SYBASE®

Installation Guide

Adaptive Server® Enterprise

15.0.3

[Linux]

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Contents

About This Book

The Sybase® Adaptive Server® Enterprise 15.0.3 *Installation Guide* for 15.0.3 provides information for installing Adaptive Server Enterprise.

- 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, Job Scheduler and sample databases, and localization information
- Instructions on how to install Adaptive Server with SySAM 2.0.

Audience

This guide is for Sybase system administrators and other qualified personnel 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, "Before You Start," provides an overview of Adaptive Server, and describes the Enterprise Edition, Small Business Edition, Developer Edition, and Express Edition (on Linux) of Adaptive Server. It also provides product descriptions and directory layout information.
- Chapter 2, "Installing Adaptive Server," describes preinstallation procedures, SySAM related tasks, and how to install server components.
- Chapter 3, "Postinstallation Tasks," describes how to verify that servers are running, connect to servers, set passwords, and install sample databases.
- Chapter 4, "Installing Sybase PC-Client Products," describes how to install Adaptive Server client products like the Adaptive Server plug-in to Sybase Central.
- Chapter 5, "Upgrading Adaptive Server," describes how to upgrade an existing Adaptive Server to the current version.

- Chapter 6, “Downgrading from Adaptive Server 15.0.3,” describes how to downgrade from Adaptive Server 15.0.3 to the earlier version.
- Chapter 7, “Troubleshooting SySAM Issues,” provides information about and solutions to SySAM related errors.
- Chapter 8, “Troubleshooting,” provides installation error messages and possible solutions to installation problems.
- Chapter 9, “Removing Adaptive Server,” describes how to uninstall Adaptive Server.
- Appendix A, “Alternative Installation Methods,” describes how to install Adaptive Server in noninteractive mode.
- Appendix B, “Creating Raw Partitions,” describes how to create partitions, bind partitions for raw disk I/O, and access raw devices from Adaptive Server.
- Appendix C, “Upgrading Servers with Replicated Databases,” describes how to upgrade servers with replicated databases.
- Appendix D, “Using sybsystemprocs,” describes how to use the sybsystemprocs database.

Related documents

The Adaptive Server® Enterprise documentation set consists of:

- 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 Product Manuals Web site.
- The *Installation Guide* for your platform – describes installation, upgrade, and some configuration procedures for all Adaptive Server and related Sybase products.
- *New Features Guide*– describes the new features in Adaptive Server version 15.0.3, the system changes added to support those features, and changes that may affect your existing applications.
- *ASE Replicator Users Guide* – describes how to use the Adaptive Server Replicator feature to implement basic replication from a primary server to one or more remote Adaptive Servers.

- *Component Integration Services Users Guide* – explains how to use the Component Integration Services feature to connect remote Sybase and non-Sybase databases.
- The *Configuration Guide* for your platform – provides instructions for performing specific configuration tasks.
- *Enhanced Full-Text Search Specialty Data Store User's Guide* – describes how to use the Full-Text Search feature with Verity to search Adaptive Server data.
- *Glossary* – defines technical terms used in the Adaptive Server documentation.
- *Historical Server Users Guide* – describes how to use Historical Server to obtain performance information for SQL Server® and Adaptive Server.
- *Java in Adaptive Server Enterprise* – describes how to install and use Java classes as datatypes, functions, and stored procedures in the Adaptive Server database.
- *Job Scheduler Users Guide* – provides instructions on how to install and configure, and create and schedule jobs on a local or remote Adaptive Server using the command line or a graphical user interface (GUI).
- *Messaging Service Users Guide* – describes how to use Real Time Messaging Services to integrate TIBCO Java Message Service and IBM WebSphere MQ messaging services with all Adaptive Server database applications.
- *Migration Technology Guide* – describes different strategies and tools for migrating to a different version of Adaptive Server.
- *Monitor Client Library Programmers Guide* – describes how to write Monitor Client Library applications that access Adaptive Server performance data.
- *Monitor Server Users Guide* – describes how to use Monitor Server to obtain performance statistics from SQL Server and Adaptive Server.
- *Performance and Tuning Series* – is a series of books that explain how to tune Adaptive Server for maximum performance:
  - *Basics* – contains the basics for understanding and investigating performance questions in Adaptive Server.
  - *Improving Performance with Statistical Analysis* – describes how Adaptive Server stores and displays statistics, and how to use the set statistics command to analyze server statistics.

    - *Locking and Concurrency Control* – describes how to use locking schemes to improve performance, and how to select indexes to minimize concurrency.
    - *Monitoring Adaptive Server with sp_sysmon* – describes how to use sp_sysmon to monitor performance.
    - *Monitoring Tables* – describes how to query Adaptive Server monitoring tables for statistical and diagnostic information.
    - *Physical Database Tuning* – describes how to manage physical data placement, space allocated for data, and the temporary databases.
    - *Query Processing and Abstract Plans* – describes how the optimizer processes queries and how to use abstract plans to change some of the optimizer plans.
- *Quick Reference Guide* – provides a comprehensive listing of the names and syntax for commands, functions, system procedures, extended system procedures, datatypes, and utilities in a pocket-sized book (regular size when viewed in PDF format).
- *Reference Manual* – is a series of books with detailed Transact-SQL information:
    - *Building Blocks* – discusses datatypes, functions, global variables, expressions, identifiers and wildcards, and reserved words.
    - *Commands* – documents commands.
    - *Procedures* – includes system procedures, catalog stored procedures, system extended stored procedures, and dbcc stored procedures.
    - *Tables* – discusses system tables and dbcc tables.
- *System Administration Guide* –
    - *Volume 1* – provides an introduction to the basics of system administration, including a description of configuration parameters, resource issues, character sets, sort orders, and instructions for diagnosing system problems. The second part of this book is an in-depth description of security administration.

