures.

When Adaptive Server has been unloaded, the Studio Installer begins the configuration process.

To configure Adaptive Server:

1   Select Yes when the Studio Installer prompts: "OK to configure component Adaptive Server Enterprise?"

> **Note** If you select No, the Studio Installer will exit. You can complete the installation by invoking *%SYBASE%\\%SYBASE_ASE%\bin\syconfig.exe*.

2   Select Adaptive Server from the icons on the left.

3   Next, click Create Adaptive Server.

4   The Adaptive Server name is generated and supplied from the server machine ID. You may change the name if you want. Click **Continue**.

5   Specify the size and location of the master database, *master.dat*.

    The default is 30MB. The minimum allowable size is 25MB.

    The default directory is: *%SYBASE%\data\master.dat*.

6   Set the size of *sybprocs.dat* to a minimum of 80MB.

    The default value, 80MB, is the recommended size. Because the *sybsystemprocs* database is constantly increasing in size, this allows enough space on the device for growth.

7   Provide an error log path name.

    The default is:

    %SYBASE%\ASE-12_0\install\errorlog

    You can provide a path name other than the default path provided.

    From this screen you may also set:

    • Command Line Parameters: You can enter command-line options that set parameters for every instance of the server.

    • Configure Default XP Server: The XP Server must be configured to use the MAIL support in Adaptive Server.

- Network Addresses: You can add and delete network connections used by the server, and specify network protocol values for new network connections. A valid network IP address is required to complete the installation and configuration of Sybase servers.

8   Click Continue when entries are correct. The installation program:

- Creates the *%SYBASE%* directory structure and places files in the appropriate subdirectories

- Starts Adaptive Server

- Creates the Adaptive Server, Backup Server, Monitor Server, XP Server

- Creates the master and system procedures device files

- Installs system stored procedures

- Installs jConnect metadata and stored procedures

- Sets permissions

- Installs the language modules

- Adds entries to the Windows NT Registry

- Shuts down the server

When the process is completed, the FINISHED window displays. The 2.4MB of disk space used by the installation program for temporary files is released when installation is complete.

9   You can set up servers to start automatically. For details, see Chapter 11, "Starting and Stopping Servers".

Note If any Sybase executables or DLLs are loaded into memory, and the installation program tries to overwrite any of the files that are in use, the installation program exits without warning. Close any Sybase products in use and restart the installation.

---

10 When you complete the setup process, click **Continue**. This returns you to the Configure Sybase Servers screen where you may select Monitor Server and the Backup Server icons to continue the installation process.

11 Do one of the following:

- Proceed to the attribute screen for the next server type. Then, go to the section in this manual that describes the next part of the custom installation process for that server. If you chose:

- Verify that the installation was successful as described in Chapter 6, "Post-Installation Tasks"

- Complete the post-installation tasks as described in Chapter 6, "Post-Installation Tasks".

Installation – Backup Server

The following procedure assumes that you have completed the procedure in the section "Pre-Installation Tasks" on page 56. To continue installing Backup Server, complete the following procedure.

1   If you selected Backup Server to be installed, the Backup Server attribute screen is displayed.

2   Provide the related Adaptive Server name. This is the name of the Adaptive Server that will use this Backup Server.

3   Provide the Sybase System Administrator (SA) user name for the related Adaptive Server, or accept the default value.

4   Provide the Adaptive Server SA password. This is the password for the related Adaptive Server.

5   Determine the error log path name for Backup Server. Accept the default provided or provide another location.

6   Determine the location of the tape configuration file.

   Backup Server reads this file when a **dump** command is issued, to determine the device type and characteristics of the dump device specified in the **dump** command. Having access to this information speeds up the dump (recovery) process.

   The default location is *%SYBASE%|%SYBASE_ASE%\backup_tape.cfg*.

7   Specify the language you want Backup Server to use for its error messages. The default language is U.S. English.

   The language available depends on which language modules were downloaded from distribution media to your system.

61

By default, all character sets are copied from the distribution media when performing a Standard or Full install.

8   Specify the character set you want Backup Server to use.

Other options are:

- cp850: Code Page 850 (Multilingual) character set

- cp437: Code Page 437 (United States) character set

- mac: Macintosh default character set for Western European locales

- ISO 8859-1 (Latin-1) Western European 8-bit character set

- UTF-8 character set

9   Specify the maximum number of network connections.

You can accept the default or change it.

This option specifies the total number of network connections available if you are backing up (dump) or restoring (load) a database over the network to a remote Backup Server.

This option is not necessary if you are dumping to the default Backup Server, which is local. Set to 0.

10   Specify the maximum number of server connections.

You can accept the default or change it.

This option specifies the number of server connections to Backup Server. Backup Server requires at least:

- Two connections for each dump (backup) operation

- One connection for each load (recovery) operation

- One connection for volume change messages

Allow a maximum of three times the number of expected concurrent dump and load sessions.

11   For the *sql.ini* File Entry attribute, specify the transport type, host name, and port number.

These entities comprise the *sql.ini* file entry. This entry defines how Backup Server and Adaptive Server find and communicate with each other on the network. **sybatch** adds this entry to the *sql.ini* file during the installation process.

- Transport type – the menu provides a list of network protocols supported by Sybase. TCP is the default. Some network protocols in the menu may not be valid for your platform. Check with your operating system administrator.

- Host name – the host name is the machine name where you are installing Backup Server.

- Port number – if you did not change the default protocol, the port number displayed is the first available port address.

    The port number you specify cannot be used for any purpose other than Backup Server.

    If you change the default port number, verify that the new port is not already in use. Check with your operating system administrator.

    If you selected a protocol other than the default, you may not be able to use the first available port number. Check with the operating system administrator to see what port numbers are available.

12 Do one of the following:

- Proceed to the attribute screen for the next server type. Then, go to the section in this manual that describes the next part of the custom installation process for that server. If you chose:

    Monitor Server – go to "Installation – Monitor Server" on page 63.

    FTS – go to "Installation – FTS" on page 66.

- To create only the server or servers you have specified, click Build Server.

    sybatch displays a Status Output screen that shows the status of the various installation tasks as they execute. Go to "Viewing the Installation Status Output Screen" on page 67.

Installation – Monitor Server

The following procedure assumes that you have completed the procedure in the section "Pre-Installation Tasks" on page 56. To continue installing Monitor Server, complete the following procedure.

1   If you selected Monitor Server to be installed, the Monitor Server attribute screen is displayed.

2   Provide the related Adaptive Server name.

3   Specify the Sybase System Administrator (SA) user name.

This option is required unless the USER environment variable is set.

This name specifies the Monitor Server superuser. It must be a valid login account for the Adaptive Server to be monitored. For production systems, Sybase recommends that you use the "sa" or "sybase" user account as the Monitor Server superuser.

Monitor Server uses the superuser account to connect to Adaptive Server to run special stored procedures and to verify shutdown requests that can be performed only by the superuser.

4   Provide the Adaptive Server SA password.

This is the password of the Monitor Server superuser.

If the password is omitted, Monitor Server prompts for a password during start-up.

5   Determine the maximum number of connections allowed to Monitor Server.

Valid values are 1–20. The default is 5.

A connection to Monitor Server can be any of the following:

- A monitor in Sybase Central,

- An active Historical Server session or a scheduled Historical Server recording session, or

- A connection to Monitor Server from a Monitor Client-Library application.

For example, if a user starts a Historical Server recording session, and another user opens the Performance Summary Monitor in Sybase Central, two connections to Monitor Server are used. If the default configuration of five connections is in effect, three additional connections to Monitor Server are available.

6   Specify the error log path.

This is the path name of the Monitor Server log file, where informational and error messages are logged.

The default location is the directory from which Monitor Server is started and the error log name is *ms.log*.

7   Specify the path of the configuration file.

This is the path name of the Monitor Server configuration file. A default configuration file is not provided. This file is optional, but if specified, the values in the configuration file override the default runtime parameters that are otherwise used by Monitor Server.

8   Specify the shared memory directory, where *servername* is the name of your Adaptive Server.

This specifies the name of the directory where the *servername.krg* shared memory file is located.

If this parameter is omitted, Monitor Server looks for the shared memory %SYBASE% directory.

If you did not change the default location while configuring the Adaptive Server, the default value is correct. Otherwise, use the value you specified for the sever.

9   For the *sql.ini* File Entry attribute, specify the transport type, host name, and port number. These entities comprise the *sql.ini* file entry. This entry enables Monitor Server and Adaptive Server to find and communicate with each other on the network. **sybatch** adds this entry to the *sql.ini* file during the installation process.

- Transport type – the menu provides a list of network protocols supported by Sybase. TCP is the default. Some network protocols in the menu may not be valid for your platform. Check with your operating system administrator.

- Host name – the host name is the machine name where you installed Monitor Server.

- Port number – if you did not change the default protocol, the port number displayed is the first available port address.

  The port number you specify cannot be used for any purpose other than installing the Monitor Server.

  If you change the default port number, verify that the new port is not already in use.

  If you selected a protocol other than the default, you may not be able to use the first available port number. Check with the operating system administrator to see what port numbers are available.

10   Do one of the following:

- • Proceed to the attribute screen for the next server type. Then, go to the section in this manual that describes the next part of the custom installation process for that server. If you chose:

  FTS – go to "Installation – FTS" on page 66.

- • To create only the server or servers you have specified, click Build Server.

  sybatch displays a Status Output screen that shows the status of the various installation tasks as they execute. Go to "Viewing the Installation Status Output Screen" on page 67.

Installation – FTS

The following procedure assumes that you have completed the procedure in the section "Pre-Installation Tasks" on page 56. To continue installing FTS, complete the following procedure.

1 Errorlog: The default is
   %SYBASE%\%SYBASE_FTS%\install\<servername>.log

2 Collection directory: Accept the default,
   %SYBASE%\%SYBASE_FTS%\collections

3 Default Database: *text_db*

4 Language: us_english

5 Character set: iso_1

6 Minimum number of sessions: 10

7 Maximum number of sessions: 100

8 For the *sql.ini* File Entry attribute, specify the transport type, host name, and port number. These entities comprise the *sql.ini* file entry. This entry enables FTS and Adaptive Server to find and communicate with each other on the network. **sybatch** adds this entry to the *sql.ini* file during the installation process.

   - • Transport type – the menu provides a list of network protocols supported by Sybase. TCP is the default. Some network protocols in the menu may not be valid for your platform. Check with your operating system administrator.

   - • Host name – the host name is the name of the machine where you installed Server.

- Port number – if you did not change the default protocol, the port number displayed is the first available port address.

  The port number you specify cannot be used for any purpose other than installing the .

  If you choose to change the default port number, verify that the new port is not already in use.

  If you selected a protocol other than the default, you may not be able to use the first available port number. Check with the operating system administrator to see what port numbers are available for use.

9   To create the server, click Build Server.

   sybatch displays a Status Output screen that shows the status of the various installation tasks as they execute. Go to "Viewing the Installation Status Output Screen" on page 67.

See *Standard Full-Text Search Specialty Data Store User's Guide* for information on the FTS feature.

Viewing the Installation Status Output Screen

Use the information in this section each time you click the Build Server button after specifying the attributes for the server.

It takes approximately 10 to 15 minutes to build each server.

1   Review the Status Output screen for informational messages about the installation process.

   If the installation is not successful, see Chapter 12, "Troubleshooting".

   If the installation is successful, you see a message similar to this on the Status Output screen:

   ```
   Server server_name was successfully created.
    Done.
   ```

2   If you installed Adaptive Server during this **sybatch** session, go to "Changing the Default Language and Character Set" on page HIDDEN.

Installation Complete

You have completed the installation process. Go to Chapter 6, "Post-Installation Tasks".

Resource File Installation

You can create an Adaptive Server or Backup Server, using values specified in a resource file that defines the attributes for the server.

Resource files are ASCII format template files that contain configuration variables. To use the template files, edit the resource file, replace variables with desired values, and execute the **sybatch** utility. The **sybatch** utility uses the variables to create servers.

Resource files allow you to create servers in batch mode. You can create servers on multiple systems from the same resource file by editing a few values in that file. Within a single resource file, you can create only one server at a time.

The server files must already exist on the computer before the servers can be created. Use procedures in Chapter 3, "Unloading Server Products from Distribution Media".

Note You cannot install Monitor Server, XP Server or FTS using resource files.

To install an Adaptive Server or Backup Server using resource files:

1   Edit a resource file as described in "Editing a Resource File" on page 68.

2   Execute the **sybatch** utility, using the edited resource file as described in "Running the sybatch Utility" on page 72.

Editing a Resource File

You can edit a resource file by:

*   Editing a sample resource file

*   Editing the resource file created by the **sybatch** utility

Editing a Sample Resource File

Sample resource files for creating Adaptive Server and Backup Server are included in your Adaptive Server distribution in:

- *%SYBASE%\ASE-12_0\bin\sybatch.exe*

- and the resource file template (*sybatch_sample.res*) in *%SYBASE%\%SYBASE_ASE\sample\server*.

Edit the resource file using a text editor such as Windows Notepad. You might want to edit a copy of the file.

Note the following:

- If you use USE-DEFAULT as the Adaptive Server name, the utility substitutes the name of the computer on which it is running for the server name. If you use USE-DEFAULT, do not create Backup Server entries in the resource file. They are created automatically using the default name.

- To create a server with a different name, change the Adaptive Server name and use the new name with the "_back" extensions for Backup Server. For example, the Backup Server for PIANO should be PIANO_back.

- The master device size must be at least 30MB.

- The system procedure device and *sybsystemprocs* database sizes must be at least 80MB.

- The auditing entries in the resource file are not supported and will not be processed by the utility. To establish auditing, use the procedures provided in Chapter 10, "Adding Optional Functionality to Adaptive Server".

Verifying That You Can Connect to Servers

Use **isql** or **dsedit** to perform a quick test.

1   Use **isql** to connect to servers:

- At the command prompt enter:

      isql -Usa -Ppassword -Sserver_name

  where *server_name* is the Adaptive Server, Monitor Server, or Historical Server name.

  The command prompt is displayed if the login is successful.

- To display the Adaptive Server version number, enter:

      1> select @@version

69

```
2> go
```

Adaptive Servers's version number is displayed. The output should show Adaptive Server at version 12.0.

2   Highlight the server_name, from the Server Option drop-down menu, select Ping.

Resource File Variables

Table 5-2 lists the resource file variables. Before running the resource file, delete or change all variables that start with "PUT-THE".

Table 5-2: Resource file variable values

Variable	Description
PUT-THE-BOOT-DIRECTORY (sybinit)	The directory in which to install Adaptive Server, such as *C:\sybase*.
PUT-THE-RELEASE-DIRECTORY (sybinit)	The Program folder for the screen icons.
PUT-THE-PORT-NUMBER	The port number by which to identify Adaptive Server on the network, such as 5000.
PUT-THE-NAME-OF-THE-SERVER	The Adaptive Server name. Example names include TEST, USE-DEFAULT, or any name up to 31 characters in length.
PUT-THE-PATH-OF -YOUR-MASTER-DEVICE-HERE	The master device path name and file name, such as *C:\sybase\data\master.dat*.
PUT-THE-SIZE-OF-YOUR-MASTER-DEVICE-HERE-MINIMUM-SHOULD-BE-30MB	The master device size, such as 30 for 30MB.
PUT-THE-PATH-AND-NAME-OF-YOUR-SYBSYSTEMPROCS-DEVICE-HERE	The system procedures path name and file name, such as *C:\sybase\data\sybprocs.dat*.
PUT-THE-SIZE-OF-YOUR-SYBSYSTEMPROCS-DEVICE-HERE-MINIMUM-SHOULD-BE-60MB	The size of the system procedures device, which stores the *sybsystemprocs* database, such as 80 for 80MB (default).
PUT-THE-PATH-AND-NAME-OF-THE-ERRORLOG	The path in which Adaptive Server error logs are placed, such as *C:\sybase\install\error.log*.
PUT-THE-CHARACTERSET (sqlsrv)	The character set used by Adaptive Server, such as cp850.
PUT-THE-CHARACTERSET (sybinit)	The character set used to install Sybase products, such as cp850.
PUT-THE-NAME-OF-THE-BACKUP-SERVER (default Backup Server)	The name of the default server to be used as a model to create the Backup Server. Example names include TEST_BS or USE-DEFAULT. If you specified a custom Adaptive Server name, add the extension "_BS" to the name.
PUT-THE-NAME-OF-THE-BACKUP-SERVER (Backup Server)	The Backup Server name. Example names include TEST_BS or USE-DEFAULT. If you specified a custom Adaptive Server name, add the extension "_BS" to the name.

71

Variable	Description
PUT-THE-PATH-AND-NAME-OF-THE-BACKUP-ERRORLOG (Backup Server)	The path in which Backup Server error logs are placed, such as *c:\sybase\install\backup.log*.
PUT-THE-PORT-NUMBER (Backup Server)	The port number by which to identify Backup Server on the network, such as 5001.
PUT-THE-CHARACTERSET (Backup Server)	The character set used by Backup Server, such as cp850.
PUT-THE-PATH-AND-NAME-OF-THE-MONITOR-ERRORLOG (Monitor Server)	The path in which Monitor Server error logs are placed, such as *c:\sybase\install\ms.log*.
PUT-THE-PORT-NUMBER (Monitor Server)	The port number by which to identify Monitor Server on the network, such as 5002.
PUT-THE-NAME-OF-THE-ADAPTIVE-SERVER (default Monitor Server)	The name of the default server to be used as a model to create Monitor Server. Example names include TEST-MS or USE-DEFAULT. If you specified a custom Adaptive Server name, add the extension "-MS" to the name.
PUT-THE-NAME-OF-THE-MONITOR-SERVER (Monitor Server)	The Monitor Server name. Example names include TEST-MS or USE-DEFAULT. If you specified a custom Adaptive Server name, add the extension "-MS" to the name.

Running the *sybatch* Utility

To run the **sybatch** utility using a resource file:

1 Open a Command Prompt window.

2 Enter:

```
cd %SYBASE%\%SYBASE_ASE%\sample\server
sybatch -r sybatch_sample.res
```

where *sybatch_sample.res* is the name of the resource file.

When you have completed resource file installation, go to Chapter 6, "Post-Installation Tasks".

What's Next?

Adaptive Server	You have a running server, as well as various system databases and system tables. Some references that may help you get started using your new Adaptive Server are:

- *Introducing Sybase Adaptive Server for UNIX Platforms* for an overview of Adaptive Server

- "Initializing Database Devices" and "Creating User Databases" in the *System Administration Guide* for information about creating an Adaptive Server user database and its devices

- *Transact-SQL User's Guide* to learn how to write queries

Backup Server	For information on developing a backup and recovery plan and backing up and restoring user databases, see the *System Administration Guide*.
Monitor Server	Monitor Server requires some additional configuration after installation. See the *Adaptive Server Enterprise Monitor Server User's Guide*.
XP Server	For information on using extended stored procedures, see the *Transact-SQL User's Guide*.
FTS	For information on using Full-Text Search capabilities, see the *Standard Full-Text Search Specialty Data Store User's Guide*.

Post-Installation Tasks

This chapter discusses post-installation tasks, including the configuration of jConnect, and describes the method for uninstalling servers. This chapter covers these topics:

Post-Installation Tasks

After completing the custom installation:

• Setting the System Administrator's Password

• Resetting Variables

Setting the System Administrator's Password

A user account called "sa" is created for the System Administrator when the Sybase software is installed. A user logged in as "sa" can use any database on Adaptive Server, including *master* with full privileges.

Immediately after a new installation, there is no password on the "sa" account. The initial default value for the password is NULL. In a production environment, the System Administrator should always use a non-default password.

The System Administrator should log in to the new Adaptive Server as "sa" and set a password with the **sp_password** system procedure:

```
isql -Usa -P -Sserver-name
1> sp_password null, new-password
2> go
```

Resetting Variables

If you install multiple versions of Adaptive Server, or if you intend to access different Adaptive Servers on your network, you may want to change the environment variables PATH, DSLISTEN, DSQUERY, TEMP, CLASSPATH, and SYBASE.

Reset variables temporarily

In most cases, you can temporarily change an environment variable by using the Windows NT **set** command from a Windows NT command prompt.

For example, to change the value of DSQUERY temporarily, enter this in a Command Prompt Window:

```
set DSQUERY = new-value
```

Any Sybase product that you start from the current window uses *new-value* rather than the value specified in the Windows NT Registry. *new-value* is lost when you close the window or log out of Windows NT.

You cannot override the PATH environment variable using the **set** command.

Reset variables permanently

To change system environment variables permanently to use the Environment area of the System option in the Control Panel.

Setting jConnect Environment Variables

To test the jConnect installation and use the jConnect classes you installed, you must set the JDBC_HOME and CLASSPATH environment variables.

Setting JDBC_HOME

JDBC_HOME represents the directory where you install jConnect.

Note The ZIP file installs everything below a directory with the specific jConnect driver's name.

For example, if you unloaded *jconnect-5_2*, you would set JDBC_HOME to:

```
%SYBASE%\jConnect-5_2
```

Setting CLASSPATH

CLASSPATH is the location of the jConnect runtime classes and/or JAR files, and the Java home library for JDK 1.1.x. This section describes what you need in your CLASSPATH depending on which versions of JDK and jConnect you are using.

Note If you are using JRE or jView instead of JDK, see the documentation for those products for instructions on setting the CLASSPATH variable.

On Windows NT and Windows 95 systems, make sure that file and directory names are no longer than eight characters plus a three-character suffix ("8.3 format"), or that you use abbreviated ("mangled") names as displayed in a DOS directory listing (for example, *progra~1* instead of *program files*).

jConnect 4.x and JDK 1.1.x

To use jConnect 4.x with JDK 1.1.x, set the CLASSPATH to:

%JAVA_HOME%\lib\classes.zip;%JDBC_HOME%\classes

jConnect 4.x and Java 2 (JDK 1.2)

To use jConnect 4.x with Java 2, set the CLASSPATH to:

%JDBC_HOME%\classes

Java 2 (JDK 1.2) does not require you to set the location of the Java runtime classes in your CLASSPATH.

jConnect 5.x and Java 2 (JDK 1.2)

To use Java 2 (JDK 1.2) with jConnect 5.x, set the CLASSPATH to:

%JDBC_HOME%\classes\jconn2.jar

Java 2 (JDK 1.2) does not require you to set the location of the Java runtime classes in your CLASSPATH.