    - *Volume 2* – includes instructions and guidelines for managing physical resources, mirroring devices, configuring memory and data caches, managing multiprocessor servers and user databases, mounting and unmounting databases, creating and using segments, using the reorg command, and checking database consistency. The second half of this book describes how to back up and restore system and user databases.

- *System Tables Diagram* – illustrates system tables and their entity relationships in a poster format. Full-size available only in print version; a compact version is available in PDF format.
- *Transact-SQL Users Guide* – documents Transact-SQL, the Sybase-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.
- *Troubleshooting Series* –
    - *Troubleshooting: Error Messages Advanced Resolutions* – contains troubleshooting procedures for problems you may encounter. The problems discussed here are the ones the Sybase Technical Support staff hear about most often.
    - *Troubleshooting and Error Messages Guide* – contains detailed instructions on how to resolve the most frequently occurring Adaptive Server error messages. Most of the messages presented here contain error numbers (from the master..sysmessages table), but some error messages do not have error numbers, and occur only in the Adaptive Server error log.
- *Users Guide for Encrypted Columns* – describes how to configure and use encrypted columns with Adaptive Server.
- *Using Adaptive Server Distributed Transaction Management Features* – explains how to configure, use, and troubleshoot Adaptive Server DTM features in distributed transaction processing environments.
- *Using Sybase Failover in a High Availability System* – provides instructions for using Sybase Failover to configure an Adaptive Server as a companion server in a high availability system.
- *Unified Agent and Agent Management Console* – describes the Unified Agent, which provides runtime services to manage, monitor, and control distributed Sybase resources.

- *Utility Guide* – documents the Adaptive Server utility programs, such as isql and bcp, which are executed at the operating system level.
- *Web Services Users Guide* – explains how to configure, use, and troubleshoot Web services for Adaptive Server.
- *XA Interface Integration Guide for CICS, Encina, and TUXEDO* – provides instructions for using the Sybase DTM XA interface with X/Open XA transaction managers.
- *XML Services in Adaptive Server Enterprise* – describes the Sybase native XML processor and the Sybase Java-based XML support, introduces XML in the database, and documents the query and mapping functions that are available in XML services.

Other sources of information

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

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

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

  Refer to the *SyBooks Installation Guide* on the Getting Started CD, or the *README.txt* file on the SyBooks CD for instructions on installing and starting SyBooks.
- The Sybase Product Manuals Web site is an online version of the SyBooks CD that you can access using a standard Web browser. In addition to product manuals, there are links to EBFs/Maintenance, Technical Documents, Case Management, Solved Cases, newsgroups, and the Sybase Developer Network.

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

Sybase certifications on the Web

Technical documentation at the Sybase Web site is updated frequently.

❖ **Finding the latest information on product certifications**

1 Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.

2 Click Certification Report.

3 In the Certification Report filter select a product, platform, and timeframe and then click Go.

4 Click a Certification Report title to display the report.

❖ **Finding the latest information on component certifications**

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

2 Either select the product family and product under Search by Base Product; or select the platform and product under Search by Platform.

3 Select Search to display the availability and certification report for the selection.

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

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

1 Point your Web browser to Technical Documents at http://www.sybase.com/support/techdocs/.

2 Click MySybase and create a MySybase profile.

Sybase EBFs and software maintenance

❖ **Finding the latest information on EBFs and software maintenance**

1 Point your Web browser to the Sybase Support Page at http://www.sybase.com/support.

2 Select EBFs/Maintenance. If prompted, enter your MySybase user name and password.

3 Select a product.

4 Specify a time frame and click Go. A list of EBF/Maintenance releases is displayed.

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

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

Conventions

The following sections describe conventions used in this manual.

SQL is a free-form language. There are no rules about the number of words you can put on a line or where you must break a line. However, for readability, all examples and most syntax statements in this manual are formatted so that each clause of a statement begins on a new line. Clauses that have more than one part extend to additional lines, which are indented. Complex commands are formatted using modified Backus Naur Form (BNF) notation.

Table 1 shows the conventions for syntax statements that appear in this manual:

Table 1: Font and syntax conventions for this manual

Element	Example
Command names, procedure names, utility names, and other keywords display in sans serif font.	select sp_configure
Database names and datatypes are in sans serif font.	master database
Book names, file names, variables, and path names are in italics.	*System Administration Guide* *sql.ini* file *column_name* *$SYBASE/ASE* directory

Variables—or words that stand for values that you fill in—when they are part of a query or statement, are in italics in Courier font.	`select column_name`
	`from table_name`
	`where search_conditions`

Type parentheses as part of the command.	compute *row_aggregate* (*column_name*)
Double colon, equals sign indicates that the syntax is written in BNF notation. Do not type this symbol. Indicates "is defined as".	`::=`
Curly braces mean that you must choose at least one of the enclosed options. Do not type the braces.	`{cash, check, credit}`
Brackets mean that to choose one or more of the enclosed options is optional. Do not type the brackets.	`[cash | check | credit]`
The comma means you may choose as many of the options shown as you want. Separate your choices with commas as part of the command.	`cash, check, credit`

Element	Example
The pipe or vertical bar (|) means you may select only one of the options shown.	`cash | check | credit`
An ellipsis (...) means that you can *repeat* the last unit as many times as you like.	`buy thing = price [cash | check | credit] [, thing = price [cash | check | credit]]...` You must buy at least one thing and give its price. You may choose a method of payment: one of the items enclosed in square brackets. You may also choose to buy additional things: as many of them as you like. For each thing you buy, give its name, its price, and (optionally) a method of payment.

- Syntax statements (displaying the syntax and all options for a command) appear as follows:

  sp_dropdevice [*device_name*]

  For a command with more options:

  select *column_name*
  from *table_name*
  where *search_conditions*

  In syntax statements, keywords (commands) are in normal font and identifiers are in lowercase. Italic font shows user-supplied words.