To run the samples or the TDS-tunnelling servlet, set the CLASSPATH to:

%JDBC_HOME%\classes\jconn2.jar;%JDBC_HOME%\classes

Note If you install both jConnect 4.x and jConnect 5.x, be sure that your CLASSPATH is set correctly. Sybase recommends that you do not run JDK 1.1.x with jConnect 5.x

---

In addition, the CLASSPATH should include the location of any application classes you have defined.

As explained in the next section, if you use Netscape, some restrictions may apply to the way you set your CLASSPATH environment variable.

Restrictions on Setting CLASSPATH When Using Netscape

The Java VM security manager does not allow a version of jConnect installed in your local file system to create a connection to a server, even if the server is your local system. This can create a problem if you use Netscape to run an applet that uses jConnect.

When Netscape needs to load jConnect to create a connection to a server, it looks for a CLASSPATH defined in its environment to find the jConnect classes. If it finds a CLASSPATH that you have defined to point to your local jConnect installation, it loads jConnect directly from the local file system, rather than from the server, and tries to create a connection. This generates a security error and the connection fails.

Therefore, if you are using Netscape to run jConnect applets, do not set the CLASSPATH to the local jConnect directory.

Installing Stored Procedures for jConnect

To use function escapes and **DatabaseMetaData** methods, you must install stored procedures on the Adaptive Server Enterprise or Adaptive Server Anywhere database against which you want to use these methods. These stored procedures are also required by some of the connection methods.

These scripts are located in the following locations, *%SYBASE%\jConnect-4_2\sp*, *%SYBASE%\jConnect-5_2\sp*.

jConnect provides scripts to install the required stored procedures and tables.

*   *sql_server.sql* installs stored procedures on pre-version 12.0 Adaptive Server Enterprise databases.

*   *sql_server12.sql* installs stored procedures on an Adaptive Server Enterprise version 12.0 databases.

*   *sql_anywhere.sql* installs stored procedures on SQL Anywhere and Adaptive Server Anywhere databases.

To run the scripts:

1   Make sure that your JAVA_HOME, JDBC_HOME, and CLASSPATH environment variables are set.

2   To connect to a SQL Anywhere database earlier than version 6.0, start an Open Server gateway.

3   Use the **IsqlApp** sample application according to the instructions in the following sections, based on the target database and your platform.

Adaptive Server Enterprise

To install stored procedures for metadata in an Adaptive Server Enterprise database using Windows NT or Windows 95, go to a DOS prompt and enter the following command on one line from the *JDBC_HOME\classes* directory:

ASE version 12.0:
```
java IsqlApp -U sa -P password -S jdbc:sybase:
   Tds:[hostname]:[port] -I %JDBC_HOME%\sp\sql_server12.sql -c go
```

ASE version 11.9.2 and earlier:
```
java IsqlApp -U sa -P password -S jdbc:sybase:
   Tds:[hostname]:[port] -I %JDBC_HOME%\sp\sql_server.sql -c go
```

SQL Anywhere or Adaptive Server Anywhere

To install stored procedures for metadata in a SQL Anywhere or Adaptive Server Anywhere database using Windows NT or Windows 95, go to a DOS prompt and enter the following command on one line from the *JDBC_HOME\classes* directory:

```
java IsqlApp -U dba -P password -S jdbc:sybase:
    Tds:[hostname]:[port] -I %JDBC_HOME%\sp\sql_anywhere.sql -c go
```

Verifying the Installation

After the installation, verify the installation by completing these steps.

Adaptive Server Enterprise Components

To verify that installation was successful:

1   Check the installation directory to make sure the products were installed correctly:

    a   Click Start | Programs

    b   Click the program folder name. The product list displays.

    c   Click each icon to verify that the product is available.

2   Use the Windows Notepad to check the installation log file contents.

The log file is created automatically in the *%SYBASE%\installer.log* subdirectory.

jConnect Version 4.2 and 5.2

Reviewing Installation Contents

Once you complete the jConnect installation, review the contents listed in this section.

Packages

jConnect consists of the following packages in the jConnect installation directory.

jConnect 4.2:

- **com.sybase.jdbc**

- **com.sybase.jdbcx**

- **com.sybase.tds**

- **com.sybase.timedio**

- **com.sybase.utils**

The jConnect driver, **com.sybase.jdbc.SybDriver**, is in the **com.sybase.jdbc** package.

jConnect 5.2:

For jConnect version 5.2, the following packages are found inside JAR files: *jconn2.jar* for the release build, *jconn2d.jar* for the debug build.

- **com.sybase.jdbc2.jdbc**

- **com.sybase.jdbc2.tds**

- **com.sybase.jdbc2.timedio**

- **com.sybase.jdbc2.utils**

- **com.sybase.jdbcx**

The jConnect driver, **com.sybase.jdbc2.jdbc.SybDriver**, is in the **com.sybase.jdbc2.jdbc** package.

Directories and Files

Table 6-1 list the directories and files created when you install jConnect version 4.2 and the jConnect documentation.

Table 6-2 list the directories and files created when you install jConnect version 5.2 and the jConnect documentation.

Table 6-3 lists the directories and files created when you install the jConnect free utilities.

Table 6-1: jConnect 4.2 installation

Name	Type	Description
jconnect-4_2	Directory	Contains all of the jConnect version 4.2 files and subdirectories.

Name	Type	Description
jConnect_docs	Directory	Contains the */docs* subdirectory, which contains the *Programmer's Reference* in HTML and PDF format.
/classes	Subdirectory	The following jConnect 4.2 components are installed in the */classes* subdirectory: • *gateway* subdirectory for compiled TDS-tunnelling servlet • *com* subdirectory for jConnect 4.2 classes. • *sample* subdirectory with jConnect 4.2 class files for sample applets and applications, including the Isql applet.
/devclasses	Subdirectory	*/com* subdirectory for jConnect 4.2 classes with debug mode turned on.
/docs	Subdirectory	Contains the */en* subdirectory, which contains the English javadoc documentation.
/gateway	Subdirectory	Contains source code for the TDS-tunnelling servlet.
/sample	Subdirectory	Contains source code for sample Java applications.
/sp	Subdirectory	Contains isql scripts that install stored procedures for function escapes and DatabaseMetaData methods on a database server. The scripts are: • sql_anywhere.sql • sql_server12.sql (ASE version 12.0) • sql_server.sql (pre-version 12.0 ASE)
/tools	Subdirectory	Contains a perl script (*decode-tli*) that UNIX users can apply to parse an *interfaces* file into a readable format.
index.html	HTML File	Contains links to jConnect documentation and samples.

Table 6-2: jConnect 5.2 installation

Name	Type	Description
jconnect-5_2	Directory	Contains all of the jConnect version 5.2 files and subdirectories.
jConnect_docs	Directory	Contains the */docs* subdirectory, which contains the *Programmer's Reference* in HTML and PDF format.
/classes	Subdirectory	The following jConnect 5.2 components are installed in the */classes* subdirectory: • *jconn2.jar* file that contains jConnect 5.2 classes • *sample2* subdirectory with jConnect 5.2 class files for sample applets and applications, including the Isql applet • *gateway2* subdirectory for compiled TDS-tunnelling servlet
/devclasses	Subdirectory	*jconn2d.jar* file that contains the same jConnect 5.2 components as *jconn2.jar*, but debug mode is turned on.
/docs	Subdirectory	Contains the */en* subdirectory, which contains the English javadoc documentation.

82

Name	Type	Description
/gateway2	Subdirectory	Contains source code for the TDS-tunnelling servlet.
/sample2	Subdirectory	Contains source code for sample Java applications.
/sp	Subdirectory	Contains isql scripts that install stored procedures for function escapes and DatabaseMetaData methods on a database server. The scripts are: • sql_anywhere.sql • sql_server12.sql (ASE version 12.0) • sql_server.sql (pre-version 12.0 ASE)
/tools	Subdirectory	Contains a perl script (*decode-tli*) that UNIX users can apply to parse an *interfaces* file into a readable format.
index.html	HTML File	Contains links to jConnect documentation and samples.

Table 6-3: Free utilities installation

Name	Type	Description
jutils-2.0	Directory	Contains all of the utility files and subdirectories listed below.
/cascade	Subdirectory	Contains */uk* subdirectory with the source code and compiled code for the Cascade gateway. For more information, see at http://www.cascade.org.uk.
/jisql	Subdirectory	Contains the jisql program and the */doc* and */HelpFiles* subdirectories.
/ribo	Subdirectory	Contains the Ribo program and the */doc* subdirectory.

JDBC 1.x Samples

You can find JDBC 1.x code samples in the *sample* subdirectory under the jConnect installation directory. See "Running jConnect Sample Programs and Code," in Appendix B of the *Sybase jConnect for JDBC Programmer's Reference* for more information.

JDBC 2.0 Samples

You can find JDBC 2.0 code samples in the *sample2* subdirectory under the jConnect installation directory. See "Running jConnect Sample Programs and Code," in Appendix B of the *Sybase jConnect for JDBC Programmer's Reference* for more information.

Testing the Installation

Once jConnect is installed, test the installation by running the **Version** program.

The **Version** program connects to a demonstration database that Sybase has made available on the Internet. You must have Internet access to run the **Version** program successfully, or explicitly run it with **[-U *username*] [-P *password*] [-S *servername*]** commands to point it to your database.

From the DOS prompt for Windows NT and Windows 95, or at a UNIX prompt, change to the JDBC_HOME directory and enter the following command.

jConnect 4.2:
```
java sample.SybSample Version
```

jConnect 5.2:
```
java sample2.SybSample Version
```

This should bring up a SybSample window. At the top of the window, the Running Sybase Sample text box should display the source code for **Version** as the program runs. The middle text box—Sample Output—should display version information. For example:

```
Using JDBC driver version 4.2
jConnect (TM) for JDBC(TM)/4.2...
```

or

```
Using JDBC driver version 5.2
jConnect (TM) for JDBC(TM)/5.2...
```

- If the message above appears in the Sample Output text box, you have successfully installed jConnect.

- If you get the above message, but the source code for **Version** does not appear in the Running Sybase Sample text box, and the Status text box at the bottom of the window shows:

  ```
  java.io.FileNotFoundException: Version.java
  ```

  you successfully installed jConnect, but probably did not enter the command to run the **Version** program from your *JDBC_HOME* or *JDBC_HOME/sample* (for jConnect 4.2) or *JDBC_HOME/sample*2 (for jConnect 5.2) directory.

- If the SybSample window does not appear and you see this error message:

  jConnect 4.2:
  ```
  Can't find class sample.SybSample
  ```

  jConnect 5.2:
  ```
  Can't find class sample2.SybSample
  ```

  check your CLASSPATH to be sure that it is set correctly.

84

• Using Windows, if the SybSample window does not come up, and you get one of these error messages:

Windows NT:
```
Name specified is not recognized as an internal or
external command
```

Windows 95:
```
Bad command or file name
```

make sure that your path includes the *bin* subdirectory of your JDK home directory.

When you have verified that your installation was successful, click Close to exit the SybSample window.

Uninstalling Sybase Products

You cannot use the Add/Remove Programs option from the Windows Control Panel to uninstall Sybase products; you must manually remove them from the server.

Uninstalling Adaptive Server 12.0

To remove an existing Adaptive Server (but not other Sybase products):

1 Shut down Adaptive Server. See Chapter 11, "Starting and Stopping Servers".

2 Shut down, then restart the Windows NT server, which releases the DLLs being used by Adaptive Server products.

3 From the Windows task bar, select Start | Run, then enter **regedt32** for Windows NT, or **regedit** for Windows 95/98 to start the registry utility.

4 Go to *HKEY_LOCAL_MACHINE\SOFTWARE\Sybase\Server*.

5 In the *Server* directory, delete the following keys related to the Adaptive Server that you want to remove:

   • *HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\<server_na me>*

   • *HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\<server_na me>_BS*

- *\\HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\<server_na me>_HS*

- *\\HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\<server_na me>_MS*

6   For the following Registry key:

\\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Sessio n Manager\Environment

make these changes:

- Delete the settings for the Sybase variables DSLISTEN, DSQUERY, and SYBASE, and other Sybase-specific environment variables.

- Remove all references to the earlier installation directories in the PATH.

7   In the following Registry key:

\\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services

remove these references:

- *SYBSOL_<server_name>*

- *SYBXPS_<server_name>_XP*

- *SYBBCK_<server_name>_BS*

- *SYBMON_<server_name>_MS*

- *SYBHIS_<server_name>_HS*

8   Restart your computer to update the changes to the Registry.

Note If you get an Event Viewer warning upon restarting the computer, you may not have cleaned up all services. See the Event Viewer Application log for details.

---

9   Use the Service Control Panel to verify that the Adaptive Server service has been removed. If it has not, check the Registry for the same keys for the CurrentControlSet in ControlSet001 and ControlSet003. Make sure you have deleted the specified entries from the Registry.

10 Delete the master device and system procedure device files from the Sybase installation directory (the default is *\sybase\data*).

11 Reinstall Adaptive Server as a new server.

To Remove an Old Server:

1   Stop the server. See Chapter 11, "Starting and Stopping Servers" for more information.

2   Reboot the machine to release any DLLs.

3   From the Windows Task bar, click Start | Programs | Sybase | Server Config.

4   The Configure Sybase Server window displays.

Note Click Help in any window to read detailed information about uninstallation. Click Contents to view available topics. Click Close or Minimize Help to return to the installation program.

---

5   Select the type of Sybase server you want to remove from the icons on the left of the Configure Sybase Servers screen.

6   Click Remove Adaptive Server. This displays an Existing Servers window.

7   Select the server you want to remove, and click OK.

8   Remove the following entries from the Registry key

   \\HKEY-LOCAL-MACHINE\SYSTEM\CurrentControlSet\Services:

   •   *SYBBCK-**

   •   *SYBHIS-**

   •   *SYBMON-**

   •   *SYBSQL-**

   •   *SYBXPS-**

9   Reboot the computer to reset registry entries.

Note The installation program does not delete shared dynamic link libraries (DLLs), such as *libunic.dll*, *mchelp.dll*, and *mclib.dll*, from the Windows system directory. Remove these files manually.

If you do an overlay install, the installation program does not allow you to create servers that already exist in CurrentControlSet. If you want to use the same name, you must also clear the server names from the Registry and then restart the computer.

What's Next?

- To configure Adaptive Server, see *Configuring Adaptive Server Enterprise for Windows NT*.

- To configure the server and utilities for non-English language operations, you must install the appropriate language module and perform the configuration. See Chapter 8, "Customizing Localization for Adaptive Server".

- To install additional Sybase products, see Chapter 5, "Installing Sybase Servers".

- To add optional functionality, see Chapter 10, "Adding Optional Functionality to Adaptive Server".

- To start and stop Adaptive Server, see Chapter 11, "Starting and Stopping Servers".

CHAPTER 7 **Unloading Sybase PC-Client Products from Distribution Media**

This chapter describes how to unload and install additional Adaptive Server products, such as Sybase Central and client plug-ins. This chapter covers the following topics:

Overview

Client plug-ins enable clients, such as Sybase Central and Open Client, to access Adaptive Server. See the release bulletin for a complete list of PC-Client components.

Product Descriptions

Table 7-1 describes Adaptive Server client products, which can be installed on Windows 95, Windows 98, and Windows NT client computers.

Table 7-1: Products and platforms

Product and Platforms	Description
Open Client/Server version 12.0	Used to develop and deploy C language-based applications that access Adaptive Server data.
	Default installation includes:
	• Client-Library™
	• DB-Library
	• CS-Library
	• Bulk Library
	• bcp utility used to transfer data between files and Adaptive Server databases
	• defncopy utility used to copy stored procedure definitions from one database to another
	• Online help files for Open Client routines
	• Net-Library drivers for connecting 32-bit client applications to a server through most available network protocols. Default installation includes:

	dsedit for editing the *sql.ini* interfaces file and testing client-server connections
	    Drivers for Named Pipes and Windows Sockets
	    Drivers for Named Pipes, Windows Sockets, Novell LAN Workplace, and Microsoft TCP/IP

	Additional options include:
	• Programmer support (include files and libraries) for compiling and linking Client-Library and DB-Library applications
	• Sample programs for Client-Library and DB-Library
	• Net-Library driver protocols:
	Novell SPX/IPX, DEC PathWorks, PC-NFS TCP/IP, FTP PC/TCP, Wollongong PathWay TCP/IP, and Net Manage TCP/IP NWLink SPX/IPX, DEC PathWorks, and debug support, for Windows 95/98 and Windows NT 3.51
	• Monitor Client Library – an application programming interface that provides access to Adaptive Server performance data.

Product and Platforms	Description
Language modules version 12.0	Display system messages and datetime formats to help you localize your 32-bit or 16-bit applications. Default installation includes: • cp437, cp850, iso_1, mac, and roman_8 character sets • U.S. English language module • Additional language modules, such as Japanese and Chinese
jConnect 4.2	Provides a Java database connectivity (JDBC) driver that works with both Sun and Microsoft virtual machines (VM).jConnect 4.2 contains the latest enhancements to jConnect that can be used in a JDK 1.1 environment. The intent is to provide customers with the latest jConnect features for applications using a Java 1.1 VM or later. For more information jConnect for JDBC, see the jConnect product page at http://www.sybase.com/products/internet/jconnect/.
jConnect 5.2	Provides a Java database connectivity (JDBC) driver that works with both Sun and Microsoft virtual machines (VM). jConnect 4.2 provides support for new features available in Adaptive Server Enterprise 12.0 and support for JDBC 2.0 standard extensions and is JDBC 2.0 compliant. For more information jConnect for JDBC, see the jConnect product page at http://www.sybase.com/products/internet/jconnect/.
jutils (Cascade Gateway, jisql, Ribo)	Includes: • The Cascade Gateway – A gateway that acts as a proxy to provide a path to the database server if it is running on a different host from the Web Server. • jisql – A graphical Transact-SQL editor written in Java that replaces SQL Advantage. • Ribo – A utility that captures, translates, and displays the Tabular Data Stream (TDS) protocol flowing between a TDS client and a TDS server.
jConnect Documentation	Contains the *Sybase jConnect for JDBC Programmer's Reference*.
Sybase Central ASE plug-in version 12.0	The graphical administration utility for Adaptive Server and PowerDynamo.
Sybase ODBC drivers version 3.5	PowerDesigner and PowerDynamo connect to Adaptive Server using the ODBC driver.
Power Dynamo version 1.2	A suite of tools for building and managing database-hosted Web sites with dynamic content.

91

Product and Platforms	Description
InfoMaker version 7.0.1	A tool for personal data access, management, and reporting, for developers and end users. InfoMaker allows you to create presentation-quality reports and powerful queries without the complexities of programming. It complements client/server business applications and development tools as well as desktop productivity suites.
SQL Remote version 6.0.2	SQL Remote enables two-way replication between a database server and multiple portable computer databases through E-mail or dial-up connections.
PowerDesigner SQL Modeler version 6.1.4	A tool for data modeling, including database design, generation, maintenance, reverse engineering, and documentation for database architects.

Unloading PC-Client Products

To unload client products on Windows NT or Windows 95/98:

1   Verify that your computer has sufficient RAM for each product. See Chapter 2, "Installation Requirements".

2   If you are unloading components on Windows NT, log in using an account with Windows NT administrator privileges.

3   Close any open applications or utilities to free up memory and system resources.

4   Insert the CD containing the PC-client products into the CD-ROM drive.

5   The Studio Installer should start automatically. Alternatively you can start the Studio Installer by doing one of the following:

  •   Click the Windows Start button, choose Run, and enter:

      `n:\setup.exe`

      where *n* is your CD-ROM drive.

  •   Or, click the Start button, choose the Windows Explorer, select your CD-ROM drive, and then double-click *setup.exe*.

6   Enter the target directory.

7   Select the type of installation to be performed. Backup Server, Monitor Server, and XP Server are unloaded, by default, with Adaptive Server.

  •   *Standard Install* – installs the default components a user needs.

- *Full Install* – installs every component on the CD.

- *Customized Install* – allows you to select which components to install. Certain components will automatically be installed if they are required to run other selected components.

> **Note** If you select Customized Install, the next window is the Component Selection screen, which allows you to specify which components to install.
>
> Components that would be installed in a standard installation appear with a check in the check box to the left of the product name. You may select or deselect components from this list. Components with subcomponents have a More... button enabled. Clicking this button allows you to select or deselect subcomponents.

8   Click Next to launch the Summary screen.

The Summary screen displays every component that will be installed by the Studio Installer. Disk space required for each selected component is also shown, along with the available disk space.

> **Note** If the target directory does not have enough free space, the available-space information will appear in red. Clicking Next without sufficient hard disk space results in an error and stops the installation.

9   Click Next to continue the installation. The Studio Installer unloads the components from the CD and displays a progress indicator.

> **Warning!** If you are prompted to overwrite any DLLs loaded in memory, select No.

93

If no component has been selected, the Studio Installer generates an error message and stops the installation. Click Back to select components, or Cancel to cancel the installation procedure.

Note Optionally, you may select Save from the Summary screen to save all the installation information into a *cmdfile* to proceed with the installation in a non-interactive, silent install. (See "Unloading Components in cmdfile" on page 35.)

If any components selected to be installed require a license, the Sybase Software Asset Management (SySAM) screen displays and prompts you for certification information at this time. If you install any components without the appropriate license information, only Adaptive Server 12.0 without licensed features is enabled.

10   When prompted to reboot the computer, leave the CD in the CD-ROM drive and select Yes. Restarting the PC updates the environment variables and registry keys.

To configure client network connections to Adaptive Server, see "Configuring Network Connections for Client Products" on page 102.

Note If you downloaded jConnect 4.2 or 5.2 from the PC-Client CD, set the JDBC_HOME and CLASSPATH environment variables and test the installation. You may also want to install stored procedures. See "setting jConnect Environment Variables, "Installing Stored Procedures for jConnect" and "jConnect 4.2 and 5.2" in Chapter 6, "Post-Installation Tasks".

Installing the Adaptive Server Plug-In for Sybase Central

This section describes how to install the Adaptive Server plug-in for Sybase Central. The plug-in is a graphical tool for managing the Adaptive Servers in your Sybase installation. Sybase Central can be installed on the same Windows NT, 95/98 computer as the server or on another computer.

Installing the Sybase Central Plug-In

To install the Sybase Central plug-in from your Sybase products CD, follow the instructions in "Unloading PC-Client Products" on page 92 and select the Sybase Central ASE Plug-in option in the Product Selection window.

Before you use the plug-in, restart your computer to implement changes made to the PATH and CLASSPATH environment variables during installation.

Installing the Required Microsoft DLL on Windows 95

After installing the Sybase Central plug-in on a computer that is running Windows 95, check the version of the *comctl32.dll* system file. This file provides common window and dialog graphical controls. If your system has an older version of this file, some Adaptive Server plug-in dialog boxes might not be displayed properly.

Checking the Current File Version

To check the file *comctl32.dll*:

1   Open the Windows NT Explorer to the *d:\windows\system* directory.

2   Locate the file *comctl32.dll*.

3   If the Modified date is earlier than 4/30/97, replace the file with a newer version from the Microsoft Web site.

    You can check the modified date by opening the property sheet for the file or putting the right pane of the Windows NT Explorer in Details view and looking in the Modified column.

Replacing the File

To replace the file *comctl32.dll*:

1   Access the Microsoft Web site:

    http://support.microsoft.com/support/kb/articles/Q165/4/87.asp

2   Get the file *com32upd.exe* from the Microsoft Web site. Follow the instructions for installation provided by Microsoft, but do not use the **-d** parameter.

3   After you install the update, restart your computer.

Installing a Java Runtime Environment

Before you can use the Sybase Central monitoring features, you need to install the Java Runtime Environment (JRE):

To install the JRE:

• Go to: *%SYBASE%\ASEP*.

• Double-click the file *jdk1_1_8-win.exe* and follow the installation instructions.

• Restart your computer after you install the JRE.

Installing the Entire Java Development Kit

Optionally, you can install the entire Java Development Kit (JDK) instead of the JRE. The JDK requires more disk space and includes files and features that support development of Java applets and applications. Sybase does not provide the JDK (see step 1 in the following instructions).

To install the JDK:

1   Download the JDK for your operating system from the Java Software Web site:

    http://java.sun.com/products/jdk/1.1

2   Double-click the file you downloaded.

3   Follow the installation instructions.

4   Add the following path to your CLASSPATH environment variable:

```
d:\install_path\lib\CLASSES.ZIP
```

where *d:\install_path* is the location (drive and directory) where you installed the JDK; for example, *c:\javasoft*.

5   Add *d:\install_path\bin* to your PATH environment variable, where *d:\install_path* is the location (drive and directory) in which you installed the JDK; for example, *c:\javasoft*.

Enabling the Monitoring Functions

If you cannot run the monitoring windows in the Adaptive Server plug-in, check the following:

• Be sure the CLASSPATH variable is set, even though the JRE documentation may ask that you not set it. The CLASSPATH variable indicates where Java classes are located.

  For example, if the JRE is installed in the release directory %SYBASE%\%SYBASE_ASE\, the plug-in requires CLASSPATH to contain:

  %SYBASE%\%SYBASE_ASE\asep\monclass.zip;
  %SYBASE%\%SYBASE_ASE\3pclass.zip

  If you are using JDK 1.1.5 or later, the CLASSPATH must also include:

  %SYBASE%\install_path\lib\classes.zip

  where *%SYBASE%\install_path* is the location (drive and directory) in which you installed the JDK; for example, *c:\javasoft*.

  Note The Adaptive Server plug-in installation process adds the following subdirectories to the PATH statement:
   %SYBASE%\Sybase\ASE\ASEP
  where *%SYBASE%\Sybase\ASE* is the Adaptive Server software location.

• Make sure that the value of the system variable CLASSPATH is not overridden by a user-level definition of the variable.

  If you install applications that set the user CLASSPATH variable, this can cause the system CLASSPATH, and therefore the monitor classes, to be ignored.

  To resolve this problem, set the user CLASSPATH to include the system CLASSPATH, as follows:

  ```
  User CLASSPATH=%CLASSPATH%;d:\new_path
  ```

  where *d:\new_path* is the path to the system CLASSPATH.

• If a Monitor Server's folder does not appear under an Adaptive Server Enterprise icon, see the Monitor Server tab on the Adaptive Server property sheet to associate the Monitor Server with the Adaptive Server.

• Make sure that Monitor Server is running.

97

Testing the Sybase Central Installation

After you install Adaptive Server, Sybase Central, and the Java Runtime Environment, it is a good idea to test the installation and network connections.

To test installation and network connections:

1   Restart the computer.

2   To start Sybase Central, select Start | Programs | Sybase Central from the Windows task bar.

3   Select Tools | Connect from the Sybase Central menu bar to activate a Sybase Adaptive Server login screen.

4   Log in using the Server Config user ID. The installation program creates the default user ID "sa" without a password. You can change the password later through the Server Config utility.
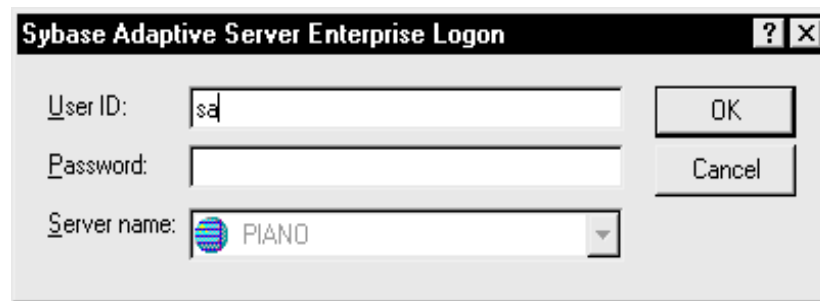
Your User ID appears in parentheses next to the server name.

5   Click on each of the other Adaptive Server installations.

If Sybase Central is installed on the same computer as the server, click the icon for the server.

If prompted to start Adaptive Server, click OK. When the traffic light icon representing the server is green, the server is running. After Adaptive Server starts, the Sybase Adaptive Server Enterprise Logon dialog box displays.

Warning! Do not start XP Server from Sybase Central. Adaptive Server starts XP Server automatically when Adaptive Server receives the first request for an extended stored procedure.

98

6   To disconnect from a server, choose Disconnect from the Tools menu.

> **Note** If a server is running on the same computer as Sybase Central, disconnecting does not stop it.

7   Exit Sybase Central.

If Adaptive Server fails any of these tests, see Chapter 12, "Troubleshooting" Before retrying the installation, follow the instructions in Chapter 6, "Post-Installation Tasks".

Installing Open Client/C

Table 7-2 lists the Sybase products you can install separately to develop and run client applications for operating systems such as Windows NT, Windows 95, Windows 3.1, OS/2, and Macintosh.

Table 7-2: Additional Sybase products

Product	Installation instructions
Use Open Client/C for Windows NT and Windows 95/98 to develop and run applications to access Adaptive Server from a Windows client computer.	Run *setup.exe* from the Sybase products CD and select Open Client Runtime from the Select Installation Type window.

Installing Open Client Runtime for Windows 95/98 and NT

The Sybase PC-Client CD includes Open Client software for Windows NT and Windows 95/98. Several products, such as the Adaptive Server plug-in and SQL Advantage require Open Client runtime. Monitor Client Library requires Open Client/C with the SDK option.

To install Open Client/C:

1   Log in to your Windows 95/98-based or Windows NT-based computer using an account with Windows administrator privileges.

2   Close any open applications or utilities to free up disk space and system resources.

3   Insert the CD into the CD-ROM drive.

4   The Studio Installer starts automatically. Alternatively, you may start the installation program by using one of the following methods:

   • For Windows 95/98 and Windows NT 4.0, click the Start button, choose Run, and type:

      d:\setup.exe

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

   • Alternatively, start the installation program by choosing the Windows NT Explorer from the Start button, selecting the CD-ROM drive, and then double-clicking *setup.exe*.

5   Enter the target directory.

6   Select the type of installation to be performed.

   • *Standard Install* – installs the default components a user needs.

   • *Full Install* – installs every component on the CD.

   • *Customized Install* – allows you to select which components to install. Certain components will automatically be installed if they are required to run other selected components.

   Note If you select Customized Install, the next window is the Component Selection screen, which allows you to specify which components to install.

   Components that would be installed in a standard installation appear with a check in the check box to the left of the product name. You may select or deselect components from this list. Components with subcomponents have a More... button enabled. Clicking this button allows you to select or deselect subcomponents.

7   Choose Open Client Runtime as the installation, and click Next in the Select Installation Type window. The Select Sybase Installation Directory window displays.

8   Click Next to launch the Summary screen.

The Summary screen displays every component that will be installed by the Studio Installer. Disk space required for each selected component is also shown, along with the available disk space.

Note If the target directory does not have enough free space, the available-space information will appear in red. Clicking Next without sufficient hard disk space results in an error and stops the installation.

---

9   Click Next to continue the installation. The Studio Installer unloads the components from the CD and displays a progress indicator.

Warning! If you are prompted to overwrite any DLLs loaded in memory, select No.

---

10 When prompted to reboot the computer, leave the CD in the CD-ROM drive and select Yes. Restarting the PC updates environment variables and registry keys.

Note Optionally, you may select Save from the Summary screen to save all the installation information into a *cmdfile* to proceed with the installation in a non-interactive, silent install. (See "Unloading Components in cmdfile" on page 35.)

If any components selected to be installed require a license, the Sybase Software Asset Management (SySAM) screen displays and prompts you for certification information at this time. If you install any components without the appropriate license information, only Adaptive Server 12.0 without licensed features is enabled.

11 Use the Windows Notepad to check the installation log file if you encounter problems. The file is automatically generated in:

%SYBASE%\installer.log.

Installing InfoMaker

InfoMaker is distributed as part of the PC-Client package.

To install InfoMaker:

1   Use the Studio Installer to unload the software from the distribution media as described in Chapter 3, "Unloading Server Products from Distribution Media".

2   Run the InfoMaker setup utility located in:

    %SYBASE%\info-7_0_1\install\setup.exe

3   When prompted for an installation directory, accept the default.

4   When prompted to reboot the computer, leave the CD in the CD-ROM drive and select Yes. Restarting the PC updates environment variables and registry keys.

5   See the Powersoft documentation for instructions on using InfoMaker.

Configuring Network Connections for Client Products

By default, connections from client products to Adaptive Server are enabled through the Named Pipes and Winsock network protocols only.

Warning! The *libtcl.cfg* file, located in *%SYBASE%\ini* will be overwritten, if it already exists.

Network connections between clients and servers are defined in the *sql.ini* file on the PC. Sybase client products use *sql.ini* to find the network addresses of available servers.

Before any client product can access a Sybase server, each server you want to connect to must be included in *sql.ini* on the client computer.

By default, connections from client products to Adaptive Server are enabled through the Named Pipes and Winsock network protocols.

Adding a Server to the *sql.ini* File

To add a server entry to the *sql.ini* file on your PC-client computer:

1   Using the Microsoft Windows task bar, click Start | Programs | Sybase | dsedit.

2 Click OK on the first screen to open the InterfacesDriver screen.

3 Select ServerObject from the menu, and click Add.

4 In the Input Server Name box, enter the name of the server for which you are creating an entry, and click OK.

5 In the Attributes column, double-click on the server address row you just added.

6 In the ProtocolNetwork Address, click Add.

7 From the drop-down list in the Protocol box, select TCP, NAMEPIPE, SPX, or VINESIP.

8 In the Network Address box, you can enter either the server name or the IP address, along with the server port number, separated by a comma. For example:

machine_name, *4100*

where *machine_name* is the name of the computer, and 4100 is the port number the server is using to "listen" for clients.

9 To find the IP address for a machine, use **ypmatch**. For example:

```
ypmatch 'hostname' hosts
```

where *hostname* is the name of the machine.

To find a server's listener server port number:

- If the server is on another PC, check the *%SYBASE%\ini\sql.ini* file

- If the server is on a UNIX machine, check the interfaces file in *$SYBASE/*

- If the host is on a Solaris machine, the host number is given in a hexidecimal. Use one of these techniques to decode it:

    - Run the **dsedit** program from the */bin* directory below SYBASE installation directory. When the server name list appears, double-click the server name. The next screen shows the port number in decimal. Exit without making any changes.

    - Check the mast line from the interfaces file. The port number appears in hexidecimal in the four digits following the "\x0002". For example:

```
testserver
     master tli tcp /dev/tcp \x0002100482d63ce70000000000000000
     query tli tcp /dev/tcp \x0002100482d63ce70000000000000000
```

103

In this example, the port number is 1004 (hexadecimal). When 1004 (hexadecimal) is converted to decimal, the port number is 4100. The port number must be between the decimal value of 1025 and 65535.

To connect to this Solaris server, the complete entry in the *sql.ini* file reads:

```
testserver
query=TCP, machine_name, 4100
```

Note To connect to a UNIX server, the entries you add to *sql.ini* must match the entries in the *interfaces* file on the UNIX system.

For additional information on using **dsedit** on the client computer, see the *Open Client/Server Configuration Guide for Desktop Platforms* and the *Open Client/Server Supplement*.

For specific information about entries for connections to Monitor Server and Historical Server, see:

• *Adaptive Server Enterprise Monitor Server User's Guide*

• *Adaptive Server Enterprise Monitor Historical Server User's Guide*

Enabling TCP Connections

To connect through TCP instead of Named Pipes and Winsock network protocols, you must enable the TCP connections.

To enable TCP connections:

1 From the Windows task bar, click Start | Programs | Sybase | OC OS Config.

2 Click the NetLibrary tab.

3 Select Windows NT or 98/95 as the platform and TCP as the protocol.

4 Click OK.

This process maps NLWNSCK to TCP in your Sybase network configuration file (*libtcl.cfg*).

Using Open Database Connectivity

Some applications do not connect to Adaptive Server directly through the Open Client software but through the Open Database Connectivity (ODBC) driver, or the jConnect driver instead. For example, PowerDynamo connects through the ODBC driver.

See *Configuring Adaptive Server Enterprise for Windows NT* for more information.

What's Next?

You have completed installing Adaptive Server client plug-ins.

• To find out more information about setting up network communications, see *Configuring Adaptive Server Enterprise for Windows NT*.

• To upgrade Adaptive Server from a previous release, see Chapter 9, "Upgrading Sybase Servers".

• To add optional functionality, see Chapter 10, "Adding Optional Functionality to Adaptive Server".

• After you have installed the Sybase products on your system, see their accompanying documentation for configuration and administration issues.

CHAPTER 8   **Customizing Localization for Adaptive Server**

This chapter provides information about Sybase localization support for international installations. It also includes information for reconfiguring localization.

Topics covered are:

This chapter provides only the information that you need to know to configure languages, character sets, and sort order. For more information, see the *System Administration Guide*.

Overview of Localization Support

Localization is the process of setting up an application to run in a particular language or country environment, including translated system messages and correct formats for date, time, and currency. Adaptive Server supports localization for international customers and for customers with heterogeneous environments.

This support includes:

- Data processing support – Adaptive Server comes with character-set and sort-order definition files it uses to process the characters used in different languages.

Sybase provides support for the major languages in:

- Western Europe

- Eastern Europe

- Middle East

- Latin America

- Asia

- Translated system messages – Adaptive Server 12.0 includes language modules for:

  - Brazilian Portuguese

  - Chinese (Simplified)

  - French

  - German

  - Japanese

  - Korean

  - Spanish

- Translated documentation – Translated documentation is available in:

  - Chinese (Simplified)

  - French

  - German

  - Japanese

  - Korean

  - Spanish

Language Modules

Adaptive Server stores its localized software messages in separate language modules, each of which includes the following:

- Character sets

- Sort orders

- Messages

When you install a language module, the installation program loads the messages, character-set, and sort-order files that support the new language in the correct locations.

Note The Adaptive Server language modules do not contain error messages for standalone utilities such as **bcp**, **isq**, and **defncopy**. These error messages are contained in the Client-Library™ language modules. For information on running these utilities with a language other than U.S. English or a character set other than ISO 8859-1, see *Utility Programs for Windows and Windows NT*.

When you install Adaptive Server and Backup Server, system messages in English are installed by default.

Character Sets

This section contains information about the default and supported character sets.

Default Character Sets for Servers

The default character set is the character set in which data is encoded and stored on the Adaptive Server databases.

By default, when Adaptive Server and Backup Server are installed on Windows NT systems, the installation installs the character set files for CP 850 which supports the Western European languages.

By default, when Adaptive Server and Backup Server are installed on Windows NT systems, the installation installs the character set files for CP 850, which supports the Western European languages.

Changing the Default Character Set for Servers

You can select any character set as the default on Adaptive Server, including character sets that are not the platform default character sets. Keep the following guidelines in mind when selecting a new default character set:

• To avoid conversion errors or overhead, determine the default character set based on the character set used by your clients.

109

For example, if most of your clients use ISO 8859-1, you can minimize the amount of data conversion that has to occur by specifying ISO 8859-1.

- If your server is operating in a heterogeneous environment, choose a character set that will work with all the character sets needed. Often, this is Unicode (UTF-8).

Warning! Make all changes to the default character set and sort order for a new Adaptive Server before creating any user databases or making any changes to the Sybase-supplied databases. Changing the character set and sort order after data or data structures have been added to Adaptive Server can cause incorrect behavior. To change the character set or sort order after you have added data, see the *System Administration Guide*.

Supported Character Sets

The following language, scripts and character sets are supported by Adaptive Server version 12.0:

- Arabic – See Table 8-1.

- Baltic – See Table 8-2.

- Chinese, Simplified – See Table 8-3.

- Chinese, Traditional – See Table 8-4

- Cyrillic – See Table 8-5.

- Eastern European – See Table 8-6.

- Greek – See Table 8-7.

- Hebrew – See Table 8-8.

- Japanese – See Table 8-9.

- Korean – See Table 8-10.

- Thai – See Table 8-11.

- Turkish – See Table 8-12.

- Unicode – See Table 8-13.

- Vietnamese – See Table 8-14.

- Western European – See Table 8-15.

The tables define each character set and indicate information on whether it requires Unilib ™ conversion (Unilib Required column).

- Checkmark (x) – the character set requires Unilib conversion.

- No checkmark – the character set may use either the Unilib conversion or the built-in conversion.

For more information see "Character-Set Conversion" on page 114.

Table 8-1: Arabic character sets

Character Set	Unilib Required	Description
cp864	X	PC Arabic
cp1256	X	Microsoft Windows Arabic
iso88596	X	ISO 8859-6 Latin/Arabic

Table 8-2: Baltic character sets

Character Set	Unilib Required	Description
cp1257	X	Microsoft Windows Baltic

Table 8-3: Simplified Chinese character sets

Character Set	Unilib Required	Description
eucgb	X	EUC GB encoding = Simplified Chinese character sets
cp936	X	Microsoft Simplified Chinese character sets

Table 8-4: Traditional Chinese character set

Character Set	Unilib Required	Description
cp950	X	PC (Microsoft) Traditional Chinese
euccns	X	EUC CNS encoding = Traditional Chinese with extensions
big5	X	Big 5 Traditional Chinese

Table 8-5: Cyrillic character sets

Character Set	Unilib Required	Description
cp855		IBM PC Cyrillic
cp866		PC Russian
cp1251		Microsoft Windows 3.1 Cyrillic
iso88595		ISO 8859-5 Latin/Cyrillic
koi8		KOI-8 Cyrillic
mac_cyr		Macintosh Cyrillic

Table 8-6: Eastern European character sets

Character Set	Unilib Required	Description
cp852		PC Eastern Europe
cp1250		Microsoft Windows 3.1 Eastern European
iso88592		ISO 8859-2 Latin-2
mac_ee		Macintosh Eastern European

Table 8-7: Greek character sets

Character Set	Unilib Required	Description
cp869		IBM PC Greek
cp1253		MS Windows Greek
greek8		HP GREEK8
iso88597		ISO 8859-7 Latin/Greek
macgrk2		Macintosh Greek

Table 8-8: Hebrew character sets

Character Set	Unilib Required	Description
cp1255	X	Microsoft Windows Hebrew
iso88598	X	ISO 8859-8 Hebrew

112

Table 8-9: Japanese character sets

Character Set	Unilib Required	Description
cp932	X	IBM J-DBCS:CP897 + CP301 (Shift-JIS)
deckanji		Digital UNIX JIS encoding
eucjis		EUC-JIS encoding
sjis		Shift-JIS (no extensions)

Table 8-10: Korean character sets

Character Set	Unilib Required	Description
eucksc	X	EUC KSC Korean encoding = CP949

Table 8-11: Thai client character sets

Character Set	Unilib Required	Description
tis620	X	TIS-620 Thai standard
cp874	X	Microsoft Windows Thai

Table 8-12: Turkish character sets

Character Set	Unilib Required	Description
cp857		IBM PC Turkish
cp1254		Microsoft Windows Turkish
iso88599		ISO 8859-9 Latin-5 Turkish
macturk		Macintosh Turkish
turkish8		HP TURKISH8

Table 8-13: Unicode character set

Character Set	Unilib Required	Description
utf8	X	Unicode UTF-8 encoding

113

Table 8-14: Vietnamese character set

Character Set	Unilib Required	Description
cp1258	X	Microsoft Windows Vietnamese

Table 8-15: Western European character set

Character Set	Unilib Required	Description
ascii8	X	US ASCII, with 8-bit data, ISO 646
cp437		IBM CP437 - U.S. code set
cp850		IBM CP850 - European code set
cp860	X	PC Portuguese
cp863	X	IBM PC Canadian French code page
cp1252	X	Microsoft Windows US (ANSI)
iso_1		ISO 8859-1 Latin-1
mac		Standard Macintosh coding
roman8		HP ROMAN8
iso 885915	X	ISO 8859-15 Latin-1 with Euro support

Character-Set Conversion

Backup Server passes messages to Adaptive Server in the client's language and in the Adaptive Server character set. Adaptive Server then converts the messages and issues them in the client's language and character set. Keep the following requirements in mind when selecting a character set:

- In a heterogeneous environment, Adaptive Server and Backup Server may need to communicate with clients running on different platforms and using different character sets. To maintain data integrity, the server converts the code between the character sets.

- To use the built-in conversion, you need to install the character-set definition files on the server for all the character sets being used by your clients. Built-in conversion support is available for many character sets.

- Unilib conversion support is available for all character sets supported by Sybase. To enable Unilib conversion, you must use **sp_configure** and turn **enable unicode conversions** on. For more information see the *System Administration Guide*.