- Examples showing the use of Transact-SQL commands are printed like this:

```
select * from publishers
```

- Examples of output from the computer appear as follows:

```
pub_id    pub_name                city          state
------    --------------------    -----------   -----
0736      New Age Books           Boston        MA
0877      Binnet & Hardley        Washington    DC
1389      Algodata Infosystems    Berkeley      CA

(3 rows affected)
```

In this manual, most of the examples are in lowercase. However, you can disregard case when typing Transact-SQL keywords. For example, SELECT, Select, and select are the same.

Adaptive Server sensitivity to the case of database objects, such as table names, depends on the sort order installed on Adaptive Server. You can change case sensitivity for single-byte character sets by reconfiguring the Adaptive Server sort order. For more information, see the *System Administration Guide*.

Accessibility features

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

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

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

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

If you need help

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

CHAPTER 1

Before You Start

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

Adaptive Server Enterprise architecture

Adaptive Server Enterprise is based on the client/server model. Adaptive Server communicates with its clients over the network via the Tabular Data Stream™ (TDS) protocol. The client process may execute on one machine and communicate with a database server on the same or a different machine.

Adaptive Server runs as an application on top of an operating system. The hardware that the operating system runs on is completely transparent to Adaptive Server which sees only the operating system's user interfaces. You can configure multiple processes (engines) to enhance performance on multiprocessor systems.

Adaptive Server is divided into two components, a DBMS component and a kernel component. The kernel component uses the operating system services for process creation and manipulation, device and file processing, and inter-process communication. The DBMS component of Adaptive Server manages the processing of SQL statements, accesses data in a database, and manages different types of server resources.

Backup Server

Like Adaptive Server, Backup Server is also an operating system process. Backup Server is dedicated to backing up and restoring Adaptive Server files. Clients do not communicate directly with Backup Server. Only Adaptive Server communicates with Backup Server.

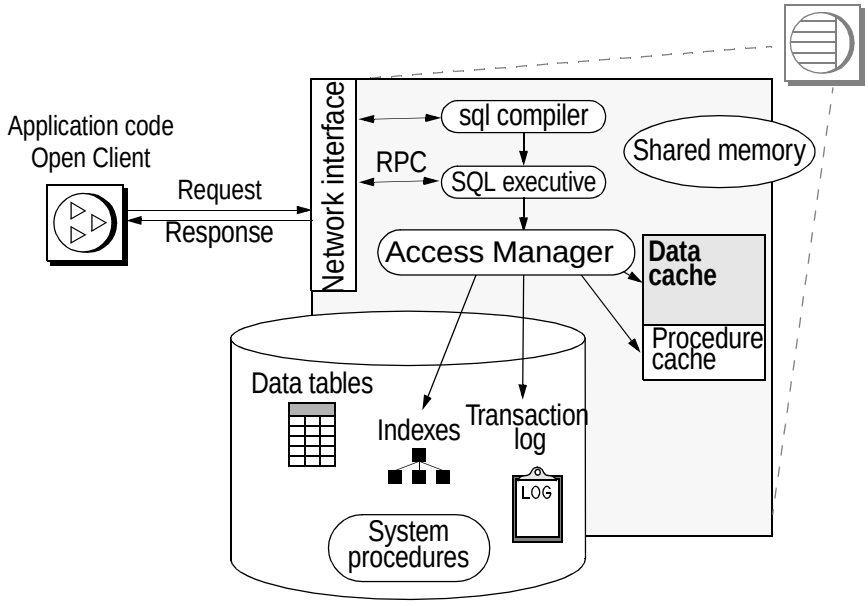
Stored procedures

Stored procedures encapsulate a series of SQL commands that the server can execute as a single command. System stored procedures (SSPs) are created when the server is installed.

The client

A client uses functions provided by the CT-Library (CT-Lib) and Common Library (CS-Lib) APIs to establish a connection to the server, submit requests to the server, and receive results back from the server. The client libraries implement the Tabular Data Stream (TDS) protocol that is used to communicate with Adaptive Server.

Figure 1-1: Adaptive Server system model



Adaptive Server editions

Adaptive Server is available in the following editions:

- Enterprise Edition – has no limit on scalability and can run all available options that can be purchased separately
- Small Business Edition – has limited scalability, and runs a limited set of options that are purchased separately
- Developer Edition – has limited scalability and includes many of the options that are included in the Enterprise Edition. The Developer Edition is available on Linux x86 and 64-bit systems and Solaris SPARC systems
- Express Edition – is a free release available only on Linux

Adaptive Server editions and optional features are unlocked by providing SySAM licenses. For complete details, see the *Sybase Software Asset Management Users Guide*.

To determine the edition of Adaptive Server currently running. Enter:

```
sp_lmconfig 'edition'
```

Adaptive Server returns a value of `EE`, `SE`, `DE`, or `XE` based on the edition it is running. See the *Reference Manual* for more information about the sp_lmconfig command.

Overview of installation steps

The basic process for installing Adaptive Server is:

1 Perform preinstallation tasks related to the license administration steps described in "Preinstallation tasks for SySAM" on page 15.

Warning! SySAM 2.0-enabled products work for an initial 30 day period without a license. If you do not install a valid license for your configuration by the end of the 30 day grace period, the product ceases to function. For general information about SySAM 2.0, see the *Sybase Software Asset Management Users Guide*.

2 Perform the installation using any of the methods described in "Installation methods" on page 29.

3 Perform the postinstallation tasks as described in Chapter 3, "Postinstallation Tasks."

System requirements

Note Direct I/O support is a platform-dependent feature that is currently available on Solaris SPARC, Windows, IBM AIX, and Linux.