If either Adaptive Server or Backup Server does not support a client's language or character set, that server issues a warning message. Errors also occur when the Backup Server character set is not compatible with the Adaptive Server character set.

Character-set conversion is supported only between character sets for the same language or between character sets in the same language group.

For example, automatic character-set conversion is supported between the character sets for the Western European languages: ASCII 8, CP 437, CP 850, CP 860, CP 863, CP 1252, ISO 8859-1, ISO 8859-15, Macintosh Roman and ROMAN8. Similarly, conversion is supported between the character sets for Japanese: CP 932, EUC-JIS, Shift-JIS, and DEC-Kanji.

However, code conversion is not supported between any of the Western European language character sets and the Japanese character sets. For more information about supported conversions, see the *System Administration Guide*.

Conversions Between Server and Client

If Adaptive Server does not support the client's language or character set, the client can connect with the server, but no character conversions will occur.

When a localized client application connects to Adaptive Server, the server checks to see if it supports the client's language and character set.

*   If Adaptive Server supports the language, it automatically performs all character-set conversions and displays its messages in the client's language and character set.

*   If Adaptive Server does not support the language, it uses the user's default language or Adaptive Server's default language.

*   If Adaptive Server does not support the character set, it issues a warning to the client, turns conversion off, and sets the language to U.S. English.

Limitations of Hankaku Katakana Conversion

Note This is not a problem if the server is set to use Unicode conversions and the client is using Open Client 11.1 or later.

Hankaku Katakana (half-width phonetic Japanese) conversions have the following limitations and rules:

• Hankaku Katakana conversion is enabled only if Adaptive Server is using EUC-JIS, and clients are using Shift-JIS.

• Hankaku Katakana character-set conversion between Shift-JIS and EUC-JIS by default is not enabled in Adaptive Server.

  You can, however, enable Hankaku Katakana character-set conversion by turning on trace flag 2402 when starting Adaptive Server. Include "-T2402" on the command line in the script used to start Adaptive Server.

• After Hankaku Katakana conversion is enabled, you cannot change the conversion on a per-client basis.

  To turn off the conversion, either remove "-T2402" from the script or use a different script with the trace flag disabled. Then restart Adaptive Server.

• If conversion is disabled for Hankaku Katakana, each unconverted Hankaku character is replaced with a question mark (?).

• The client application using Shift-JIS must recognize different character sizes when defining a table. Data that is longer than column length is truncated. No warning message appears.

• In an Adaptive Server using EUC-JIS, characters are stored in the EUC-JIS sort order. Zenkaku characters come after Hankaku characters in the EUC-JIS character set. Therefore, Adaptive Server sorts Hankaku first, followed by Zenkaku.

• If the column contains Hankaku Katakana, the Adaptive Server using EUC-JIS sends the client application using Shift-JIS converted characters to pad the length with NULLs.

• Hankaku Katakana can be used in logical expressions, for example:

```
1> select * from table
2> where column=Hankaku_Katakana_here
3> go
```

• The Transact-SQL search functions treat Hankaku Katakana and Zenkaku Katakana as different sets of characters. Katakana can be either half-width (Hankaku) or full-width (Zenkaku) in both EUC-JIS and Shift-JIS.

  For example, if the data in a table is stored in Hankaku Katakana, the following SQL statement returns no rows, even if both Hankaku and Zenkaku data have the same meaning:

```
1> select * from table
```

```
2> where column=Zenkaku_Katakana_here
3> go
```

- Hankaku Katakana cannot be used for procedure names or parameter names because the internal memory allocated for these names may be less than the length required by EUC-JIS.

- You can use **bcp** from a client application using Shift-JIS to an Adaptive Server using EUC-JIS; however, you cannot run **bcp** from Shift-JIS client applications containing Hankaku Katakana characters.

Hankaku Katakana Conversion and Datatypes

The following limitations apply to datatypes in Hankaku Katakana conversion:

- Hankaku Katakana can be used only in *char*, *varchar*, *nchar*, *nvarchar*, and *text* datatypes.

- The *char*, *varchar*, *nchar*, *nvarchar*, and *text* datatypes are stored in an Adaptive Server using EUC-JIS and can be used for a Shift-JIS client application.

  However, because one Shift-JIS Hankaku character uses 1 byte of storage and one EUC-JIS Hankaku character uses 2 bytes of storage, a client application using Shift-JIS can insert a maximum of 127 Hankaku Katakana characters, rather than the 255 characters of Adaptive Server using Shift-JIS. Inserting more than 127 characters during conversion to EUC-JIS generates an error message.

- Sybase recommends that you not use Hankaku Katakana for the *sysname* datatype, such as database names, table names, column names, and so on, because of the conversion length changes.

- If you plan to convert with Shift-JIS, do not use Hankaku Katakana in *text* datatypes that are larger than one data page, typically 2K.

  If the text column contains Hankaku Katakana, and the character spans two pages in the database, the partial byte in the first page is not converted. A warning message advises that the conversion did not succeed.

  There is no problem when converting EUC-JIS to EUC-JIS or Shift-JIS to Shift-JIS.

117

Sort Orders

Each character set comes with one or more sort orders (collating sequences), which are located in the sort-order definition files (*.srt* files). These files accompany the character-set definition files and can be found in the same directory.

You can select a sort order for your data according to the needs at your site. However, keep in mind that the server can support only one sort order at a time, so be sure to select a sort order that will work for all of your clients.

Warning! Make all changes to the default character set and sort order for a new Adaptive Server before creating any user databases or making any changes to the Sybase-supplied databases. Changing the character set and sort order after data or data structures have been added to Adaptive Server may cause incorrect behavior. To change the character set or sort order after you have added data, see the *System Administration Guide*.

Available Sort Orders

The sort order determines the collating sequence Adaptive Server uses to order, compare, and index character data. Each character set comes with one or more sort orders.

Sort orders are located in sort order definition files (*.srt* files) that accompany your character-set definition files.

Note Available sort orders vary according to the character set installed on Adaptive Server.

You can see the available sort orders for your character set by looking in the *.srt* file for your language. Sort orders are stored in the following path:

%SYBASE%\charsets\<charset_name>*.srt

For more information about localization files, see "Localization Directories" on page 125.

Table 8-16 describes the sort orders that you can specify at installation time or at a later time using the **syconfig** utility.

Table 8-16: Sort orders available in Adaptive Server

Sort Order Name	Description
Binary order	Sorts all data according to numeric byte values for that character set. Binary order sorts all ASCII uppercase letters before lowercase letters. Accented or ideographic (multibyte) characters sort in their respective standards order, which may be arbitrary.
	All character sets have binary order as the default. If binary order does not meet your needs, you can specify one of the other sort orders either at installation or at a later time by, using the syconfig utility.
Dictionary order case sensitive, accent sensitive	Case sensitive. Sorts each uppercase letter before its lowercase counterpart, including accented characters. Recognizes the various accented forms of a letter and sorts them after the associated unaccented letter.
Dictionary order case insensitive, accent sensitive	Case-insensitive dictionary sort order. Uppercase letters are equivalent to their lowercase counterparts and are intermingled in sorting results.
Dictionary order case insensitive accent insensitive	Case-insensitive dictionary sort order. Diacritical marks are ignored.
Dictionary order case insensitive with preference	Case-insensitive dictionary sort order, with case preference for collating purposes. A word written with uppercase letters is equivalent to the same word written with lowercase letters.
	Uppercase and lowercase letters are distinguished only when you use an order by clause. The order by clause sorts uppercase letters before it sorts lowercase.
	Note Do not select this sort order unless your installation requires that uppercase letters be sorted before lowercase letters in otherwise equivalent strings for order by clauses. Using this sort order may reduce performance in large tables when the columns specified in an order by clause match the key of the table's clustered index.
Alternate dictionary order case sensitive	Case-sensitive alternate dictionary sort order with lowercase variants sorted before uppercase.
	Use with several of the Western European languages.
Alternate dictionary order case insensitive accent insensitive	Case-insensitive and accent-insensitive alternate dictionary sort order.
	Use with several of the Western European languages.

Sort Order Name	Description
Alternate dictionary order case insensitive uppercase preference	Case-insensitive alternate dictionary sort order with uppercase preference. Use with several of the Western European languages.

To see the sort orders that are available, use Server Config to display the sort orders for the character sets you plan to use.

Gathering Information About Collation

The following functions enable you to perform collation operations in your applications:

- **sortkey** – generates binary values that you can use to order query results based on collation behavior.

- **compare** – compares two character strings based on alternate collation rules.

These functions can be nested and used anywhere that an expression is allowed, including stored procedures and triggers.

Ordering Query Results Based on Collation Behavior

The **sortkey** function generates values that can be used to order results based on collation behavior. This allows you to work with character collation behaviors beyond the default set of Latin-character-based dictionary sort orders and case or accent sensitivity. The return value is a *varbinary* datatype value that contains coded collation information for the input string that is retained from the **sortkey** function.

For example, you can store the values returned by **sortkey** in a column with the source character string. When you want to retrieve the character data in the desired order, the **select** statement only needs to include an **order by** clause on the columns that contain the results of running **sortkey**.

The **sortkey** function guarantees that the values it returns for a given set of collation criteria work for the binary comparisons that are performed on varbinary datatypes.

Syntax for sortkey

The syntax is:

sortkey (*char_expression* [, {*collation_name* | *collation_ID*}])

where:

- *char_expression* is one of the following:

    - Character type (*char*, *varchar*, *nchar*, or *nvarchar*)

    - Character variable, or

    - Constant character expression, enclosed in single or double quotation marks

- *collation_name* is a quoted string or a character variable that specifies the collation to use.

- *collation_ID* is an integer constant or a variable that specifies the collation to use.

There are two types of collation tables, built-in and external. You can use either the collation name or the collation ID to specify a built-in table. You must use the collation name to specify external tables. Table 8-17 lists the valid values for *collation_name* and *collation_ID*.

Table 8-17: Collation Names and IDs

Description	Collation Name	Collation ID
Binary sort	binary	50
Default Unicode multilingual	default	0
CP 850 Alternative: no accent	altnoacc	39
CP 850 Alternative: lower case first	altdict	45
CP 850 Alternative: no case preference	altnocsp	46
CP 850 Scandinavian dictionary	scandict	47
CP 850 Scandinavian no case preference	scannocp	48
GB Pinyin	gbpinyin	n/a
Latin-1 English, French, German dictionary	dict	51
Latin-1 English, French, German no case	nocase	52
Latin-1 English, French, German no case preference	nocasep	53
Latin-1 English, French, German no accent	noaccent	54
Latin-1 Spanish dictionary	espdict	55
Latin-1 Spanish no case	espnocs	56
Latin-1 Spanish no accent	espnoac	57
ISO 8859-5 Cyrillic dictionary	cyrdict	n/a

Description	Collation Name	Collation ID
ISO 8859-5 Russian dictionary	rusdict	n/a
ISO 8859-9 Turkish dictionary	turdict	n/a
Shift-JIS binary order	sjisbin	n/a
Thai dictionary	thaidict	1

Rules for Using sortkey

The following rules apply to using the **sortkey** function:

- *char_expression* must be composed of characters that are encoded in the server's default character set.

- *char_expression* can be an empty string. If it is an empty string:

    - **sortkey** returns a zero-length varbinary value, and

    - Adaptive Server stores a blank for the empty string.

    An empty string has a different collation value than an NULL string from a database column.

- If *char_expression* is NULL, **sortkey** returns a NULL value.

- If you do not specify a value for *collation_name* or *collation_ID*, **sortkey** assumes binary collation.

Note **sortkey** can generate up to 6 bytes of collation information for each input character. Therefore, the result from using **sortkey** may exceed the 255-byte length limit of the varbinary datatype. If this happens, the result is truncated to fit. Truncation removes result bytes for each input character until the result string is less than 255 bytes. If this occurs, a warning message is issued, but the query or transaction that contained the **sortkey** function continues to work.

Comparing Strings Based on Alternate Collation Rules

The **compare** function allows you to directly compare two character strings based on alternate collation rules.

Syntax for *compare*

The syntax is:

```
compare (char_expression1, char_expression2
[, {collation_name | collation_ID}])
```

where:

- *char_expression1* is the character expression you want to compare to *char_expression2*.

    char_expression2 is the character expression against which you want to compare *char_expression1*.

    char_expression1 and *char_expression2* can be one of:

    - Character type (*char*, *varchar*, *nchar*, or *nvarchar*)

    - Character variable

    - Constant character expression, enclosed in single or double quotation marks

- *collation_name* can be a quoted string or a character variable that specifies the collation to use.

- *collation_ID* is an integer constant or a variable that specifies the collation to use.

The **compare** function returns the following values, based on the collation rules that you chose:

- 1 – indicates that *char_expression1* is greater than *char_expression2*.

- 0 – indicates that *char_expression1* is equal to *char_expression2*.

- -1 – indicates that *char_expression1* is less than *char_expression2*.

Rules for Using *compare*

The following rules apply to using the **compare** function:

- Both *char_expression1* and *char_expression2* must be characters that are encoded in the server's default character set.

- Either *char_expression1* or *char_expression2*, or both, can be empty strings:

    - If *char_expression2* is empty, the function returns 1.

    - If both strings are empty, then they are equal, and the function returns a 0 value.

    - If *char_expression1* is empty, the function returns a -1.

The **compare** function does not equate empty strings and strings containing only spaces, as Adaptive Server does. **compare** uses the **sortkey** function to generate collation keys for comparison. Therefore, a truly empty string, a string with one space, or a string with two spaces do not compare equally.

*   If either *char_expression1* or *char_expression2* is NULL, then the result will be NULL.

*   If you do not specify a value for *collation_name*, **compare** assumes binary collation.

*   If you do not specify a value for *collation_ID*, **compare** assumes binary collation.

Language Modules

If you want Adaptive Server error messages to be displayed in a language other than U.S. English (us_english), you must install the appropriate language module.

When you install a new language module, installation automatically loads the language, character set and sort order files into the Sybase installation directory to support the new language. For information about directories, see "Localization Directories" on page 125.

Installing a New Language Module

A full install of Adaptive Server installs all the language components automatically. If you did not select a full install, you need to install additional language modules manually.

To install a new language module:

1   Load the language module software from the distribution media. You must load this software into the same directory in which you loaded Adaptive Server.

2   Reconfigure the language and, if necessary, the character set and sort order for Adaptive Server. For instructions, see "Changing the Localization Configuration" on page 129.

Message Languages

For messages, U.S. English is installed as the default language in Adaptive Server. The following rules apply to language modules:

- During Adaptive Server installation or reconfiguration, you can specify a default language other than U.S. English. However, you must have installed the language module for the language you specify.

- If your clients require Adaptive Server messages in a language other than U.S. English, you must load the language module for those languages. Then, you can configure Adaptive Server to the language used by your clients.

- If Adaptive Server does not support messages in a client's language, these clients receive messages in the Server default language.

  For example, if your client's language is Latin, the Spanish language module is installed, and Spanish is specified as the Adaptive Server default language, the client receives messages in Spanish.

Localization

By default, the Adaptive Server and Backup Server configurations use the English locale settings, which include:

- Character-set definition files for Western European character sets

- Sort-order definition files for Western European character sets

- U.S. English system message files

During the installation process or through reconfiguration, you can specify a different language, character set, and sort order.

Localization Directories

Sybase localization configuration involves the following directories:

- *locales*

- *charsets*

The table below illustrates the structure of the localization files. It does not show a complete list of all the files.

	charset_name	*.srt* files
charsets	*charset_name...*	*charset.loc*
	unicode	*.uct* files
	language_name	charset_name
locales	*language_name...*	*charset_name...*
	locales.dat	
	message	*language_name*
		language_name...

%SYBASE% or *$SYBASE/*

About the Directory

The *%SYBASE%\locales* directory contains a subdirectory for each available language. Each language subdirectory contains a subdirectory for each character set available with that language.

- The *.loc* files in these subdirectories enable Adaptive Server or Backup Server to report errors in a specific language, encoded in a specific character set.

  There are a variety of *.loc* files in each subdirectory. Most of these files contain translated error messages for a specific product or utility.

- The *common.loc* file in each subdirectory contains localized information, such as local date, time, and currency formatting, that is used by all products.

- The *locales.dat* file contains entries that associate platform-specific locale names with Sybase language and character-set combinations.

About the *charsets* Directory

The files in *%SYBASE%\charsets\charset_name* contain information related to each particular character set, such as the definition of the character set and any sort orders available for that character set.

About the *locales.dat* File

You can edit the *locales.dat* file to:

- Change the default language or character set for a platform, or

- Add new associations between platform locale names and Sybase language and character-set names.

Format of *locales.dat* File Entries

Each entry in the *locales.dat* file links a platform-specific locale definition to a Sybase language and character set combination. Each entry has the following format:

```
locale = platform_locale, syb_language, syb_charset
```

where:

- *platform_locale* is the platform-specific keyword for a locale. For acceptable values, see your operating system documentation.

  When the locale being defined is the default for the site, *platform_locale* is "default".

- *syb_language* is the name of the language directory to be used from within *%SYBASE%\locales\language_name*.

- *syb_charset* is the character-set name that determines the character-set conversion method and identifies the directory location of the message files for clients from within *%SYBASE%\locales\charset_name*.

For example, the following entry specifies that the default locale uses us_english for the language and iso_1 for the character set:

```
locale = default, us_english, iso_1
```

How Client Applications Use *locales.dat*

Client applications use the *locales.dat* file to identify the language and character set to use. The connection process follows these steps:

1   When a client application starts, it checks the operating system locale setting and then checks the *locales.date* file to see if that setting is appropriate for Adaptive Server. For example, a locale entry for French can look like the following:

```
locale = fr_FR, french, iso_1
```

2   When the client connects to Adaptive Server, the language and character-set information is passed to Adaptive Server in the login record.

3   Adaptive Server then uses:

*   The character-set information, for example, iso_1, to identify the client's character set and verify whether it can convert character data to this character set

*   The language (in the preceding example, French) and character-set information to see if it has messages in the client's language

Note Adaptive Server software comes with some locale entries already defined in the *locales.dat* file. If these entries do not meet your needs, you can either modify them or add new locale entries.

Editing the *locales.dat* File

Before beginning the edit, make a copy of the original file, in case you have problems with the resulting edited version.

To edit the *locales.dat* file:

1   Open the *locales.dat* file copy in a text editor such as Notepad.

2   Find the section for NT, which is enclosed in brackets *[NT]*.

3   Make sure the section contains an entry for the language (*syb_language*) and character set (*syb_charset*) combination that you want to use.

*   If an entry does not exist, continue with step 4.

*   If an entry does exist, continue with step 5.

Note The value for *platform_locale* must match the value required by your operating system. If the locales definitions in your system configuration files do not match the Sybase locale definitions, your applications will not run properly.

For example, if you want your Open Client messages to appear in French, and Adaptive Server is using the ROMAN8 character set, you would check the *locales.dat* entries for your platform and look for the following entry:

```
locale = fr_FR, french, roman8
```

4   Add the required entry or modify an existing entry.

5   Save the changes, if any, and exit the text editor.

Changing the Localization Configuration

By default, the Adaptive Server and Backup Server configurations uses the English locale settings localization, which include:

•   Character-set definition files for Western European character sets

•   Sort order definition files for Western European character sets

•   us_english system message files

During the installation process and through reconfiguration, you can specify a different language, character set, and sort order.

To change the localization configuration for Adaptive Server and Backup Server:

1   Start Server Config. The Server Config option appears as an option of the Sybase program group.

2   Click the icon for the server for which you want to change configuration, and click its corresponding Configure button in the Configure Sybase Servers dialog box.

3   From the Existing Servers screen, select the name of the server you want to configure, and click Continue.

4   Log in, if necessary.

    When configuring a Backup Server, you may already be logged in. If you are, go to step 6.

    When configuring an Adaptive Server, you need to log in first.

    a   Enter the login name and password of a user with System Administrator privileges, and click Continue.

    b   Click Yes if the Adaptive Server is not running. Server Config asks you to start it now.

5   Depending on the type of server you are configuring, go to "For Adaptive Server," on page 130, or "For Backup Server" on page 131.

129

For Adaptive Server

Each language uses about 2MB of database space per module. If necessary, use the **alter database** command to increase the size of the *master* database before adding another language.

Note If you want to install more than one language on Adaptive Server, and the *master* database is not large enough to manage more than one language, the transaction log may become too full. You can expand the *master* database only on the master device. For more information, see the *System Administration Guide*.

To configure localization for Adaptive Server on the server, start **syconfig**:

1   Choose Language from the Configure Adaptive Server Enterprise dialog box.

    Server Config displays the Language Options dialog box.

    Note If you change the sort order or default character set, you must reconfigure existing databases to work with the new data requirements. See the *System Administration Guide* for more information.

    ---

2   To add or remove a language or character set, click the appropriate Add/Remove option.

    Server Config displays the Install Languages or Install Character Sets dialog box, depending on your choice.

    The languages and character sets displayed in the Selected list are already installed and available for Adaptive Server to use.

    Server Config permits you to configure only those languages for which it finds message files. Since we do not provide message files for all possible languages, some languages cannot be installed using the Server Config utility. If your language does not appear as one of the available languages you must exit Server Config and follow the instructions in "Installing a New Language Module" on page 124.

    To add or remove a language or character set:

    a   Select a language or character set from the Available list, and click Add or Remove.

b   Click OK. The Configure Adaptive Server dialog box redisplays.

Note The Japanese language cannot coexist with any other installed language. If you install the Japanese language on Adaptive Server, you must make it the default language.

---

3   To change the default language, character set, or sort order, click the appropriate Set Default button in the Language Options dialog box.

Server Config displays the appropriate Change dialog box:

- Change Default Language

- Change Default Character Set

- Change Default Sort Order

Adaptive Server supports only one sort order at a time, so the Sort Order heading provides only the Set Default option.

4   For languages or character sets:

a   Select an option from the Available list, and click Add.

b   Click OK.

For sort orders:

a   Select a sort order from the Available Sort Orders list.

b   Click OK.

5   In the Language Options dialog box, click OK.

6   In the Configure Adaptive Server dialog box, choose Save to save the localization settings and return to the Configure Sybase Servers dialog box.

7   When you have completed the necessary configuration changes, click Exit to quit Server Config.

For Backup Server

When you select the Backup Server to configure, Server Config displays the Configure Backup Server dialog box.

To configure localization for Backup Server:

1   From the Configure Backup Server dialog box, choose:

   a   The default language for Backup Server from the Language drop-down list

   b   The default character set from the Character Set drop-down list

2   Click Save to save the changes and return to the Configure Sybase Servers dialog box.

3   When you have completed the necessary configuration changes, click Exit to quit Server Config.

Configuring Adaptive Server for Other Character Sets

To configure Adaptive Server with the character set and sort order for your language, complete the following steps. Your system messages appear in the default language, English.

1   Use the **charset** utility to load the default character set and sort order.

   To use the **charset** the server must be running and you must have System Administrator privileges. Use the *file name* of the sort order:

   ```
   %SYBASE%\%SYBASE_ASE%\bin\charset -Usa -Ppassword -
   Sserver_name  sort_order_file character_set
   ```

   Replace *sort_order_file* with the name of the sort order file. See Table 8-18 on page 133. Replace *character_set* with the Sybase name for your character set. See Table 8-19 on page 135.

2   Use the **charset** utility to load any additional character sets. See"charset Utility" on page 136 for more about this utility.

   If you plan to use the Adaptive Server built-in character-set conversions, you must load the character-set definition files for all the characters set on your client platforms. If you are using the Unilib character-set conversions, you do not need to do this.

3   Using **isql**, log in to your server as "sa" and select the master database.

   ```
   1> use master
   2> go
   ```

4   Use the *ID* of the sort order to configure your server for the new character set and sort order.

   ```
   1> sp_configure "default sort_order_id",
   2> sort_order_id, "character_set"
   ```

```
3> go
```

Replace *sort_order_id* with the ID for your sort order. See Table 8-18 on page 133. Replace *character_set* with the Sybase name for your character set. See Table 8-19 on page 135.

5   Shut down the server to start the reconfiguration process.

6   Reboot the server. Use Windows NT Service Manager from your Sybase Program Group or from a command prompt, invoke RUN_*server_name.bat* from %SYBASE%\%SYBASE_ASE%\install.

7   The server boots, rebuilds all the system indexes, then shuts down. Reboot a second time to bring the server up in a stable state.

Sort Orders

Table 8-18 describes the available sort orders. If your language does not appear, then there is no language-specific sort order for your language—use a binary sort order.

Table 8-18: Available sort orders

Language or Script	Sort orders	File name	ID
All languages	Binary order	*binary.srt*	50
Cyrillic	Dictionary order, case sensitive, accent sensitive	*cyrdict.srt*	63
	Dictionary order, case sensitive, accent sensitive	*cyrnocs.srt*	64
English French German (These sort orders work with all Western European character sets.)	Dictionary order, case sensitive, accent sensitive	*dictiona.srt*	51
	Dictionary order, case insensitive, accent sensitive	*nocase.srt*	52
	Dictionary order, case sensitive, accent sensitive, with preference	*nocasepr.srt*	53
	Dictionary order, case insensitive, accent insensitive	*noaccent.srt*	54

Language or Script	Sort orders	File name	ID
English French German (These sort orders work only with CP 850.)	Alternate dictionary order, case sensitive	*altdict.srt*	45
	Alternate dictionary order, case sensitive, accent insensitive	*altnoacc.srt*	39
	Alternate dictionary order, case sensitive, with preference	*altnocsp.srt*	46
Greek (This sort order works only with ISO 8859-7.)	Dictionary order, case sensitive, accent sensitive	*elldict.srt*	65
Hungarian (These sort orders work only with ISO 8859-2.)	Dictionary order, case sensitive, accent sensitive	*hundict.srt*	69
	Dictionary order, case insensitive, accent sensitive	*hunnoac.srt*	70
	Dictionary order, case insensitive, accent insensitive	*hunnocs.srt*	71
Russian (This sort order works with all Cyrillic character sets except for CP 855.)	Dictionary order, case sensitive, accent sensitive	*rusdict.srt*	58
	Dictionary order, case insensitive, accent sensitive	*rusnocs.srt*	59
Scandinavian (These sort orders work only with CP 850.)	Dictionary order, case sensitive, accent sensitive	*scandict.srt*	47
	Dictionary order, case insensitive, with preference	*scannocp.srt*	48
Spanish	Dictionary order, case sensitive, accent sensitive	*espdict.srt*	55
	Dictionary order, case insensitive, accent sensitive	*espnocs.srt*	56
	Dictionary order, case insensitive, accent insensitive	*espnoac.srt*	57
Thai	Dictionary order	*dictionary.srt*	51
Turkish (These sort orders work only with ISO 8859-9.)	Dictionary order, case sensitive, accent sensitive	*turdict.srt*	72
	Dictionary order, case insensitive, accent insensitive	*turnoac.srt*	73
	Dictionary order, case insensitive, accent sensitive	*turnocs.srt*	74

Character sets

Table 8-19 lists the supported character sets and their Sybase name.

Table 8-19: Sybase character-set names

Character sets	Sybase name
ASCII 8	acsii_8
Big 5	big5
CP 437	cp437
CP 850	cp850
CP 852	cp852
CP 855	cp855
CP 857	cp857
CP 860	cp860
CP 863	cp863
CP 864	cp864
CP 866	cp866
CP 869	cp869
CP 874	cp874
CP 932	cp932
CP 936	cp936
CP 950	cp950
CP 1250	cp1250
CP 1251	cp1251
CP 1252	cp1252
CP 1253	cp1253
CP 1254	cp1254
CP 1255	cp1255
CP 1256	cp1256
CP 1257	cp1257
CP 1258	cp1258
DEC Kanji	deckanji
EUC-CNS	euccns
EUC-GB	eucgb
EUC-JIS	eucjis
EUC-KSC	eucksc
GREEK8	greek8
ISO 8859-1	iso_1
ISO 8859-2	iso88592

Character sets	Sybase name
ISO 8859-5	iso88595
ISO 8859-6	iso88596
ISO 8859-7	iso88597
ISO 8859-8	iso88598
ISO 8859-9	iso88599
ISO 8859-15	iso885915
Koi8	koi8
Macintosh Cyrillic	mac_cyr
Macintosh Central European	mac_ee
Macintosh Greek	macgrk2
Macintosh Roman	mac
Macintosh Turkish	macturk
ROMAN8	roman8
Shift-JIS	sjis
TIS 620	tis620
TURKISH8	turkish8
UTF-8	utf8

charset Utility

Use the **charset** utility to load character sets and sort orders into Adaptive Server. If you are using **charset** to load the default character set and sort order, this should be done only at the time of installation.

To change the default character set and sort order of Adaptive Server, see the *System Administration Guide*.

Syntax

```
charset [ sort_order_file | charset.loc] charset_directory
```

Usage

```
charset
[ -U username ]
[ -P password ]
[ -S server ]
[ -I interfaces ]
[ -v version ]
[ sort_order_file | charset.loc ]
[ charset_directory ]
```

Table 8-20: Keywords and options for charsets

Keywords and Options	Description
-U	If you are not already logged in to your operating system as "sa", you must specify "-Usa" or "/username = sa" in the command line.
-P	Specifies the "sa" password on the command line. If not specified, the user is prompted for the "sa" password.
-S	Specifies the name of the server. If not specified, charset uses the DSQUERY environment variable to identify the server name. If there is no DSQUERY environment variable, charset attempts to connect to a server named "SYBASE."
-I	Specifies the interfaces file to use. If not specified, charset uses the interfaces file in the SYBASE directory.
-v	Causes the Sybase version string to be printed, then exits. Use with no other options specified.
sort_order_file | charset.loc	When charset is used to load the default character set and sort order, *sort_order_file* is a mandatory parameter specifying the name of the sort order file to be used by Adaptive Server. When loading additional character sets, use *charset.loc* to indicate the name of the character-set files.
charset_directory	Specifies the directory of the character set to be used by Adaptive Server.

Upgrading Sybase Servers

This chapter describes how to upgrade approved versions of Adaptive Server, SQL Server, Backup Server, and Monitor Server to version 12.0.

Topics covered include:

Note If you are migrating applications from one version of jConnect to another, see Chapter 5, "Migrating jConnect Applications," in the *jConnect for JDBC Programmer's Reference* for instructions.

Overview

You can upgrade to Adaptive Server 12.0 from any of these versions:

- 11.0.x

- 11.5

- 11.5.1

- 11.9.2

The upgrade process includes:

- Performing generic pre-upgrade tasks to prepare your site environment and your current server for the upgrade

- Performing specific pre-upgrade tasks if your current server supports auditing or replicated databases

139

• Upgrading to the new release level

• Performing post-upgrade tasks

Note Before you begin the upgrade process, unload Adaptive Server 12.0 product files onto your system. The unloading process is described in Chapter 3, "Unloading Server Products from Distribution Media".

Pre-Upgrade Tasks

Before beginning any upgrade tasks, read the "Special Upgrade Instructions" section in the release bulletin for Adaptive Server.

To ensure a successful upgrade, review the following pre-upgrade tasks and perform them as necessary. Depending on your current Adaptive Server configuration, it may not be necessary to perform all pre-upgrade tasks.

Pre-upgrade tasks include:

• Check System and Upgrade Requirements.

• Note Server and Device Names and Locations.

• Test Current Applications and Stored Procedures.

• Check for Reserved Word Conflicts.

• Create a *sybsystemdb* Database.

• Verify That Users Are Logged Off.

• Disable Disk Mirroring.

• Check Database integrity.

• Back up Databases.

• Dump Transaction Logs.

• Turn Off Database Options.

• If you use replicated databases, read Appendix A, "Preparing to Upgrade Servers with Replicated Databases".

• If applicable, disable auditing. See "Upgrading a Database That Uses Auditing" on page 152.

Check System and Upgrade Requirements

To verify that your system environment is configured correctly:

1   Verify that the computer on which you plan to upgrade the Sybase products meets the requirements described in Chapter 2, "Installation Requirements".

2   Determine whether your server supports an upgrade to Adaptive Server 12.0.

    To determine the release level of your current Adaptive Server (or SQL Server), enter the following command after login in to your server using **isql**:

    ```
    1> select @@version
    2> go
    ```

    You can upgrade to Adaptive Server 12.0 from any of these versions:

    •   11.0.x

    •   11.5

    •   11.5.1

    •   11.9.2

    If you are running a version of Adaptive Server or SQL Server that is earlier than those listed here, you must upgrade to one of these versions before upgrading to 12.0.

3   Set the environment variables necessary to perform the upgrade to contain the necessary values as described in Chapter 5, "Installing Sybase Servers".

4   Verify that your operating system is at the proper release level and has all operating system patches needed for Adaptive Server.

Note Server and Device Names and Locations

By default, the master (*master.dat*) and system procedures device (*sysprocs.dat*) files are installed in the *%SYBASE%\data* directory. The device file names can be different than their device names.

141

Be sure that the *d:\temp* directory and TEMP environment variable exist, where *d:* is the letter of the hard drive. The installation program uses the extra space and directory (*d:\temp*) to write files temporarily during the installation, which it locates via the TEMP environment variable. The program frees this space after installation is complete.

Test Current Applications and Stored Procedures

If you have critical applications and stored procedures, perform an upgrade in a test environment, so that you can determine any adjustments you may need to make in your production environment before upgrading it.

Determine which Sybase products should be running.

If you are upgrading Adaptive Server (or SQL Server), the previously installed version of the server *must* be running.

Check for Reserved Word Conflicts

Check for reserved words that may conflict with identifiers currently in use by existing databases. Reserved words are pieces of SQL syntax that have special meaning when used as part of a command.

Transact-SQL does not allow words that are part of command syntax to be used as identifiers, unless they are enclosed in quotation marks, as explained in "Using Quoted Identifiers" on page 144. If you are upgrading Adaptive Server, and the identifiers in your user databases match new reserved words, errors can result when you run queries, stored procedures, or applications that use these identifiers.

 Warning! If a user database name is a reserved word, upgrade fails when it tries to upgrade the database. You must use **sp_renamedb** to change the name of any user database that is a reserved word before performing the upgrade.

Conflicts between object names do not prevent the upgrade process from completing. However, applications that refer to conflicting object names may not work after the upgrade. Be sure to rename all objects that use reserved words.

See the *Adaptive Server Reference Manual* for a complete list of reserved words.

Note If you change an object name, be sure to change applications and stored procedures that refer to that object.

Running a Reserved Word Check

The **sp_checkreswords** system procedure detects and displays any identifiers in your existing databases that conflict with reserved words. Server Config installs **sp_checkreswords** and checks the reserved words during the upgrade.

The reserved word check detects whether your existing Adaptive Server databases use as identifiers words that are reserved for command syntax use (reserved words) and displays the number of reserved word conflicts. Server Config does not display the names or locations of identifiers that conflict with reserved words.

Note Server Config always discovers one reserved-word conflict for each database in your Adaptive Server. This is because the *sysobjects* table in Adaptive Server inserts a reserved word with each of its table entries. You do not need to address these conflicts, because they do not adversely affect the upgrade process.

Addressing Reserved Words Conflicts

If any database names are reserved words, you must use **sp_renamedb** to change the database names before you can upgrade. Use **sp_dboption** to set the database to single-user mode, and then run **sp_renamedb**, specifying the new name. See *Adaptive Server Reference Manual* for more information on these procedures.

If other identifiers are reserved words, you can:

- Use **sp_rename** to change the name of the object, before or after the upgrade.

- Use quoted identifiers. See "Using Quoted Identifiers" on page 144 for more information.

When you perform a reserved word check with **sqlupgrade** or **sqlupgradres** it installs new reserved words and **sp_checkreswords**. While you address reserved word conflicts, you can run **sp_checkreswords** to verify that all conflicting names have been resolved. **sp_checkreswords** checks for all reserved words used as identifiers in the current database. Run this procedure in *master* and in each user database to display the names and locations of conflicting identifiers.

For more information about **sp_rename** and **sp_checkreswords** and methods for avoiding reserved word conflicts, see the *Adaptive Server Reference Manual*.

Using Quoted Identifiers

You can enclose the identifiers that are reserved words in double quotation marks and invoke the **quoted_identifier** option of the **set** command in procedures and queries that include the reserved words. The **set quoted_identifier** option tells Adaptive Server to treat any character string enclosed in double quotation marks as an identifier.

To avoid reserved word conflicts, all users on the server must invoke the **quoted_identifier** option in all stored procedures and queries that include the reserved words.

Verify That Users Are Logged Off

Use the following procedure to verify that users are logged off of the system:

1   Log in to your current server as the Sybase System Administrator:

```
isql -Usa -Ppassword -Sserver_name
```

2   Enter:

```
1> sp_who
2> go
```

This command returns a list of all users and processes currently on the server.

3   Log off all users on the server.

The upgrade will not work if you boot the server in single-user mode.

Check Database integrity

Check logical and physical database consistency by running the following commands in each database:

- **dbcc checkalloc**

- **dbcc checkdb**

- **dbcc checkcatalog**

If you encounter any errors while running these commands, resolve them before continuing the upgrade. For help with resolving errors, see the *Troubleshooting and Error Messages Guide*.

If you are upgrading from Adaptive Server 11.5.1 or later, and you have set up your system to run **dbcc checkstorage**, you can use that command instead of the other **dbcc** commands to check database consistency. For details on using **dbcc checkstorage**, see the *System Administration Guide*.

If a database is marked "suspect," drop that database with the **dbcc dbrepair** (*database_name*, **dropdb**) command**.** See step 13.

Back up Databases

Use the **dump database** command to back up your databases. If you encounter any problems during the upgrade, you may need these dumps to recover the previous installation. Be sure to dump the *master* database.

 Warning! *The upgrade process permanently modifies your existing Sybase databases.* Back up all your databases, including *master, sybsystemprocs,* and *model*, before beginning the upgrade so you can restore them if necessary.

For information on backing up and recovering databases, see the *System Administration Guide*.

Dump Transaction Logs

The upgrade process may consume substantial space in the transaction log. Before beginning the upgrade process, run the **dump transaction** command in each database to free up log space.

Database and Devices

Make sure that *master* is the default database for the "sa" user.

The upgrade cannot complete successfully with a different database as your default. For information about specifying the default database, see the *System Administration Guide*.

Use **sphelpdb** to:

- Verify that the *tempdb* database is a minimum of 3MB.

- Verify that the *model* database is a minimum of 3MB.

- Verify that the master database is a minimum of 7MB.

If any database is smaller that the required size, use **alter database** to increase the size.

Create a *sybsystemdb* Database

In versions 11.5.x and 11.9.x, the *sybsystemdb* database was required only for servers using two-phase commit transactions. In version 12.0, all servers must have a *sybsystemdb* database. Version 12.0 uses this database for tracking transactions and during recovery. In addition, it is used for applications using two-phase commit and distributed transaction management (DTM).

sybsystemdb does not need to be located on the *master* device.

If You Have a *sybsystemdb* Database

If you have a *sybsystemdb* from 11.5.x or 11.9.x and the database is at least 4 MB, you do not need to make any changes. If the database is smaller than 4MB, increase the size with **alter database**.

If You Do Not Have a *sybsystemdb* Database

If you do not have a *sybsystemdb*, and will not be using two-phase commit or DTM applications, create a *sybsystemdb* at the minimum database size (4MB.)

If you will be using two-phase commit or DTM, you can either:

- Create a minimum-sized *sybsystemdb* for upgrade and expand it later, or

- Create a *sybsystemdb* of 5 to 20MB, depending on your expected usage. Approximately 25% of the database should be data storage, and 75% should be log storage.

The following example initializes data and log devices, and creates a 20MB
sybsystemdb:

```
1> disk init name = "sybsystemdb_data"
2> physname = "/sybase/data/sybsystemdb_data"
3> vdevno = 8
4> size = 2560


1> disk init name = "sybsystemdb_log"
2> physname = "/sybase/data/sybsystemdb_log"
3> vdevno = 9
4> size = 7680


1> create database sybsystemdb on sybsystemdb_data = 5
2> log on sybsystemdb_log = 15
```

sybsystemprocs

Verify that the *sybsystemprocs* database is large enough. The minimum size for
sybsystemprocs is 80MB. You may need more space if you are adding user-
defined stored procedures.

If your *sybsystemprocs* database is smaller than 80MB, and you have room on
the device that contains this database, use the **alter database** command to
increase the database size.

To determine whether the *sybsystemprocs* database is large enough, use
sp_helpdb to determine the size of the *sybsystemprocs* database:

```
1> sp_helpdb sybsystemprocs
2> go
```

To determine whether the system procedures device is large enough, use
sp_helpdevice to determine the size of the *sybsystemprocs* device:

```
1> sp_helpdevice sybsystemprocs
2> go
```

If the resulting information indicates that the *db_size* setting is less than 80MB,
you must increase the size of *sybstemprocs*.

Increasing the Size of the *sybsystemprocs* Database

The recommended system procedures device (*sysprocsdev*) size is 80MB, which allows extra space that you may need for your stored procedures and accommodates any size increase in the *sybsystemprocs* database.

If your current *sybsystemprocs* database does not have at least 80MB available space, you have two options for creating a new database with sufficient space for the upgrade:

• You can drop the old database and the device and create a new *sysprocsdev* device with 80MB, or

• You can leave the database and old device alone and add a new device large enough to hold the additional megabytes, and alter the *sybsystemprocs* onto the new device.

To enlarge the *sybsystemprocs* database:

1   If you do not have a current backup, create one.

2   In **isql**, use **alter database** to increase the size of the *sybsystemprocs* database. For example:

```
1> use master
2> go
1> alter database sybsystemprocs on sysprocsdev=35
2> go
```

In this example, "sysprocsdev" is the logical name of the existing system procedures device and "35" is the number of megabytes of space to add.

If the system procedures device is too small, you may receive a message similar to the following when you try to increase the size of the *sybsystemprocs* database:

```
Couldn't find enough space on disks to extend
database sybsystemprocs
```

If there is space available on another device, you can expand *sysprocsdev* to a second device, or initialize another device that is large enough. For instructions on creating a larger *sysprocsdev* device, see "Increasing Device and Database Capacity for System Procedures" on page 149.

3   Verify that Adaptive Server has allocated more space to *sybsystemprocs* by issuing the command:

```
1> sp_helpdb sybsystemprocs
2> go
```

When the system procedures database is large enough to accommodate the increased size of the *sybsystemprocs* database, continue with the other pre-upgrade tasks.

Increasing Device and Database Capacity for System Procedures

If you cannot fit the enlarged *sybsystemprocs* database on the system procedures device, increase the size of the device and create a new database.

This procedure involves dropping the database. For more information on **drop database**, see the *Adaptive Server Reference Manual*.

 Warning! This procedure removes all stored procedures you have created at your site. Before you begin, save your local stored procedures using the **defncopy** utility.

To create a larger system procedures device (*sysprocsdev*):

1   Use the **drop database** command to drop the existing *sybsystemprocs* database, using the name you assigned to sysprocsdev:

```
1> sp_configure "allow updates", 1
2> go
1> use master
2> go
1> drop database sybsystemprocs
2> go
1> begin transaction
2> delete from sysdevices
3> where name = "sysprocsdev"
4> go
```

Note If this command affects only one row, commit the transaction. If it affects more than one row, roll back the transaction and call Sybase Technical Support.

---

2   Shut down Adaptive Server or SQL Server:

```
1> shutdown
2> go
```

3   Delete the *sybprocs.dat* device file from the *%SYBASE%\data* directory.

4   Start the server.

5   Log in to the server using **isql**.

6   Find another existing device that has 80MB additional free space, or use a **disk init** command similar to the following to create an additional device for *sybsystemprocs*:

```
1> use master
2> go
1> disk init
2> name = "sysprocsdev",
3> physname = "%SYBASE%\sybase\data\sysproc.dat",
4> vdevno = 9,
5> size = 40960
6> go
```

where *%SYBASE%\data* is the path to your system procedures device.

> **Note** The number for **vdevno** must be available. For information about determining whether **vdevno** is available, see the *System Administration Guide*.

The size you provide should be the number of megabytes of space needed for the device multiplied by 512. **disk init** requires the size to be specified in 2K pages. In this example, the size is 80MB (80 x 512 = 40960). For more information on **disk init**, see the *Adaptive Server Reference Manual*.