Table 1-1: System requirements for Linux 32-bit and 64-bit

Operating system	Hardware	Minimum RAM
Linux x86 Red Hat Enterprise Linux 4.0 update: 4 • kernel-2.6.9-55.EL • glibc-2.3.4-2.36 Red Hat Enterprise Linux 5.0 update:1 • kernel-2.6.18-53.1.13.el5 • glibc-2.5-18 SuSE Linux Enterprise Server SLES 10 • kernel-smp-2.6.16.21-0.8 • glibc-2.4-31.2	Intel Xeon AMD Opteron	512 MB
Linux x64 RedHat Enterprise Linux 4.0 update: 4 • kernel-2.6.9-55.EL • glibc-2.3.4-2.36 Red Hat Enterprise Linux 5.0 update:1 • kernel-2.6.18-53.1.13.el5 • glibc-2.5-18 SuSE Linux Enterprise Server SLES 10 • kernel-smp-2.6.16.21-0.8 • glibc-2.4-31.2	Intel Xeon EM64T AMD Opteron	512 MB
Linux pSeries Red Hat Enterprise Linux 4.0 update: 4 • kernel-2.6.9-55.EL • glibc-2.3.4-2.36 • compat-libstdc++-33-3.2.3-47.3 Red Hat Enterprise Linux 5.0 update:1 • kernel-2.6.18-53.1.13.el5 • glibc-2.5-18 SuSE Linux Enterprise Server SLES 10 • kernel-smp-2.6.16.21-0.8 • glibc-2.4-31.2	IBM pSeries Server with POWER5 CPU	512 MB
	Memory needed for 32-bit x86 systems	
Minimum RAM required for Adaptive Server	96MB	With default stack size, packet size, and user log cache size

Operating system	Hardware	Minimum RAM
Minimum RAM per additional user	Approx. 182KB	
Default user stack size	64KB	
	Memory needed for 64-bit x64 systems	
Minimum RAM required for Adaptive Server	106MB	With default stack size, packet size, and user log cache size
Minimum RAM per additional user	Approx. 233KB	
Default user stack size	86K	
	Memory needed forpSeries systems	
Minimum RAM required for Adaptive Server	127MB	With default stack size, packet size, and user log cache size
Minimum RAM per additional user	Approx. 324KB	
Default user stack size	128K	

Table 1-2: Disk space requirements for Linux 32-bit platforms

Product	Disk space requirements
Adaptive Server typical install	865MB
Default databases created during install	306MB
Total	1015MB

Table 1-3: System requirements for Linux Itanium

Operating system	Hardware	Minimum RAM
Linux Itanium Red Hat Enterprise Linux 4.0 update: 4 • kernel -2.6.9-42.EL • glibc: glibc-2.3.4-2.25 • ia32el: ia32el-1.6-10.EL4	Intel Itanium/Itanium 2 architecture	256 MB Recommended: at least 512 MB
Linux Itanium SUSE Linux Enterprise Server 10 • kernel -2.6.16.21-0.8.or higher • glibc: glibc-2.4-31.2 or higher • ia32el: ia32el-6.5-17.2 or higher	Intel Itanium/Itanium 2 architecture	256 MB Recommended: at least 512 MB
	Memory needed	
Processor	32-bit Intel Pentium II level	
Minimum RAM required for Adaptive Server	128MB	With default stack size, packet size, and user log cache size
Minimum RAM per additional user	Approx. 140KB	
Default user stack size	80KB	

Table 1-4: Disk space requirements for Linux 64-bit 64 platforms

Product	Disk space requirements
Adaptive Server typical install	921MB
Default databases created during install	306MB
Total	1071MB

Table 1-5: System requirements for Linux Itanium

Operating system	Hardware	Minimum RAM
Linux Itanium Red Hat Enterprise Linux 4.0 update: 4 • kernel -2.6.9-42.EL • glibc: glibc-2.3.4-2.25 • ia32el: ia32el-1.6-10.EL4	Intel Itanium/Itanium 2 architecture	256 MB Recommended: at least 512 MB
Linux Itanium SUSE Linux Enterprise Server 10 • kernel -2.6.16.21-0.8.or higher • glibc: glibc-2.4-31.2 or higher • ia32el: ia32el-6.5-17.2 or higher	Intel Itanium/Itanium 2 architecture	256 MB Recommended: at least 512 MB
	Memory needed	
Processor	32-bit Intel Pentium II level	
Minimum RAM required for Adaptive Server	128MB	With default stack size, packet size, and user log cache size
Minimum RAM per additional user	Approx. 140KB	
Default user stack size	80KB	

Table 1-6: Disk space requirements for Linux 64-bit pSeries platforms

Product	Disk space requirements
Adaptive Server typical install	1092MB
Default databases created during install	164MB
Total	1256MB

Note Adaptive Server 15.0.3 supports Pentium and higher chip sets.

Operating system patches for Linux

Operating system patches for Linux are listed above as part of the system requirements for different Linux flavors. Here is additional patch information that may be required for your system.

If you are running RHEL 5 or higher, use the following settings:

- kernel.exec-shield = 0
- kernel.randomize_va_space = 0

The following patches are required for GUI components to work properly:

- xorg-x11-libs-6.7.0-2
- openmotif-2.2.3-6

Adaptive Server requires the following variable setting:

- For glibc version 2.4 set LD_POINTER_GUARD to 1
- For glibc version 2.5 set LD_POINTER_GUARD to 0

Large memory support and POSIX Asynchronous I/O

Adaptive Server version 12.5.4 and later versions support the large memory feature on Linux platforms configured to use POSIX Asynchronous I/O.

Adaptive Server product descriptions and directory layout

The Adaptive Server installation installs a wide array of software products into the *SYBASE* directory. Table 1-7 provides a brief description of the server products installed, and the top-level directory structure.

Note Starting with Adaptive Server 15.0.2, Enhanced Full-Text Search (EFTS) does not ship with Adaptive Server. It now ships separately, but is still installed into the same directory as Adaptive Server. Please contact Sybase Customer Service for more information.