7   Create a *sybsystemprocs* database of the appropriate size on that device, for example:

```
1> create database sybsystemprocs on sysprocsdev =
80
2> go
```

8   Run the **instmstr** command in the old release directory, as follows:

```
isql -Usa -Ppassword -i%SYBASE%\scripts\instmstr -oinstmster.out
```

Turn Off Database Options

To turn off database options:

1   Run the **sp_helpdb** stored procedure to show the options that are set for each database.

2   Use the **sp_dboption** stored procedure and the results from **sp_helpdb** to
turn off all options except **select into/bulk copy** on *tempdb*.

For example, to turn off the **trunc log on chkpt** database option, type:

```
sp_dboption sybsystemprocs, 'trunc log on chkpt', false
```

Be sure to turn off the **trunc log on chkpt** database option to avoid
upgrade failure.

For more information about using these system procedures, see the *Adaptive
Server Reference Manual*.

Note The database options for *master* cannot be changed and are not disabled.

Disable Disk Mirroring

Use the **disk unmirror** command to disable disk mirroring for your current
Adaptive Server or SQL Server. For more information about this command, see
the *Adaptive Server Reference Manual*.

Checking Memory Caches

Use **sp_configure** to check the amount of memory used by the following
parameters:

• **procedure cache percent**

• **total data cache size**

Record the amount of memory and the procedure cache percent "Run Value"
to use after you complete the upgrade. Memory use is given in kilobtyes by
sp_configure.

Adaptive Server 12.0 uses more memory for code and internal structures than
previous versions. If you have limited memory assigned for your Adaptive
Server, you may encounter problems starting the new Adaptive Server during
the upgrade process.

To avoid this problem, reconfigure your current Adaptive Server to provide
sufficient memory for the upgrade process to complete successfully.

You can accomplish this task in either of two ways:

151

- Raise the memory allocated to Adaptive Server, or

- Lower other configuration parameters that consume memory.

  For example, use **sp_configure** to set user connections to the default value of 25. For more information about **sp_configure**, see the *Adaptive Server Reference Manual*.

  Make a note of the current values so that you can reset them after the upgrade.

Reboot Adaptive Server when you have finished configuring memory resources.

Upgrading a Database That Uses Auditing

To upgrade a server that contains a database in which auditing is activated make sure that auditing is disabled before starting the upgrade:

1   Turn off auditing before upgrading.

   a   Verify that all Adaptive Server users are logged off.

   b   Disable auditing with the following Transact-SQL command:

```
sp_auditoption 'enable auditing', 'off'
```

2   Record system procedure audit options before upgrading.

   When upgrading, all previous versions of system procedures are overwritten when *sybsystemprocs* is populated. Be sure to record the audit options for all system procedures. After the upgrade is complete, shut down and restart the server. Reenable auditing using:

```
sp_configure auditing, 1
```

   You can reenter the audit options, using **sp_audit**. For more information, see the *System Administration Guide*.

Preparing to Upgrade with Replicated Databases

If you have a version of Replication Server running on a system that will use Adaptive Server version 12.0, follow the instructions in Appendix A, "Preparing to Upgrade Servers with Replicated Databases" *before beginning the upgrade process*.

152

Upgrading to Adaptive Server 12.0

This section covers the upgrade process, and outlines the following tasks:

- Installing version 12.0 software on the target computer. See Chapter 3, "Unloading Server Products from Distribution Media".

- Upgrading the servers with **syconfig** or the Studio Installer software.

- Post-upgrade tasks, and include enabling previous programs and databases, allowing them to utilize the new version's functionality.

Note The 12.0 installation procedure for Sybase Central and the Adaptive Server plug-in for Sybase Central has changed from previous releases. Earlier versions installed both products in the *d:\sybtools* directory. Version 12.0 uses the following locations: Sybase Central in the *d:\Program Files\Sybase\Sybase Central\win32* directory and Adaptive Server plug-in for Sybase Central in the *%SYBASE%* directory. Studio Installer modifies your CLASSPATH, PATH, Profiles, and Registry entries to these specific new locations.

Upgrading the Server

To upgrade the server after you have unloaded the new software (see Chapter 3, "Unloading Server Products from Distribution Media"):

1   Click Upgrade Adaptive Server in the Configure Sybase Servers window.

2   In the Release Path window, enter the old path value in the Path field, for example: *C:\sybase*. By default, the installation program displays the name of the installation directory specified by the SYBASE environment variable.

3   If you are upgrading a version earlier than 12.0, leave the line "ASE" blank in the Release Path window. If you are upgrading from version 12.0 to a later version, enter the path of old Adaptive Server you are upgrading.

4   Click Continue.

5   In the Existing Servers window, select the Adaptive Server or SQL Server to upgrade and choose Continue.

6   In the Enter the System Administrator Password window, type the administrator login name and password.

7   Choose Continue.

8   If Adaptive Server or SQL Server is not running, the upgrade program starts it for you automatically.

Before making any changes to the existing Adaptive Server or SQL Server databases, the installer states: You are advised to backup your databases before upgrading. Do you want to proceed with the upgrade?

9   If you have not backed up the existing databases, choose No in the Upgrade window and use the **dump database** command to make backup copies.

If you have made the necessary backups, select Yes. The installer begins the database eligibility test.

Testing the Adaptive Server Upgrade

To start Adaptive Server and test the upgrade:

1   Start Sybase Central by clicking Start | Programs | Sybase | Sybase Central from the Windows task bar.

2   Select the name of the upgraded Adaptive Server. You are prompted to start the server.

After Adaptive Server starts, the green light appears next to the server name.

3   When prompted, log in as a System Administrator.

Your user ID appears in parentheses next to the server name.

4   Connect to each server listed to verify the installation.

 Warning! Do not start XP Server from Sybase Central. Adaptive Server starts XP Server automatically when Adaptive Server receives the first request for an extended stored procedure.

---

5   To disconnect from each server, choose Disconnect from the Tools menu.

6   Close Sybase Central.

To connect to servers:

1   Select SQL Advantage from the Program group.

2   Click Server, and then click Connect. The SQL Advantage window displays.

3   Select a server, log in by clicking Connect.

If Adaptive Server fails the test, see Chapter 12, "Troubleshooting". Before retrying the installation, follow the instructions in "Uninstalling Adaptive Server 12.0" on page 85.

Note If the upgrade was successful, back up all the databases, including the *master* database, in your upgraded Adaptive Server.

To check the upgrade, use Windows Notepad to view the log file in the directory:

%SYBASE%\%SYBASE_ASE%\upgrade\errorlog.upg

Post-Upgrade Tasks

After you have upgraded to the new version of Adaptive Server, perform the following tasks to make sure your new Adaptive Server is up and running.

Verifying That Servers Are Running

1   To find out whether Adaptive Server is currently running, try to log in to the server, using **isql**:

```
isql -Usa -P -Sserver_name
```

If the server is running, you see the **isql** prompt:

```
1>
```

2   To verify that you are at the new version level, connect to Adaptive Server via **isql** and run the following commands:

```
1> select @@version
2> go
```

Look for "12.0" in the version string.

```
1> sp_configure "upgrade version"
2> go
```

155

sp_configure should return the Run Value "12000".

Restoring Functionality in Adaptive Server

To reset or enable options or functionality you had to change before the upgrade:

1   Reset the configuration parameters.

    If you changed any configuration parameters before the upgrade to ensure enough memory, use the **sp_configure** command to set them back to their previous values.

2   Use **sp_dboption** to reset any database options you disabled before the upgrade.

3   After you complete the upgrade, but before you use the upgraded Adaptive Server, verify that all scripts developed at your site point to Adaptive Server 12.0.

4   Determine the effect of upgrade on your caches.

    When preparing for your upgrade, you recorded the amount of memory used by the **procedure cache percentage** and **total data cache size** configuration parameters.

    Compare the previous values to the upgraded values to see what effect the upgrade had on your caches. Increase total memory, using **sp_configure,** to add enough memory to your Adaptive Server to raise your caches back to the previous values. This formula uses the old and new values for the procedure cache memory and the setting for **procedure cache percent** to determine how much memory to add:

    ```
    select (old_proc_value + new_proc_value)/2 *
    100/proc_cache_percent
    ```

    Add the result to the current "Run Value" for **total memory**. You must reboot the server for this command to take effect. You may wish to add additional memory for the procedure cache, as explained in the next step, before you reboot.

    For more information about **sp_configure**, see the *Adaptive Server Reference Manual*.

5   Check the procedure cache requirements.

The size of query plans has increased between releases. You may want to increase both the total memory and the percent of memory allocated to the procedure cache.

Stored procedures, triggers and other compiled objects require more memory to run than in older versions. The memory required to run a stored procedure increased by almost 100 percent between versions 4.9.x and 11.5 and approximately 20 percent between versions 10.x and 11.5. Adaptive Server 12.0 may need more procedure cache for the server to maintain the same performance.

To increase the procedure cache size, increase the **total memory** or **procedure cache percentage** using **sp_configure**. Use **sp_sysmon** to monitor procedure cache usage.

For more information about **sp_configure** and **sp_sysmon**, see the *Adaptive Server Reference Manual* and the *Performance and Tuning Guide*. For more information about configuring memory, see the *System Administration Guide*.

6   If you unmirrored devices, remirror them, using the **disk remirror** command.

7   If you used two-phase commit in 11.5.x or 11.9.x, run the script to install the two-phase commit tables:

```
isql -Usa -Psa_password -Sserver_name
-i%SYBASE%\%SYBASE_ASE%\scripts\instcomm
```

You do not need to run this script if you do not use two-phase commit.

Reenabling Replication Server

If you disabled replication before the upgrade, you must reenable replication. To do so, first remove any older format log records from your database, and then reenable replication.

Removing Old Log Records

Use the **dump database** command after the upgrade to dump the database and transaction logs to remove the older format log records from your database. This prevents Replication Server from accessing the pre-upgrade portion of the transaction logs.

For example, to dump the *sales* database:

```
1> use master
2> go
1> dump database sales to "\\.\TAPE0"
2> go
```

Reenabling Replication

Follow the steps in this section to reenable replication after upgrading the primary databases and primary RSSDs.

For each primary database and RSSD:

1   Start Adaptive Server if it is not already running.

2   Log on to the server.

3   Clear the locator for the database by executing the following command in the RSSD for this database:

```
1> use RSSD
2> go
3> rs_zeroltm dataserver, database
4> go
```

4   Enable the truncation point for the database.

```
1> use database
2> go
1> dbcc settrunc("ltm", "valid")
2> go
```

5   Restart the Replication Servers and LTMs.

6   Resume the DSI connections that were suspended before the upgrade by executing the following Replication Server command for each suspended database:

```
1> resume connection to dataserver.database
2> go
```

The replication system is now ready for Adaptive Server 12.0, and applications can resume.

If you installed any Sybase client products, such as Open Client, use the **dsedit** utility to edit your interfaces file and to specify the servers to which you want to connect.

Reenabling Auditing

Reenable all auditing options for stored procedures using the audit options you recorded during pre-installation. See "Upgrading a Database That Uses Auditing" on page 152). Reenter the audit options using **sp_audit**.

- Adaptive Server 12.0 includes the following global audit options for **sp_audit**:

    - **security**

    - **dbcc**

- These options are turned off by default and will not be turned on even if you used **sp_auditoption all** to turn on all global audit options in a version earlier than 11.5.

    To turn on these options, use:

    ```
    1> sp_audit security "on"
    2> go
    1> sp_audit "dbcc" "on"
    2> go
    ```

    For more information, see the *Adaptive Server Reference Manual*.

- The functionality provided by these obsolete **sp_auditoption** options is now covered by the **sp_audit security** global audit option:

    - **server boot**

    - **role toggle**

- The **security** option is turned off by default.

If any of these options were turned off before the upgrade, reset the **security** option to **on** to achieve the same auditing actions.

Upgrading Backup Server, Monitor Server, and XP Server

Backup Server, Monitor Server, and XP Server do not have a formal upgrade process.

Note Install a new Backup Server before you dump and load databases on the upgraded Adaptive Server. Back up all databases, including *master*, after successfully upgrading Adaptive Server and Backup Server.

To unload the new release of Backup Server, Historical Server, Monitor Server, and XP Server, follow the instructions in Chapter 3, "Unloading Server Products from Distribution Media"

To create the new Backup Server, and Monitor Server, follow the instructions in Chapter 5, "Installing Sybase Servers"

To create the new Historical Server, see the Historical Server documentation.

What's Next?

You have completed the upgrade to Adaptive Server 12.0.

To localize your server, see Chapter 8, "Customizing Localization for Adaptive Server".

To add extra functionality to your server, see Chapter 10, "Adding Optional Functionality to Adaptive Server".

To configure and administer Adaptive Server, see the following sources:

- *System Administration Guide*
- *Performance and Tuning Guide*

CHAPTER 10   **Adding Optional Functionality to Adaptive Server**

This chapter provides instructions for adding the following optional functionality for Adaptive Server:

- Auditing – tracks security-related system activity in an audit trail, which can be used to detect penetration of the system and misuse of resources.

- Sample databases – French, German, Japanese, and U.S. English, databases that can be used to practice most examples given in the *Transact-SQL User's Guide*.

Topics include:

Name	Page
Installing Auditing	161
Installing Sample Databases	165

Installing Auditing

Auditing is an important part of security in a database management system. Security-related system activity is recorded in an audit trail, which can be used to detect penetration of the system and misuse of resources. By examining the audit trail, the System Security Officer can inspect patterns of access to objects in databases and can monitor the activity of specific users. Audit records can be traced to specific users, enabling the audit system to act as a deterrent to users who are attempting to misuse the system.

A System Security Officer manages the audit system and is the only user who can start and stop auditing, set up auditing options, and process audit data.

Audit System Devices and Databases

The audit system includes several components. The major components are:

- The sybsecurity device and the *sybsecurity* database, which stores audit information

- The audit trail, which is composed of several audit devices and tables that you determine at configuration time

- The syslogs transaction log device, which stores transaction logs

The *sybsecurity* Device and Database

The sybsecurity device stores the *sybsecurity* database. The *sybsecurity* database is created as part of the auditing configuration process. It contains all the system tables in the *model* database as well as a system table for keeping track of server-wide auditing options and system tables for the audit trail.

Tables and Devices for the Audit Trail

Adaptive Server stores the audit trail in system tables, named *sysaudits_01* through *sysaudits_08*. For example, if you have two audit tables, they are named *sysaudits_01* and *sysaudits_02*. At any given time, only *one* of the audit tables is *current*. Adaptive Server writes all audit data to the current audit table. A System Security Officer can use **sp_configure** to set or change which audit table is current.

When you configure Adaptive Server for auditing, you determine the number of audit tables for your installation. You can specify up to eight system tables (*sysaudits_01* through *sysaudits_08*). Plan to use at least two or three system tables for the audit trail and to put each system table on its own device, separate from the master device. If you do this, you can use a threshold procedure that archives the current audit table automatically, before it fills up and switches to a new, empty table for subsequent audit records.

Device for *syslogs* Systems Table

When you configure for auditing, you must specify a separate device for the *syslogs* system table, which contains the transaction log. The *syslogs* table, which exists in every database, contains a log of transactions that are executed in the database.

Pre-Installation Tasks

Determine the location of the raw devices you need for the *sybsecurity*, *syslogs*, and *sysaudits* table devices. You will need to provide this information later. For information on device selection, see "Pre-Installation Tasks" on page 56.

It is recommended that you configure your system with the minimum number of auditing devices you require—you must configure for at least three devices. You can add more auditing devices later with **sp_addaudittable**. For information, see the *Adaptive Server Reference Manual*.

Sybase recommends:

- Installing auditing tables and devices in a one-to-one ratio

  Tables that share the same device will share the same upper threshold limit. These tables cannot be used sequentially when a device fills up, because they both reside on the same device.

- Installing each auditing table on its own device

  This enables you to set up a smoothly running auditing system with no loss of auditing records.

  With two auditing tables, when one fills up, you can switch to the other. With a third auditing table, if one device fails, the System Security Officer can install a new threshold procedure that changes the device rotation to skip the broken device until the device is repaired.

- Making the device larger than the table

  When you use only three auditing tables and devices, the size of the table and the size of the device can be similar, because you can obtain more auditing capacity by adding more auditing tables and devices (up to eight). When you are working toward the upper table and device limit (six to eight), you may want to make the device considerably larger than the table. Then, you can expand the table size later towards the upper size of the device when a larger auditing capacity is desired, and few or no device additions are available.

Installing Auditing

The Adaptive Server auditing feature records information about the use of the server. By default, the auditing feature is not installed, but you can install it by using the instructions in this section. For more information about the auditing features, see the *System Administrators Guide*.

The basic steps to install auditing include:

- Create auditing devices.

- Create the auditing database.

- Run the **instsecu** script to populate the database tables.

To install auditing:

1   Open a Command Prompt window.

2   Start the **isql** program as user "sa":

```
isql -Usa -Ppassword -Sserver_name
```

3   Determine the next available device number to use for the auditing device using statements similar to the following:

For the auditing database itself:

```
1> declare @devno int
2> select @devno = max(low/16777216)+1 from
sysdevices
3>disk init
4> name = "auditdev",
5> physname = "%SYBASE%\data\sybaud.dat",
6> vdevno = @devno,
7> size = 5120
8> go
```

For the auditing database log:

```
1>declare @devno int
2> select @devno = max(low/16777216)+1 from
sysdevices
3> disk init
4> name = "auditlogdev",
5> physname = "%SYBASE%\data\sybaudlg.dat",
6> vdevno = @devno,
7> size = 1024
8> go
```

4   At the **isql** prompt, use the **disk init** command to create the auditing devices.

5   Create the auditing database:

```
1> create database sybsecurity on auditdev
2> log on auditlogdev
```

```
3> go
```

6   Exit **isql**:

```
exit
```

7   Change to the *scripts* directory:

```
cd %SYBASE%\ASE-12_0\scripts
```

8   Set the DSQUERY environment variable:

```
set DSQUERY = server_name
```

9   Start the **isql** program as user "sa" with the **instsecu** script as the input file:

```
isql -Usa -Ppassword -Sserver_name -iinstsecu
```

10 Restart Adaptive Server.

After auditing is installed, no auditing occurs until a System Administrator or System Security Officer enables auditing with the auditing system procedures. See the *System Administrators Guide* for information about enabling auditing features.

Installing Sample Databases

This section describes how to install the U.S. English and international language sample databases. For installation instructions specific to each sample database, see the following sections:

Installing

• "Running the Database Scripts" on page 167

• "Installing the interpubs Database" on page 168

• "Installing the jpubs Database" on page HIDDEN

The **sample databases** contain information about a fictional business. You can use this information to learn about the Sybase products, without affecting essential data while learning.

Table 10-1 lists the scripts that you can use to install the sample databases:

165

Table 10-1: Sample database scripts

Script	Description
instpbs2	Installs the *pubs2* sample database.
	This database contains data that represents a publishing operation. Use this database to test your server connections and to learn Transact-SQL. Most of the examples in the Adaptive Server documentation query the *pubs2* database.
instpbs3	Installs the *pubs3* sample database.
	This updated version of *pubs2* uses referential integrity. In addition, its tables are slightly different than the tables used in *pubs2*. Where noted, the Adaptive Server documentation uses the *pubs3* database in its examples.
instpix2	Installs the image data that is used with the *pubs2* database.
	Note The master device size should be at least 30MB to install the full *pubs2* database, including the image data. Be sure to run the instpix2 script after you run instpbs2.
psdemodb	Installs the Powersoft sample database referred to in the PowerDynamo and InfoMaker documentation.
	For information on installing psdemodb, see "About the Sample Powersoft Database" on page 170.

Default Devices for Sample Databases

The *%SYBASE%\%SYBASE_ASE%\scripts* directory contains scripts for installing the us_english sample database, foreign language sample databases, and the image data associated with the U.S. English *pubs2* sample database.

Each sample database requires 3MB on your database device. By default, the sample database installation scripts install the sample databases on the device that is designated as the default database device, which is the master device.

If you have not used **sp_diskdefault** to change the status of the master device or to specify another default device, the scripts install the sample databases on the master device. This configuration is not recommended because it uses valuable space that is best used for system tables.

To avoid installing sample databases on the master device, do one of the following:

- Use **sp_diskdefault** to specify a default device other than the master device. For information on **sp_diskdefault**, see the *Adaptive Server Reference Manual*.

- Modify each sample database installation script to specify a different device.

Running the Database Scripts

To run any of the scripts listed in Table 10-1:

1   Start Adaptive Server.

2   Determine the type (raw partition, logical volume, operating system file, and so on) and location of the device where you will be storing the *pubs2* and *pubs3* databases. You will need to provide this information later.

3   Make a copy of the original **installpubs2** and **installpubs3** scripts. Be sure you can access the copies, in case you have problems with the edited scripts.

4   Use a text editor to edit the script, if necessary, to specify a default device other than the master device, or use **sp_diskdefault**.

5   Open a Command Prompt window.

6   Use the following syntax to run the script:

```
isql -Usa -P -Sserver_name -iscript_name
```

7   where *server_name* represents the destination server for the database and *script_name* is the full path to and file name of the script to run.

For example, to install *pubs2* on a server named VIOLIN, enter:

```
isql -Usa -P -SVIOLIN
-i %SYBASE%\%SYBASE_ASE%\scripts\instpbs2
```

8   To install the *image* data associated with *pubs2* (*pubs3* does not use image data) run:

```
isql -Usa -Ppassword -Sservername\
```

167

```
<%SYBASE%\ASE-12_0\scripts\instpix2
```

> **Note** The *image* data requires a fair amount of space—there are six pictures, two each in the PICT, TIFF, and Sun raster file formats. Run the images script only if you want to use or test the *image* datatype. Sybase does not supply any tools for displaying *image* data. You must use appropriate screen graphics tools to display the images, after you have extracted them from the database.

For more information about running these scripts, see *Configuring Adaptive Server Enterprise for Windows NT*.

interpubs Database

interpubs is a database similar to *pubs2* that contains French and German data. This data contains 8-bit characters and is available for use at Adaptive Server installations using the ISO 8859-1 (iso_1) or Roman8 (for HP-UX) character set. To display the French and German data correctly, you must set up your terminal to display 8-bit characters.

Installing the *interpubs* Database

To install *interpubs*:

1 Be sure iso_1 or Roman8 is installed as the default character set or as an additional character set.

2 Determine the type (raw partition, logical volume, operating system file, and so on) and location of the device where you will be storing the *interpubs* database. You will need to provide this information later.