Table 1-7: Product description

Product	Description
Adaptive Server	Installed into the *ASE-15_0* directory. • Adaptive Server – the database server. • Backup Server – an Open Server™-based application that manages all database backup (dump) and restore (load) operations. • Monitor Server – an Open Server-based application that obtains performance information on Adaptive Server and makes that information available to Monitor Server client applications. • XP Server– an Open Server application that manages and executes extended stored procedures (ESPs) from within Adaptive Server. • Job Scheduler – provides a job scheduler for Adaptive Server. Job Scheduler components are located in their own directory at *ASE-15_0/jobscheduler/.*
Software Developer Kit (SDK)	Installed into the *OCS-15_0* directory. • Open Client (Client Library, dblib) • ESQL/C • Monitor Client Library • ESQL/COBOL • XA Installed into the *DataAccess* directory on Linux x86, x64, and Windows platforms. • ODBC (Windows and Linux only) – a driver used to connect to Adaptive Server from ODBC based applications. • OLEDB (Windows only) – a provider used to connect to Adaptive Server from OLEDB-based applications. • ADO.NET (Windows only) – a provider used to connect to Adaptive Server from .NET based applications.
shared	The *shared* directory contains components and libraries that are shared by several other components. In earlier versions, this directory was named *shared-1_0*. • Sybase Central 6 – is a Java-based framework used by the system management tools. • JRE – the Java Runtime Environment (JRE) is a runtime Java virtual machine used to execute Java-based programs such as Sybase Central. Adaptive Server includes the JRE In typical installations, by default, the JRE is installed in full. In custom installations, if you select a component for installation that requires the JRE, the JRE is also automatically selected for installation. It is located in the *shared/JRE.-6_0 ** directory
Adaptive Server Plug-in	Installed into *ASEP* directory. This plug-in contains the management software for managing Sybase servers and its associated servers.
Language Modules	Installed into the *locales* directory. Provides system messages and date/time formats.

Product	Description
Character Sets	Installed into the *charsets* directory. Provides character sets available for use with Adaptive Server.
Collation Sequences	Installed into the *collate* directory. Provides the collation sequences available for use with Adaptive Server.
ASE Replicator	Installed into the *RPL-15_0* directory. Provides lightweight replication for those companies who do not need a full-featured replication product such as Sybase Replication Server.
Sybase Software Asset Management (SySAM)	Installed into the *SYSAM-2_0* directory. Provides asset management of Adaptive Servers and optional features.
Web Services	Installed into the *WS-15_0* directory. An optional product that provides access to Adaptive Server using HTTP/SOAP and WSDL.
Agent Management Console	This is a Sybase Central plug-in that manages the Unified Agent. It is installed into the *AMCP* directory.
Interactive SQL	Interactive SQL is a GUI tool that allows you to execute SQL statements, build scripts, and display data from Adaptive Server. It is installed into the *DBISQL* directory.
Unified Agent	Unified Agent is a management framework that provides runtime services to manage, monitor, and control distributed Sybase resources. Agents plug into the framework and provide the ability to manage specific components. It is installed into the new UA directory *UAF-2_0* directory.
jutils-2_0	A collection of Adaptive Server utility programs including: • jisql – a JDBC-based GUI isql tool. • ribo – a tool to trace TDS traffic between client program and Adaptive Server.
jConnect	Installed into the *jConnect-6_0* directory. Provides a Java Database Connectivity (JDBC) driver for Adaptive Server.

Sybase support for OLE DB and ODBC

Adaptive Server 15.0.3 includes new ODBC and OLE DB drivers developed by Sybase. The third-party rebranded ODBC and OLE DB Driver Kits included with earlier Adaptive Server versions are no longer shipped.

The retired ODBC Driver Kit was installed in *%SYBASE%\ODBC*, and registered with the ODBC Driver Manager as Sybase ASE ODBC Driver. The new Adaptive Server ODBC Driver by Sybase is installed in *%SYBASE%\DataAccess\ODBC*, and registered as Adaptive Server Enterprise. The version shipped with Adaptive Server 15.0.3 is version 15.0.0.325.

The retired OLE DB Driver Kit was installed in *%SYBASE%\OLEDB*, and used the provider short name of "Sybase.ASEOLEDBProvider" and the long name of "Sybase ASE OLE DB Provider". The new ASE OLE DB Provider by Sybase is installed in *%SYBASE%\DataAccess\OLEDB*, and uses the provider short name of ASEOLEDB. The version shipping with Adaptive Server 15.0.3 is version 15.0.0.325.

Sybase recommends that you start your migration process to the new ODBC and OLE DB drivers as soon as possible. New features introduced in Adaptive Server 15.0.3 are supported only by the new drivers.

See "New Features for Open Server 15.0 and SDK 15.0 for Windows, Linux and UNIX," for instructions on migrating to the new drivers.

PC-Client product descriptions and directory layout

Sybase has certified PC-Client for:

- Windows 2003, 2008, XP, and Vista
- SDK on Windows 32-bit and 64-bit systems
- Power Transfer 15.0.3 on Windows 2003, XP, and Vista
- Power Designer 12.5 on Windows 2003, XP and Vista
- InfoMaker 11.5 on Windows 2003, XP and Vista

Note If you are using ODBC, OLE DB or ADO.NET Drivers, then you must have Microsoft .NET Framework 2.0 Service Pack 1 installed on your system. The installer produces errors during installation and the drivers do function without this service pack installed.

To check whether you have this service pack installed:

- Open Add or Remove Programs item from the Control Panel. If NET Framework is listed under Currently installed programs then you do not need to update your system.

The following products are installed as Adaptive Server PC-Client products. In addition to these products, there are several separately installed products listed in the following sections.