3 Make a copy of the original **interpubs** script. Be sure you can access this copy, in case you experience problems with the edited script.

4 Use a text editor to edit the script, if necessary, to specify a default device other than the master device, or use **sp_diskdefault**.

5 Execute the script, using the **-J** flag to ensure that the database is installed with the correct character set:

For more information on the **-J** option in **isql**, see the *Utility Programs for UNIX Platforms*.

```
isql -Usa -Ppassword -Sservername -Jiso_1
```

```
<%SYBASE%\%SYBASE_ASE%scripts\iso_1\interpubs
```

jpubs Database

If you installed the Japanese Language Module with your Adaptive Server, *%SYBASE%\scripts* contains the **installjpubs** script for installing the *jpubs* database. *jpubs* is a database similar to *pubs2* that contains Japanese data. **installjpubs** uses either the EUC-JIS (eucjis) or the Shift-JIS (sjis) character set.

Installing the *jpubs* Database

To install the *jpubs* database:

1   Set your terminal to display 8-bit characters.

2   Verify that the EUC-JIS or Shift-JIS character set (depending on which characters you want for *jpubs*) is installed as Adaptive Server's default character set or as an additional character set.

3   Determine the type (raw partition, logical volume, operating system file, and so on) and location of the device where you will be storing the *jpubs* database. You will need to provide this information later.

4   Make a copy of the original **installjpubs** script. Be sure that you can access this copy, in case you experience problems with the edited script.

5   Use a text editor to edit the script, if necessary, to specify a default device other than the master device, or use **sp_diskdefault**. See "Default Devices for Sample Databases" on page 166.

6   Execute the **installjpubs** script, using the **-J** flag to ensure that the database is installed with the correct character set:

```
isql -Usa -Ppassword -Sservername -Jeucjis \
 <
%SYBASE/%\%SYBASE_ASE%\scripts\eucjis\installjpubs
```

or:

```
isql -Usa -Ppassword -Sservername -Jsjis \
```

```
< %SYBASE/%\%SYBASE_ASE%\scripts\sjis\installjpubs
```

> **Note** Since you may want to refresh or make new copies of the sample databases, back up the original and edited versions of the installation scripts and store the copies in a safe place.

The Powersoft Sample Database

Both InfoMaker and PowerDynamo documentation make use of a sample database. PowerDynamo also uses a sample Web site, which is essentially the same sample database with added Web site content and tables.

> **Note** Before using InfoMaker or PowerDynamo, run the ODBC Administrator program to configure ODBC. You can access this utility by clicking ODBC Data Source Administrator in the Sybase program group or by double-clicking *c:\WINNT\system32\ODBCAD32.EXE* in Windows NT Explorer.

Pre-Installation Task for the Powersoft Sample Database

Before connecting to the sample database from InfoMaker, you must create a database profile for the sample database. For information on creating a database profile, see the InfoMaker manual *Connecting to Your Database*, which is available in the Sybase Technical Library.

About the Sample Powersoft Database

The sample Powersoft database is provided as two SQL scripts with a controlling batch file, which is named *psdemodb.bat*. The *psdemodb.bat* file is installed in the *%SYBASE%\INFO-7_0_1\ shared* directory.

The SQL scripts carry out the following tasks to create the sample database. Command-line arguments to the batch file are used to control the settings. Each of the scripts:

• Drops the *psdemodb* database from the server, if it exists.

• Creates a 4MB device named *tempdb_dev* on the server, using command-line arguments to specify the location and device number.

• Adds a 4MB log to *tempdb* from the new *tempdb_dev* device.

- Creates a 14MB device named *psdemodb_dev*, using command-line arguments to specify the location and device number.

- Creates a database named *psdemodb* on the server, using the *psdemodb_dev* device.

Installing the Sample Powersoft Database

To install the sample Powersoft database:

1   Be sure that you can connect to Adaptive Server and that you have a valid user ID and password with permissions to create a database.

2   From an operating system command prompt, change to the *d:\sybtools* directory and run the *psdemodb.bat* batch file:

```
psdemodb tempdb_location tempdb_number psdemodb_location psdemodb_number
server_name id password
```

For example:

```
psdemodb c:\sybase\data\tempdb.dev 8 c:\sybase\data\psdemodb.dev 9 PIANO sa
```

where:

- **psdemodb** is the installation script.

- *tempdb_location* is the source device location and file name.

- *tempdb_number* is the source device number. Use the first available device number.

- *psdemodb_location* is the destination device location and file name.

- *psdemodb_number* is the destination device number. Use the second available device number.

- *server_name* is the destination Adaptive Server name. The default name of the server is the name of the machine on which it is installed.

- *id* is the System Administrator user ID. For new Adaptive Server installations, the default System Administrator user ID is "sa".

- *password* is the System Administrator's password. For new Adaptive Server installations, no password is assigned. For security, a password should be established as soon as possible through the Server Config utility. In the example, the password has not been established so the password is omitted from the command line. If you changed the password for "sa" during the installation, specify the new password assigned through the Server Config utility.

171

Connecting Clients to the Sample Powersoft Database

To access the sample database through ODBC, create an ODBC data source on the client machine:

1   Start the ODBC Administrator on the client machine.

2   Select Sybase System 11 Sample from the list of available data sources and click Setup.

3   Change the server name for the data source to the name of the server you have installed. By default, the server name is the name of the machine.

4   Click the Advanced tab, and fill in the Database Name (*psdemodb*) and the default Logon ID, which is "sa" if you are using the default System Administrator ID.

5   Click the Performance tab. Make sure that:

   •   The Select Method is set to "0 – Cursor."

   •   The Prepare Method is set to "2 – Full."

6   Double-click Close, and then click OK in the Driver Setup window to create the data source.

Creating the Sample Web Site

When you use Sybase Central to connect from PowerDynamo to a database that does not have a Web site stored for the user ID and database, PowerDynamo asks if you want to create a Web site.

To create the sample Web site:

1   Be sure that the sample database is installed and that you can connect to it from Sybase Central.

2   Start Sybase Central, and choose Tools | Connection Profiles.

3   Select the Dynamo Demo connection profile from the list.

4   Click Connect to connect to the database from the PowerDynamo environment. Since no Web site exists on the sample database for the user ID you have specified, PowerDynamo prompts you to add a Web site.

   Check the boxes to load the documentation and sample database into the Web site.

5   Click OK to create the Web site.

Enabling InfoMaker Native Driver Access to Adaptive Server

InfoMaker uses system procedures to get information about Adaptive Server.

The *pbsyc.sql* Script

The *pbsyc.sql* script, located in the *%SYBASE%\INFO-7_0_1\shared* directory, contains SQL code that drops all existing Powersoft stored procedures in the Adaptive Server *sybsystemprocs* database and then re-creates them. This database is created when you install Adaptive Server.

Before you connect to an Adaptive Server database in PowerBuilder or InfoMaker for the first time, using the PBSYC050 database interface, run the *pbsyc.sql* script once for each database server that will be accessed by users of the InfoMaker development environment or by deployment machines.

The *pbsyc.sql* script creates the following Powersoft stored procedures in the *sybsystemprocs* database. Table 10-2 lists the procedures in the order in which the script creates them.

Table 10-2: pbsyc.sql stored procedure

Stored Procedure	What It Does
sp_pb50column	Lists the columns in a table.
sp_pb50primarykey	Lists the columns in a table's primary key.
sp_pb50pkcheck	Determines whether a table has a primary key.
sp_pb50fktable	Lists the tables that refer to the current table.
sp_pb50foreignkey	Lists all foreign keys associated with a specified table.
sp_pb50extcat	Checks the status of the PowerBuilder catalog in the Powersoft repository.
sp_pb50procdesc	Retrieves a description of the argument list for a specified stored procedure.
sp_pb50proclist	Lists available stored procedures. If the SystemProcs DBParm parameter is set to 1 (Yes), sp_pb50proclist displays both system procedures and user-defined stored procedures. If SystemProcs DBParm is set to 0 (No), sp_pb50proclist displays only user-defined stored procedures.
sp_pb50text	Retrieves the text of a stored procedure from the *syscomments* table.
sp_pb50db	Retrieves the names of all databases available for this server.
sp_pb50table	Retrieves information about *all* tables in a database, including those for which the current user has no permissions.
sp_pb50index	Retrieves information about all indexes for a specified table.

Running the *pbsyc.sql* Script

You can run the *pbsyc.sql* script using **isql**. The following sections describe how to run the script with each utility.

Using *isql* to Run *pbsyc.sql*

To use **isql** to run the script, issue the following command from a command prompt:

isql -U*sa* -S*servername* -i*scriptname* -P*password*

where:

- *sa* is the user ID for the System Administrator. Do not change this user ID.

- *servername* is the name of the Adaptive Server in which you want to install the stored procedures.

- *scriptname* is the drive, directory, and script name of the SQL script you want to run.

- *password* is the System Administrator's password. For new Adaptive Server installations, no password is assigned. For security, a password should be established as soon as possible through the Server Config utility. If you changed the password for "sa" during the installation, specify the new Server Config utility assigned password.

For example:

```
isql -Usa -STEST -ic:\INFO-7_0_1\shared\pbsyc.sql -P
```

```
isql -Usa -SSALES -ic:\INFO-7_0_1\shared\pbsyc.sql -Padminpwd
```

For complete instructions on using **isql**, see Utility Programs for Windows and Windows NT.

Maintaining the Sample Databases

The sample databases contain a "guest" user that allows access to the database by any authorized Adaptive Server user. The "guest" user has a wide range of privileges, including permissions to select, insert, update, and delete user tables. For more information about the "guest" user and a list of "guest" permissions, see the *System Administration Guide*.

If possible, and if space allows, give each new user a clean copy of the sample databases so that she or he is not confused by other users' changes.

If space is a problem, you can instruct the user to issue the **begin transaction** command before updating a sample database. After the user has finished updating one of the sample databases, he or she can issue the **rollback transaction** command to undo the changes.

175

What's Next?

After you have installed the Sybase products on your system, see the product documentation for configuration and administration issues.

CHAPTER 11   **Starting and Stopping Servers**

This chapter describes how to start and stop Adaptive Server, Backup Server, Monitor Server, and XP Server.

Topics covered include:

Overview

You can use either Sybase Central or the NT Services Control Panel to start and stop servers manually or automatically.

XP Server is not started by the installation process. XP Server is started only when any XP command is issued through **isql**.

The methods described here are used to start Adaptive Server, Backup Server, and Monitor Server after a shutdown for database maintenance, because of an operating system crash, or for some other reason.

Requirements for Starting Servers

To start a server, your user account must have:

- Windows NT administrator privileges, or you can use the default "sa" login

- Access to the Adaptive Server distribution files

- Access to a *sql.ini* file entry for the server

- The system environment variables discussed in Chapter 1, "Overview"

The installation program creates the *sql.ini* file and system environment variables when you install servers on your computer.

Starting Servers

Adaptive Server, Backup Server, Monitor Server, and Historical Server store their default start-up parameters in the Windows NT Registry file. This allows you to start and manage servers as Windows NT services, and allows servers to start automatically when you boot your computer.

Server Start-Up Parameters

The default start-up parameters are stored under the Registry key:

\\HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\
server_name\Parameters

where *server_name* is the name of the server you installed.

Backup Server, Monitor Server, and Historical Server server names are appended with "_BS", "_MS", and "_HS", respectively.

Note You can install multiple servers, each with its own Registry key.

Start-up parameters are listed under Registry values named *Argn*, where *n* is a number from 0 to 8. The number of the argument indicates the order in which the server reads the parameter.

Table 11-1 lists the default start-up parameters for Adaptive Server.

Table 11-1: Default Adaptive Server start-up parameters

Parameter	Switch	Description
Arg0	-d *%SYBASE%\data\master.dat*	Location of the master device file
Arg1	-s *server_name*	Name of the Adaptive Server
Arg2	-e *%SYBASE_ASE%\ install\errorlog*	Location and name of the error log file
Arg3	-i *%SYBASE%\ini*	Directory containing the *sql.ini* file
Arg4	-M *%SYBASE%\ %SYBASE_ASE%*	Directory that stores shared memory files

Changing Start-Up Parameters

You cannot change any of these default start-up parameters unless you directly edit the Windows NT Registry values. However, you can use Server Config to specify additional start-up parameters.

Additional start-up parameters include any valid server command-line options listed for the **sqlsvr** and **bcksrvr** descriptions in *Utility Programs for Windows and Windows NT*. For a description of start-up parameters for Monitor Server and Historical Server, see the Adaptive Server Monitor documentation.

To specify additional start-up parameters:

1   Log in to Windows NT using an account with Windows NT administrator privileges.

2   Start Server Config.

3   Select the Adaptive Server icon, the Backup Server icon, or the Monitor Server icon to indicate which type of server you want to configure.

4   Select Configure Adaptive Server, Configure Backup Server, or Configure Monitor Server to display a list of available servers on your system.

5   Select the name of the server to configure, and choose Continue.

6   If you are configuring Adaptive Server, enter the login name and password of a user with System Administrator privileges, and choose Continue.

    Or use the default Sybase "sa" login, which does not require a password.

7   If Adaptive Server is not running, Server Config asks you to start it now; choose Yes.

8   Select the Command Line button.

179

Server Config displays the Command Line Parameters dialog box:

Command Line Parameters

Enter the command line options used every time this instance of the Server is executed. These command line options will set parameters that can not otherwise be configured from this program.

Command Line Parameters: -gPIANO

✓ OK   ✗ Cancel   ? Help
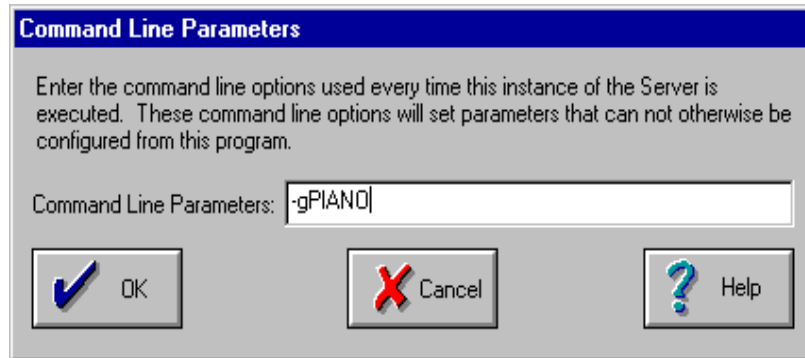
This example, using the **-g** parameter, specifies "PIANO" as the name of the machine used to log that server's error messages.

9   Edit the text in the Command Line Parameters box to include the additional start-up parameters and values you require.

Do not specify the default command line parameters listed in Table 11-1 on page 179. For details on available command line parameters, see **sqlsvr** and **bcksrvr** in the *Utility Programs for Windows and Windows NT*, and the Adaptive Server Enterprise Monitor documentation.

10   Choose OK.

11   Choose Save in the server's configuration dialog box.

12   Exit Server Config.

Starting and Stopping Servers Using Sybase Central

If Sybase Central is installed on the same computer as Adaptive Server, you can start Adaptive Server from Sybase Central.

Starting Servers

To start a local server and connect to it from Sybase Central:

1   Start Sybase Central by clicking on its entry in the Sybase program group.
      A Sybase Central screen similar to the following displays:
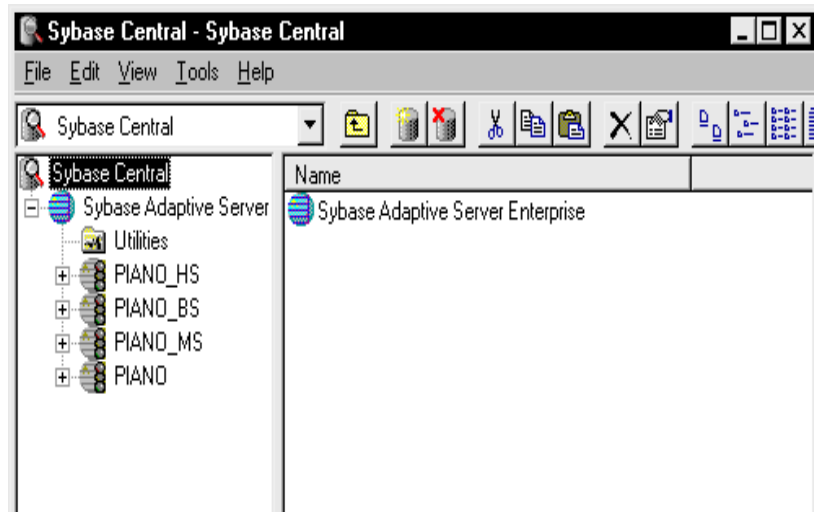
2   In the left panel, click on the server to which you want to connect.

      If the server is not running, Sybase Central asks if you want to start it.
      Click Yes.

      When the traffic light icon representing the server is green, the server is
      running. The Sybase Adaptive Server Enterprise Logon dialog box
      appears.

 Warning! You cannot start XP Server from Sybase Central. Adaptive
Server starts the XP Server automatically when Adaptive Server receives
the first request for an extended stored procedure.

---

3   Log in to Adaptive Server.

You can also start a server from Sybase Central without connecting to the
server, and then connect at a later time.

To start a server without connecting:

1   Right-click on the server you want to start.

2   Click Start in the pop-up menu.

Stopping Servers

To pause or stop a server that is running:

1   Right-click on the server. When the server is running, the menu offers the option to Pause or Stop the server.

2   Click Pause.

3   Click Continue to accept new connections again.

Starting and Stopping Servers Using the Control Panel

You can start, stop, and pause a server both automatically and manually from the Services applet in the Control Panel.

Note If you are running Adaptive Server and the Windows NT Process Viewer, and Adaptive Server is listed in the Process Viewer, you may not be able to restart Adaptive Server after you shut it down. This is because the Process Viewer holds some Registry resources, even after the viewed process is closed. The solution is to shut down the Process Viewer before you restart Adaptive Server.

Starting Servers As an Automatic Service

For a production system, Adaptive Server should start automatically when you restart your computer. To do this, use the Control Panel to set up the server as an automatic service.

Note Do not place Adaptive Server devices on network drives. If Adaptive Server uses a device on a network drive, you cannot start the server as an automatic Windows NT service.

Setting Up Adaptive Server As an Automatic Service

To set up an automatic service:

1   Log in to Windows NT using an account with Windows NT administrator privileges.

2   Choose the Windows NT Services Control Panel.

3   Double-click the Services icon in the main Control Panel window. The Services window displays.

4   Scroll through the list of available services until you find the listings for your Sybase servers.

Server names use the format:

"Sybase *type*Server_*servername_suffix*"

where *servername* is the name of the Adaptive Server and *type* and *_suffix* represent the server type:

- "SQL" for Adaptive Server

- "BCK" and "_BS" for Backup Server

- "MON" and "_MS" for Monitor Server

- "HIS" and "_HS" for Historical Server

- "XP" and "_XP" for XP Server

The Services window in the preceding figure shows listings for an Adaptive Server named PIANO and the default Backup Server and Monitor Server.

5   Select the Adaptive Server, and click the Startup button.

6   In the Services window for the server, select the Automatic option button, and click OK.

To designate a special account that the service should use for logging onto the system, refer to the Windows NT online help or the Windows NT printed documentation.

7   If you are starting Monitor Server as an automatic service, make sure Adaptive Server is started as an automatic service also. Adaptive Server must be running before Monitor Server can start.

8   Click the Close button to close the Services window.

9   Exit the Control Panel.

183

The selected server now starts automatically each time you restart the computer. You can verify the status of the server either by using Sybase Central or by examining the **status** column in the Services applet.

See your Windows NT documentation or online help for more information on setting up automatic services.

Starting, Stopping, and Pausing Servers Manually

You can use the Control Panel to stop, start, and pause Adaptive Server manually.

1 Log in to Windows NT using an account with Windows NT administrator privileges.

2 Choose the Windows NT Control Panel | Services. The Services window displays.

3 Scroll through the list of available services until you find the listings for your Sybase servers.

Server names use the format:

"Sybase *type*Server_*servername_suffix*"

where *servername* is the name of the Adaptive Server and *type* and *_suffix* represent the server type:

- "SQL" for Adaptive Server

- "BCK" and "_BS" for Backup Server

- "MON" and "_MS" for Monitor Server

- "HIS" and "_HS" for Historical Server

- "XP" and "_XP" for XP Server

4 Press the Start, Stop, or Pause button. You are prompted to confirm the choice.

5 Click the Close button to close the Services window.

6 Exit the Control Panel.

You can verify the status of the server either by using Sybase Central or by examining the **status** column in the Services applet.

Stopping Servers

Only the System Administrator has permission to issue a shutdown command. Using a shutdown command minimizes the amount of work that automatic recovery needs to do when the servers are restarted.

The preferred method of stopping Adaptive Server or Backup Server is to use the Transact-SQL **shutdown** command. For Monitor Server, use the **sms_shutdown** command.

Stopping Adaptive Server

To shut down Adaptive Server:

1   Use **isql** to log in to an Adaptive Server account with System Administrator privileges:

```
isql -Usa -Ppassword -Sserver_name
```

2   Enter the following command to shut down the server:

```
1> shutdown
2> go
```

The default for the **shutdown** command is **with wait**. The **with wait** option allows Adaptive Server to finish executing SQL statements or procedures, perform a checkpoint in each database, disable new logins, and perform other shutdown tasks.

Issuing the **shutdown** command prints a message like this to the *sterr* file:

```
Server SHUTDOWN by request.The SQL Server is terminating
this process.
CT-LIBRARY error:
```

This is normal behavior. If the message indicates that Adaptive Server is waiting for processes to complete, and you need to stop Adaptive Server immediately, you can use the **shutdown with nowait** command. **shutdown with nowait** does not wait for currently executing statements to finish and does not perform checkpoints in every database.

Stopping Backup Server

To shut down a Backup Server:

1   Use **isql** to log in to a server with System Administrator privileges:

```
isql -Usa -Ppassword -Sserver_name
```

2   Enter the following command to shut down the specified Backup Server:

```
1> shutdown SYB_BACKUP
2> go
```

After you shut down a Backup Server, you must wait at least 30 seconds before restarting it.