Table 1-8: Products and platforms

Product	Description
Software Developer Kit (SDK)	Installed into the *OCS-15_0* directory. • Open Client (Client Library, dblib) • ESQL/C • Monitor Client Library • ESQL/COBOL • XA Installed into the *DataAccess* directory: • ODBC (Windows and Linux only) – a driver used to connect to Adaptive Server from ODBC based applications. • OLEDB (Windows only) – a provider used to connect to Adaptive Server from OLE DB-based applications. • ADO.NET (Windows only) – a provider used to connect to Adaptive Server from .NET based applications.
Windows Cluster Server Admin utilities	Windows Cluster Administrator is a GUI tool for managing Microsoft Cluster Server (MSCS). It can be used to create, modify and displays the information of groups, resources and the cluster itself. There is also an alternative command-line tool called *Cluster.exe* for cluster administration.
Shared	The shared directory contains components and libraries that are shared by several other components. In earlier versions, this directory was named *shared-1_0*. • Sybase Central 6 – Sybase Central is a Java-based framework used by the system management tools. • JRE – The Java Runtime Environment (JRE) is a runtime Java virtual machine used to execute Java-based programs such as Sybase Central.
Adaptive Server Plug-in	Installed into *ASEP* directory. This plug-in contains the management software for managing Adaptive Server and its associated servers.
Language Modules	Installed into the *locales* directory. Provides system messages and date/time formats.
Character Sets	Installed into the *charsets* directory. Provides character sets available for use with Adaptive Server.
jConnect	Installed into the *jConnect-6_0* directory. Provides a Java Database Connectivity (JDBC) driver for Adaptive Server.
Agent Management Console	This is a Sybase Central plug-in that manages the Unified Agent. It is installed into the *AMCP* directory.
Interactive SQL	Interactive SQL is a GUI tool that allows you to execute SQL statements, build scripts, and display data from Adaptive Server. It is installed into the *DBISQL* directory.
jutils-2_0	A collection of Adaptive Server utility programs including: • jisql – a JDBC-based GUI isql tool. • ribo – a tool to trace TDS traffic between client program and Adaptive Server.

Separately installable PC-Client products

The PC-Client CD also contains the following products, which are separately installable:

- InfoMaker® – a tool for personal data access, management, and reporting, used by both 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.
- PowerDesigner Physical Architect – a tool for data modeling, including database design, generation, maintenance, reverse engineering, and documentation for database architects.
- PowerTransfer – a tool that transfers table data from any supported database to Adaptive Server.

CHAPTER 2

Installing Adaptive Server

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

Contents

Adaptive Server Enterprise 15.0.3 includes the following:

- Adaptive Server Enterprise 15.0.3 server
- PC-Client

Preinstallation tasks for SySAM

Note If you are using a SySAM License Server Adaptive Server 15.0.3 is linked with the FLEXnet Publisher version 11.5. If you use a SySAM License Server, it is required that you update the license server to at least this version before installing Adaptive Server 15.0.3. You can check the version information of your license server by examining the license server log or executing the following command:

```
cd $SYBASE/SYSAM-2_0/bin
./lmutil lmver lmgrd
```

Refer to “Installing a new license server” section for instructions on how to install the license server. If you are managing FLEXnet licenses from multiple vendors, refer to SySAM Users Guide for more information.

For simple installations follow the instructions in this book. No additional information should be necessary.

The Adaptive Server *Installation Guide* (this document) has the following information about SySAM-related tasks:

- Installation instructions are described in “Installing server components in GUI mode” on page 30.
- If you have problems, see Chapter 7, “Troubleshooting SySAM Issues.”

If you decide to retrieve the SySAM license before running the installer, you should:

1 Decide the SySAM license model to use. The choices are:

   - The unserved license model – retrieves licenses directly from the license file. If you are using an unserved license, save the license to the machine on which you have installed Adaptive Server or specify the license during the Adaptive Server installation.
   - The served license model – uses a license server to manage the allocation of your licenses to multiple machines. See the following for more information.

   For information about served and unserved licenses, and which model is best suited for your environment, see Chapter 2, “Choosing a License Model” in the *Sybase Software Asset Management Users Guide*.

2 If you plan to use a served license, you need a license server. Decide whether it is an existing license server or a new license server. The license server need not be on the same machine or running on the same operating system and architecture.

   - If you are going to use an existing license server, you must know the server host name and port number.
   - For information about creating a new license server before installing Adaptive Server, see “Installing a new license server” on page 22.

- If you are planning to create a new license server on the same machine, you can specify the license file during the Adaptive Server installation. The Adaptive Server installation sets up the license server for you.

Note There can be only one instance of a SySAM license server running on a given machine. If you want to set up a SySAM 2.0 license server on a machine that is already running a SySAM 1.0 license server, the old license server must be migrated to 2.0. A migrated license server can serve licenses for both SySAM 1.0 and SySAM 2.0 enabled products.

Please see Appendix F of the *Sybase Software Asset Management User's Guide* for instructions on migrating a license server.

For information about choosing a license server host, see the "Choosing a license server host" section in Chapter 2, "Choosing a License Model" of the *Sybase Software Asset Management Users Guide.*

For information about license server administration, see Chapter 4, "License Server Administration" in the *Sybase Software Asset Management Users Guide.*

3 Retrieve your license files from the Sybase Product Download Center (SPDC) at https://sybase.subscribenet.com before installing Adaptive Server. For information about accessing SPDC, see "Accessing SPDC" on page 17, and for information about generating your licenses at SPDC, see "Generating licenses at SPDC" on page 19.

Accessing SPDC

When you purchase a Sybase product, download the product and generate its licenses from the online Web portal. The Sybase Product Download Center is referred to as "SPDC."

To access SPDC when you have purchased Sybase products from Sybase:

1 Once you have ordered a Sybase product you receive a welcome e-mail that contains a URL to the SPDC site, as well as a user name and password.

Note If you have purchased your Sybase software from a Sybase reseller, you receive a Web key rather than an e-mail.

2 Click the URL, and when prompted, enter the designated user name and password. Your login is typically your e-mail address. If you have forgotten your password, use the password finder on the SPDC login page.