Issuing the **shutdown** command prints a message similar to the following to the *stderr* file:

```
Backup Server: 3.48.1.1: The Backup Server will go down
immediately.
 Terminating sessions.
```

This is normal behavior. If a message indicates that Adaptive Server or Backup Server is waiting for processes to complete, and you need to stop Adaptive Server or Backup Server immediately, you can use the **shutdown with nowait** command. **shutdown with nowait** does not wait for currently executing statements to finish and does not perform checkpoints in every database.

Using **shutdown with nowait** for Backup Server can cause inconsistent or incomplete dumps and loads. Use this command only when necessary.

For more information on the **shutdown** command, see the *Adaptive Server Reference Manual*.

Stopping Monitor Server

You must shut down Monitor Server before restarting Adaptive Server. If Adaptive Server stops, make sure that Monitor Server is shut down before you restart Adaptive Server. Monitor Server must be shut down to release resources. Otherwise, Adaptive Server may not be able to allocate enough resources to restart.

If the Monitor Server heartbeat feature is in effect, Monitor Server automatically detects the termination of Adaptive Server within the specified period and shuts itself down. Therefore, before attempting to restart Adaptive Server after a shutdown, either wait for the automatic shutdown of Monitor Server to occur, or explicitly stop Monitor Server.

For more information on stopping Monitor Server, see the *Adaptive Server Enterprise Monitor Server User's Guide*.

Monitoring Servers

There are two methods for checking a server's status using either Sybase Central, or the Control Panel.

Through Sybase Central

The simplest way to determine whether a local server is running is to start Sybase Central. The small traffic light icon, representing the server, in the left pane of Sybase Central is:

- Green if the server is running

- Yellow if the server is paused

- Red if the server is stopped

For a remote server, the traffic light icon is green if that server is running and Sybase Central is connected to it. However, Sybase Central does not display a red traffic light icon if the remote server is not running. This is because to determine whether a remote server is started requires that you connect to the remote server, and the remote server must be running in order for you to connect to it.

Through the Control Panel

You can use the Services option in the Control Panel to check a local server's status. Check the Status column. If the server is:

- Running, the Status value is Started.

- Not running, the Status value is blank.

CHAPTER 12   **Troubleshooting**

This chapter provides instructions for troubleshooting installation error messages.

If this chapter does not describe the error message you are encountering, see the *Troubleshooting and Error Messages Guide*.

Topics covered include:

Name	Page
Overview	189
Error Log Locations	191
Solutions to Common Installation Problems	192

Overview

For Sybase server products, there are two categories of errors:

* Errors generated by the installation, upgrade, and setup utilities

* Errors generated by the server (Adaptive Server, Backup Server, and so on)

To determine the cause of an error, first look in the log file of the utility being used, to identify the task the utility was performing when it failed. Then check the server error log. See "Error Log Locations" on page 191 for the location of the error log files for the installation utilities and the servers.

Table 12-1 lists possible causes and solutions for common problems that you might encounter during a first-time installation or upgrade. If you continue to have problems, retry the installation or upgrade.

If the installation program or Server Config unexpectedly quits, or if you are unable to correct the problem, see the *Troubleshooting and Error Messages Guide*.

Table 12-1: Troubleshooting guidelines

Problem	Possible Cause and Solution
The installation program cannot start Adaptive Server.	Failure to boot Adaptive Server is generally caused by a lack of available RAM or disk space.
	Make sure you meet RAM requirements. If you have the required RAM, unload all transfer all applications to the hard drive and restart the installation process.
	After Adaptive Server is installed, there should be 25MB of free disk space left in the disk drive. Adaptive Server needs approximately 18MB for creating shared memory files.
	Verify that you are logged in as system administrator. You must log in as an administrator to start Adaptive Server.
	If you have a FAT-based file system, you may have given the server a name that is more than 31 characters, which prevents the installation program from booting and causes the installation to fail. This occurs because the server tries to create a shared memory file with the same name as the server.
	Shut down Monitor Server before restarting Adaptive Server.
Sybase products cannot locate their required DLLs.	The installation program makes several modifications to your operating environment in order to locate required files. Log out of Windows NT, and log in again for the changes to take effect. Use the system administrator's login account or assign yourself system administrator privileges.
	Verify that you are logged in to Windows NT as a member of the Administrators group.
After upgrading from SQL Server, you cannot use Server Config.	After you begin upgrading a server, you may be unable to use the same Server Config session for other tasks. Exit and restart Server Config.
The installation program cannot connect to the upgraded Adaptive Server.	After you begin upgrading a server, you may be unable to use the same Server Config session for other tasks. Exit and restart Server Config.
The installation program detects reserved word conflicts.	See "Stopping Adaptive Server After a Failure" on page 192.
The upgrade fails.	See "Recovering from a Failed Upgrade" on page 196.

Problem	Possible Cause and Solution
Attempts to create a server at the network level.	Use the Open Client/Open Server Configuration utility to edit *%SYBASE%\ini\libtcl.cfg*. The file should contain one of the following entries, depending on the protocol you have chosen to use:
	NLWNSCK = Windows Socket driver NLMSNMP = Named Pipes driver NLNWLINK = spx/ipx driver
	If the entry is missing or incorrect, enter the correct value.
	Note Do not use a text editor, such as Notepad, to edit the libtcl.cfg file.

Error Log Locations

The information in the error logs can help you determine the reason and possible solution for an error message.

For Installation Utilities

Table 12-2 lists the default error log locations for the installation, upgrade, and setup utilities.

Table 12-2: Error log locations for installation utilities

Utility	Error log location
Studio Installer	*%SYBASE%\installer.log*
sybatch	*%SYBASE%\%SYBASE_ASE%\install\errorlog*
syconfig	*%SYBASE%\%SYBASE_ASE%\install\errorlog*

For Sybase Servers

Table 12-3 lists the default error log locations for each Sybase server.

191

Table 12-3: Default locations for error log files

Product	Error Log Location
Adaptive Server	*%SYBASE%\%SYBASE_ASE%\install\errorlog*
Backup Server	*%SYBASE%\%SYBASE_ASE%\install\backup.log*
Monitor Server	*%SYBASE%\%SYBASE_ASE%\install\ms.log*
Historical Server	*%SYBASE%\%SYBASE_ASE%\install\hs.log*

Solutions to Common Installation Problems

Some common installation problems and possible solutions follow.

If this section does not describe the problem you are experiencing, see the *Troubleshooting and Error Messages Guide*.

Adaptive Server Failed to Boot

The shared memory of the operating system may not be set high enough.

To correct the problem, see Chapter 5, "Installing Sybase Servers" for instructions on adjusting the shared memory value and start the installation or upgrade process again.

Stopping Adaptive Server After a Failure

If the installation or upgrade session fails after you start Adaptive Server, try using Sybase Central to shut down the server. If Sybase Central cannot shut down the server, use the **shutdown** command.

To stop Adaptive Server using **shutdown**:

1   Go to the MS-DOS window from Windows NT.

2   Start **isql** and connect to Adaptive Server:

        d: %SYBASE%\bin**>** isql –Usa –P –S*server_name*

where *%SYBASE%\bin* is the Sybase installation directory and *server_name* is the name of your Adaptive Server.

3   Shut down Adaptive Server using the **shutdown with nowait** command.
    Using the **with nowait** option stops the Adaptive Server immediately,
    without waiting for currently executing SQL statements to finish:

```
1> shutdown with nowait
2> go
```

> **Note** If you cannot connect to Adaptive Server with **isql**, or if the
> **shutdown with nowait** command fails, use the Task Manager (press
> Control-Alt-Delete to access the manager) or a Windows NT process
> monitoring utility, for example, the **pview.exe** program included with the
> Microsoft Toolkit, to stop the Adaptive Server process.

Recovering from a Failed Installation

If the installation does not succeed, the installation program displays error
messages. Review the error messages and your Adaptive Server error log to
determine the cause of the installation failure. For default error log locations,
see Table 0-2.

If Installation Fails After the Installer Creates Files

If the installation program quits while Adaptive Server is being configured,
perform the following steps:

1   View the contents of the log file generated by Adaptive Server. For default
    error log locations, see Table 0-2.

2   Take any suggested actions to correct the problem.

3   If the installation fails *after* the installation program has created any
    operating system files, such as the master device or system procedures
    device files, delete those files.

4   If the installation fails *after* the installation program boots the Adaptive
    Server that you are attempting to install, shut down that server. Follow the
    procedure under "Stopping Adaptive Server After a Failure" on page 192
    before performing step 5.

5   Use Server Config to restart the configuration.

Removing an Existing Adaptive Server Installation

To remove an existing Adaptive Server and keep the other Sybase products:

1   Shut down Adaptive Server.

2   Turn off Automatic Server Startup in the Windows NT Services Control Panel.

3   Shut down, then restart, the Windows NT server. Restarting the server releases the DLLs (dynamic link libraries) being used by Adaptive Server products. See Chapter 11, "Starting and Stopping Servers" for instructions.

4   From the Windows task bar, select Start | Run, and enter **regedt32** for Windows NT or **regedit** for Windows 95/98 to start the Registry Editor utility.

5   Go to *HKEY_LOCAL_MACHINE\SOFTWARE\Sybase\Server*.

6   In *Server*, delete the following keys related to the Adaptive Server that you want to remove:
    \\HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\<server_name>

    \\HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\<server_name>_BS

    \\HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\<server_name>_HS

    \\HKEY_LOCAL_MACHINE\SOFTWARE\SYBASE\Server\<server_name>_MS

7   Make the following changes to this Registry key:
    \\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Session Manager\Environment

    Delete the settings for the Sybase variables DSLISTEN, DSQUERY, and SYBASE, and edit the LIB, INCLUDE and PATH registries to remove all Sybase-specific environment variables.

8   Remove the following references from this Registry key:
    \\HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services

    •   *SYBSQL_<server_name>*

    •   *SYBXPS_<server_name>_XP*

    •   *SYBBCK_<server_name>_BS*

    •   *SYBMON_<server_name>_MS*

194

- *SYBHIS_<server_name>_HS*

9   Restart your computer to update the changes to the Registry.

> **Note** If you get an Event Viewer warning upon restart, you probably did not clean up all services. See the Event Viewer Application log for details.

10 Use the Start | Control Panel | Settings | Services to verify that the Adaptive Server service has been removed.

If it is still there, check the same keys for the CurrentControlSet in ControlSet001 and ControlSet003, and make sure you have deleted the specified entries from the Registry.

11 Delete the master device and system procedures device files from the *%SYBASE%\data* directory in the Sybase installation directory.

12 Reinstall Adaptive Server as a new server.

If Adaptive Server Fails the Pre-Upgrade Eligibility Test

If Adaptive Server or SQL Server fails the pre-upgrade test, Server Config displays:

```
Server SERVER_NAME failed preupgrade eligibility test. See log for more
information.
```

1   Click Exit.

2   The message: "Upgrade Check Failed" appears. Click OK.

3   From the Configure Sybase Servers window, select Exit.

4   Examine the log file created in the *%SYBASE%\%SYBASE_ASE%\init\logs* directory to find out why Adaptive Server or SQL Server failed the pre-upgrade eligibility test.

If the log contains messages about insufficient space in *sybsystemprocs*, follow the instructions in "Increasing the Size of the sybsystemprocs Database" on page 148 to correct the problem.

After you resolve any problems, shut down Adaptive Server or SQL Server and use Server Config to complete the upgrade session.

Recovering from a Failed Upgrade

If the upgrade process does not succeed, the installation program displays error messages. Review the error messages and the Adaptive Server error log to determine the cause of the upgrade failure. For default error log locations, see Table 0-2.

Restoring from Backup

You may need to restore your databases due to a failed upgrade.

If you think the upgrade failure or its cause may have damaged your databases, restore the databases from backups. For information on restoring databases, see the *System Administration Guide*.

If you are concerned about the possible corruption of your databases, exit Server Config, but do not attempt to restart the upgrade session until you have restored the databases from backup. After restoration is complete, retry the upgrade.

Rerunning the Upgrade

Whether you can safely re-run the upgrade depends on when the failure occurred in the upgrade process. If the failure occurs while the message: "Starting to upgrade Adaptive Server" is displayed, it is safe to re-run the upgrade program.

- *First*, try to fix the problem that caused the upgrade to fail.

- *Then*, run the upgrade again.

If the upgrade fails:

- *Before* returning the message "Setting upgrade version to 12.0", you may need to restore your latest database backup, and restart the upgrade.

- *After* returning the message "Setting upgrade version to 12.0", it is not necessary to restart the upgrade. The installation utility considers the upgrade to be complete.

Also, it is not necessary to restore a database from a backup unless that database failed during the upgrade.

Recording the Upgrade Manually

If Adaptive Server did not finish recording the upgrade in the *sysattributes* table before the failure occurred.

1   Fix the problem that caused the failure.

The first error message indicates the cause of the failure. If you can, solve the problem and proceed to step 2. For example, an 1105 error can usually be corrected with a **dump transaction** command. However, more complex problems may have to be referred to Sybase Technical Support.

2   Execute the following SQL statements to allow Adaptive Server to complete recording the upgrade:

```
1> declare @dbname varchar(30)
2> select @dbname = min(name)
3> from sysdatabases
4> while @dbname is not null
5> begin
6> online database @dbname
7> select @dbname = min(name)
8> from sysdatabases
9> where name > @dbname
10> end
```

If the Cause of the Failure Is Known

If the error logs or messages clearly indicate the cause of failure, and you do not believe your databases were damaged, you can attempt to fix the problem and rerun the upgrade immediately.

1   Exit the Server Config program.

2   Perform the necessary actions to fix the problem.

For example, if the error log indicates that the upgrade failed because your existing databases do not contain enough space, use the **alter database** command to increase the available space.

3   It may be necessary to shut down Adaptive Server. Follow the instructions for "Stopping Adaptive Server After a Failure" on page 192.

Shutting down the server enables the installation program to boot the server and re-run the upgrade session.

4   Start Server Config from the Sybase program folder.

5   Select Upgrade Adaptive Server, and proceed with the upgrade.

If the Cause of the Failure Is Unknown

If the upgrade fails again, and you cannot determine the cause of failure, check the error log file to find out when and where the upgrade failed, and contact Sybase Technical Support.

By default, the log file is located in *%SYBASE%\%SYBASE_ASE%\install\errorlog*.

Preparing to Upgrade Servers with Replicated Databases

If you are upgrading from a version of Adaptive Server prior to 11.5.1, transactions that were committed before an Adaptive Server or SQL Server database is upgraded to version 12.0 cannot be replicated after the upgrade because of a new transaction log format. Therefore, make sure that Replication Server® processes all committed transactions in the log before you upgrade the database.

Follow the instructions in this appendix *before beginning the upgrade process. If you are running version 11.5 or later, the information in this appendix does not apply.*

Note The procedures described here do not upgrade Replication Server itself. For information on upgrading Replication Server, see your Replication Server documentation.

The database upgrade procedure consists of the following activities:

- Suspending transaction processing and replication activities.

- Draining transaction logs for primary databases.

- Draining the Replication Server System Database (RSSD) log.

- Disabling the log truncation point.

After upgrading to version 12.0, complete the post-upgrade tasks to reenable database replications functions.

For more information, see the *Replication Server Reference Manual* and the *Replication Server System Administration Guide*.

Warning! As a safeguard, perform a **dump database** and a **dump transaction** before executing the procedures in the following sections.

To determine whether your existing server contains replicated databases:

1 Connect to the Server you are upgrading via **isql**.

2 Run the following command in each database (including system databases):

```
1> dbcc gettrunc
2> go
```

3 If the command returns "1" for "*ltm_trunc_state*" in any database, replication is enabled in that database.

Suspending Transaction Processing and Replication Activities

To suspend replication of and transaction activity in the databases:

1 Verify that subscriptions that are being created by the **create subscription** command, with primary data in the databases being upgraded, have reached the "valid" state at the primary Replication Server before you begin the upgrade. Use the **check subscription** command to find the "valid" state.

Defer upgrade while the subscriptions are being created so that Replication Server does not interfere with the upgrade process by accessing the database being upgraded.

Make sure that no users create subscriptions for data in the database you are upgrading until the upgrade procedure is finished.

2 Execute **rs_helproute** in each RSSD being upgraded.

The status of all existing routes should be "Active". If any route is not active, resolve the route before continuing. See the Replication Server documentation for help in diagnosing and fixing the problem with the route, and then go to step 3.

3 Shut down all applications that use the databases you are upgrading.

4 Use the **admin who** command in Replication Server to find the existing Data Server Interface (DSI) connections to the data server being upgraded.

5 Suspend all DSI connections to the non-RSSD databases you are upgrading by entering the following command in Replication Server for each database:

```
1> suspend connection to dataserver.database
2> go
```

6   Leave the DSI connections to the RSSD databases running.

Draining the Transaction Logs for Primary Databases

For each primary database you are upgrading, you need to ensure that Replication Server completely processes the pre-upgrade log.

To drain the transaction logs:

Wait for all remaining transactions to be replicated.

Run the following Replication Server command:

```
1> admin who, sqm
2> go
```

Find the entry that corresponds to the inbound queue for this database by looking for the Info field for the queue_number:queue_type entry. For an inbound queue, the queue type is 1. Note the Last Seg.Block entry for the queue.

Open a queue dump file by executing the following Replication Server command:

```
1> sysadmin dump_file, "file_name"
2> go
```

where *file_name* is the name of the file to which you will dump the queue.

Use **isql** to update one row in a single replicated table in the primary database:

```
1> update table set column = column
2> where key = unique_value
3> go
```

The **update** command helps to track whether all modifications to the replicated database have been sent to the Replication Server.

Note In Replication Server 10.1 or later, choose a table that does not use the **replicate minimal columns** clause, or use the **alter replication definition command...replicate all columns** command to change the replication definition before updating the row. If you alter the replication definition, be sure to change it back after you complete this upgrade procedure.

In the primary Replication Server, execute the **admin who, sqm** command until the last segment:block entry for the inbound queue changes.

Execute the following Replication Server command to dump the last block of the inbound queue to the dump file you created in step 3:

```
1> sysadmin dump_queue, queue_number,
2> queue_type, last_seg, block, 1
3> go
```

Use the *queue_number*, *queue_type*, *last_seg*, and *block* values found in the output of the last **admin who, sqm** command.

Examine the dump file to make sure it contains the transaction that corresponds to the update you performed in step 4. (You can use Notepad to examine the file.)

Repeat steps 5–7 until the transaction that corresponds to the update is in the dump file.

After draining the transaction logs, do not allow any other activity in the databases. If activity does occur, you will need to redrain the logs.

Draining the RSSD Transaction Log

If the Replication Server has routes to other Replication Servers, you must ensure that Replication Server processes all transactions in the RSSD transaction log before you upgrade the databases.

To see whether the transaction log has been processed completely, create a replication definition in the primary Replication Server and then watch for it to appear in the replicate Replication Server's RSSD. When the replication definition is in the replicate RSSD, you can assume that the log is processed fully.

To ensure that the RSSD log is processed:

1   Log into the primary Replication Server and create a temporary replication definition:

```
1> create replication definition rep_def_name
2> with primary at dataserver.database
3> (column_a int)
4> primary key (column_a)
5> go
```

The data server and database names must be valid, but the replication definition does not have to reference an actual table.

2   Log into the replicate RSSD (not the primary RSSD) and execute the following query to find out if the replication definition has arrived from the primary RSSD:

```
1> select * from rs_objects
2> where objname = "rep_def_name"
3> go
```

If this **select** statement returns rows, the last replication definition created in step 1 has been sent successfully to the replicate RSSD. This means that the transaction log has been drained.

Disabling the Log Truncation Point

When you upgrade a primary database, the Log Transfer Manager (LTM) must not be running, and the LTM truncation point should be turned off for the duration of the upgrade.

Before upgrading the databases:

1   Shut down the LTMs for the databases that you are upgrading.

2   Shut down Replication Servers for the RSSDs that you are upgrading.

3   In each primary database and primary RSSD, execute the following commands to turn off the LTM truncation point:

```
1> use database
2> go
1> dbcc settrunc("ltm", "ignore")
2> go
```

If the **dbcc settrunc** command fails because the server "context" is reserved, execute the following commands to allow the server to recognize that the LTM is disconnected:

```
1> begin tran
2> commit tran
3> go 500
```

Then turn off the LTM truncation point:

```
1> dbcc settrunc("ltm", "ignore")
2> go
```

203

Repeat step 3 for each primary database and each primary RSSD.

4   Use Sybase Central to shut down the servers.

Draining Each Replicated Primary

Manually drain the transaction log of each replicated primary in the data server you are upgrading:

1   Note the timestamp of the last log page:

```
1> use database
2> go

1> dbcc traceon (3604)
2> go
```

This sends trace output to the terminal.

```
1> select root from sysindexes where name = 'syslogs'
2> go
```

The value returned is the last log page.

```
1> dbcc page (<database>, <last_log_pageid>, 0)
2> go
```

The timestamp is a 6-byte hexadecimal number. Save this value for reference in step 3.

2   Append to the log:

```
1> use database
2> go

1> begin tran
2> commit tran
3> go 500
```

3   Check the LTM truncation point:

```
1> use database
2> go

1> dbcc gettrunc
2> go
```

The value in the *ltm_trunc_page* column is the LTM truncation point.

```
1> dbcc traceon (3604)
2> go
```

This forces trace output to the terminal.

```
1> dbcc page (<database>, <ltm_trunc_page>, 0)
2> go
```

Note the timestamp. Continue this step until the timestamp of the LTM truncation page is greater than the timestamp value you saved in step 1.

Shut down the LTM for this replicated database, and then disable the LTM truncation point.

```
1> use database
2> go

1> dbcc settrunc ('ltm', 'ignore')
2> go
```

Suspend the connection to the RSSD databases from Replication Server.

```
1> suspend connection to dataserver.database
2> go
```

Restoring Replication After Upgrade

Restore the replication functionality:

1   Zero out the locator in the RSSD for each replicated primary.

2   Using **isql**, connect to the RSSD and execute the following commands:

```
1> use RSSD
2> go

1> rs_zeroltm dataserver, RSSD
2> go
```

3   Set the LTM truncation point to "valid" in each replicated primary. Using **isql**, connect to the replicated primary, and execute the following commands:

```
1> use <database>
2> go

1> dbcc settrunc ('ltm', 'valid')
2> go
```

Upgrading Adaptive Server

Follow the instructions in Chapter 9, "Upgrading Sybase Servers" to complete the upgrade of your replicated databases.

Index