Getting your host ID

Run the host ID command if it is available. If it is not yet available run the OS command to get your host ID:

1 Change to *$SYBASE/SYSAM-2_0/bin.* Where *$SYBASE* is the Sybase installation directory.

2 To run the host ID command Enter:

```
./lmutil lmhostid
```

Note On some platforms, the host ID is derived from the network adapter address. If your machine has multiple network adapters, `lmutil lmhostid` returns one host ID for each network adapter. The output may look similar to:

```
The FLEXlm host ID of this machine
is ""0013023c8251 0015c507ea90""
Only use ONE from the list of hostids.
```

Choose *one* of these host IDs. Sybase recommends using the value associated with the primary wired Ethernet adapter. Do not use values associated with internal loop back adapters. If you cannot determine which host ID to use from the `lmutil lmhostid` output, use the native operating system command to get additional details to help make the determination. See to the SPDC FAQ titled,"What's my Host ID," or "Appendix A" of the *FLEXnet Licensing End User Guide* for the exact commands for your platform.

3 If the lmutil utility is not available, run the OS command:

```
/sbin/ifconfig eth0
```

Use the HWaddr value to the ethernet address for the host ID.

4 Save the host ID so you can use it later at SPDC. Your host ID is platform-specific, but may be similar to:

00400516E525 or 00:40:05:16:E5:25 on Linux platforms.

Generating licenses at SPDC

This section provides information about how to generate a license for a served and an unserved license model. To generate your license, regardless of license model:

1 At the Welcome screen, at SPDC, you can view all of the product families to which you have access. Select the product family that contains the product for which you wish to generate a license.

2 A list of available Sybase products displays. Click the product with the appropriate edition and version. Make sure you select the product for the operating system you are using.

3 The license agreement displays. You must agree to the terms and conditions in the license in order to generate a license. To do so, click I Agree.

Note The license agreement only displays the first time you attempt to download a product. Once you have agreed to the license, you do not encounter the license agreement for all subsequent downloads of that product.

4 At the product download page, click the License Keys link.

5 The License Information page displays. Select the license you wish to generate. When you are selecting the license you wish to generate, consider:

- The license *type* for the license you wish to generate. For more information about license types, see the "License types" in Chapter 3 "Getting and Using your License" of the *Sybase Software Asset Management Users Guide*.
- If you are unsure what you have licensed, your company's purchase order should have the product name, edition, and license type.

6 Once you determine the license to generate, select it using the Generate radio button on the left side of the screen. Scroll to the bottom of the page, and click Select to Generate.

7 Step one of the SySAM license generation wizard asks you to choose between a served license and an unserved license. If you choose a served license, continue with the steps in "Generating a served license" on page 20, and if you choose an unserved license, continue with the steps in "Generating an unserved license" on page 22.

Note Some Sybase Products or specific license types do not give you a choice of license model to use, and therefore do not display this page. If this is the case, proceed with the SySAM license generation wizard to generate your license.

Generating a served license

To generate a served license:

1 Select Served License and click Next.

2 Indicate the quantity of licenses you wish to generate and click Next.

3 Enter the License Server Host ID and optionally the host name and port number.

   a Sybase recommends that you provide the host name here to ease future license administration.

   b A port number is not required unless you are using a 3-node redundant cluster. A valid number is any unused port number between 0 and 64000. On UNIX, choose a port greater than 1024, since those less than 1024 are privileged port numbers. If no TCP/IP port number is specified, one of the default ports in the range of 27000 and 27009 is used.

   c Get your server host ID before generating your licenses. For information about how to get the host ID, see "Getting your host ID" on page 18. You have the option to specify redundant server information if you choose to configure your servers for three-server redundancy.

   d If you want to generate a license for a 3-node redundant cluster, then you must specify the host ID, host name, and port number for the three nodes of the cluster. The port number is not optional for this configuration and should be outside of the 27000 to 27009 range.

4 Click Generate.

5 Once you have generated the license, you can:

   a Download the license file by clicking the Download License File button.

   b Print a paper copy of the license by clicking the Print Friendly button.

   c Return to the license information page to generate additional licenses.

6 Once you have generated all the licenses you must, save them to the *licenses* directory in your license server installation.

Note You must save your license files with a *.lic* extension, or SySAM 2.0 does not recognize them.

Sybase recommends that you setup the license server and required licenses before installing your SySAM 2.0 enabled Sybase product.

Generating an unserved license

To generate an unserved license:

1 Select Un-served License and click Next.

2 Select the number of machines you want to license and click Next. You can generate licenses for a maximum of ten machines at a time.

3 It is necessary to determine the host ID before generating your licenses. For information on getting your host ID and host name, see "Getting your host ID" on page 18.

4 Enter the host ID, and optionally the host name for each machine for which to generate a license.

For some license types, you are asked to enter the number of CPUs or licenses for the machine where this license is used.

5 Click Generate.

6 Once you have generated the license, you can:

- Download the license file by clicking the Download License File button.
- Print a paper copy of the license by clicking the Print Friendly button.
- Return to the license information page to generate additional licenses.

7 Once you have generated all the licenses you must, save them to the specific location required by your product.

Note You must save your license files with a *.lic* extension, or SySAM 2.0 does not recognize them.

Installing a new license server

If you selected a served license model, you must install a license server. You do not need to run the license server on the same machine as the Adaptive Server. You can specify the served license during the Adaptive Server installation and the installer sets up the license server.

Perform the following steps to install a new license server.

1 Ensure that your system is updated with the correct operating system patches for your platform. For more information see “System requirements” on page 4.

2 Install the license server.

   a Insert the CD or DVD into the appropriate drive.

   b Launch the SySAM License Server installer program from command prompt in the CD drive. Enter:

      ```
      ./SySAM/setup
      ```

   c The Welcome Window displays. Click Next.

   d Select the most appropriate country from the drop-down list.

   e Accept the license agreement.

   f Enter or select the destination directory.

   g Select Sybase Software Asset Management License Server and Utilities 2.1.

   h Click Next to see the summary.

   i Click Next to proceed with the installation.

   Note The license server cannot be started until there is at least one valid served license installed in the *licenses* directory located at *$SYBASE/SYSAM-2_0/licenses*.

3 Get the host ID for the machine on which you run the license server. For information on how to generate the host ID, see “Getting your host ID” on page 18.

4 Go to the Sybase Product Download Center (SPDC) at https://sybase.subscribenet.com.

5 Generate the licenses for the products you want to install. For instructions on generating your licenses, see “Generating licenses at SPDC” on page 19.

6 From command prompt, navigate to installed directory to source the environment variables.

   - C Shell

      ```
      source SYBASE.csh
      ```

   - Bourne Shell

```
. ./SYBASE.sh
```

7 Copy the license file in the *$SYBASE/SYSAM-2_0/licenses* directory on the network license server machine.

8 Refresh or restart the license server:

a Change to:

$SYBASE/$SYBASE_SYSAM/bin

b If the license server is not already started, start it, by entering:

```
sysam start
```

If the license server is already started, use the reread command to make the license server read the new license files:

```
sysam reread
```

9 Refresh or restart the license server:

10 Validate that the license daemon is running by entering:

```
sysam status
```

You can expect to see output for a running server that is similar to:

```
Starting the SYSAM service
The SYSAM service is starting.
SThe SYSAM service was started successfully.

lmutil - Copyright (c) 1989-2006 Macrovision Europe
Ltd. and/or Macrovision Corporation. All Rights
Reserved. Flexible License Manager status on Wed
5/24/2006 15:04

License server status: 27000@mysysamserver
License file(s) on keyserver:
/opt/sybase/SYSAM_0/licenses/mysysamserver_60302031
5.lic
```

11 The SySAM License Server installer installs both IPv4 and IPv4/IPv6 dual stack License Server binaries during installation and configures use of IPv4 only binaries. You can use the SySAM script to configure the appropriate version of the license server:

```
sysam configure [IPv6|IPv4]
```

For example, this command configures use of the IPv4/IPv6 dual stack binaries:

```
sysam configure IPv6
```

For more information, see *SySAM Users Guide*.

Preinstallation tasks

Note If you plan to install both Open Server and Adaptive Server on the same machine, install Open Server before installing Adaptive Server.

If you have already installed Adaptive Server, answer yes during the Open Server installation when you are prompted to override Open Server, srvlib, Common Client Library, and Client Library components. Then use the Adaptive Server 15.0.3 installation program to reinstall CT-lib components.

Before installing Adaptive Server:

1 Read the release bulletins for the latest information on the products (Adaptive Server, Monitor Server, and so on) that you are installing. See "Special Installation Instructions" in the release bulletin.

2 Install operating system patches, if required.

For information about operating system requirements, see "System requirements" on page 4.

3 If you are having trouble starting the installer, make sure you have the required operating system patches for the Java Runtime Environment (JRE) version 6.

Information about the required operating system patches is available from the Sun Java Web site at http://java.sun.com.

4 If you areinstalling on a **Linux pSeries** and are having trouble starting the installer, make sure you have the required operating system patches for the Java Runtime Environment (JRE) version 6.

Information about the required operating system patches is available from the IBM Java Web site at http://www.ibm.com/java.

5 Review the SySAM procedures and plan your client/server configuration using the configuration guide for your platform.

6 Create a "sybase" account on your system to perform all installation 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.

7 Log in to the machine as the “sybase” user.

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 installation, upgrade, and setup tasks.

8 If you are installing Adaptive Server 15.0.3 over an existing Adaptive Server 15.0.x version then, and the Java in the database feature is enabled, perform these steps:

- Create the sybpcidb database, which stores configuration information for the Pluggable Component Interface (PCI) and all Pluggable Component Adapter (PCA) components. This database is used by the installpcidb script. For example:

```
1> disk init
2> name = "sybpcidb_dev"
3> physname = "${SYBASE}/data/sybpcidb_dev.dat"
4>size = '24MB'
4>go
6> create database sybpcidb on sybpcidb_dev = 24
6> go
```

  The device and database sizes depend on the Adaptive Server page size:

  - 2k page size – 24MB
  - 4k page size – 48MB
  - 8k page size – 96MB
  - 16k page size – 192MB

  If you are upgrading from a 15.0.x Adaptive Server, disable the Java feature before you upgrade, and reenable it after you have finished the upgrade.

  To disable the Java feature, use:

```
1> sp_configure 'enable java',
2> go
```

9 Decide where the Adaptive Server software is installed. Make sure there is sufficient available disk space. There cannot be any spaces in the path name of the directory.

10 Know what product edition you are installing. The options are:

- Enterprise Edition
- Small Business Edition
- Developers Edition – Available on Linux x86, 64-bit, Solaris SPARC, and Windows systems.
- Express Edition – Available on Linux x86, 64-bit and pSeries systems.

If you are installing the Small Business or Enterprise Edition, you must know the license type under which Adaptive Server was licensed. For more information about license types, see the "License types" in Chapter 3 "Getting and Using your License" of the *Sybase Software Asset Management Users Guide*.

11 Sybase recommends that you specify license types at the time of installation. However, you may choose to specify the product edition and license type later using sp_lmconfig. For information on sp_lmconfig, see *Reference Manual:Procedures*.

12 You must decide if you want licensing events to trigger e-mail alerts and the severity of the events that generate e-mail messages.

If you choose to have e-mail notifications for license events, you must know the:

- SMTP server host name
- Port number for an SMTP server
- E-mail return address
- Recipients of the notifications
- Severity level of an event that triggers mail. Your choices are:
  - None
  - Informational
  - Warning
  - Error

13 Verify that the operating system meets the version-level, RAM, and network protocol requirements for your platform.

14 Verify that your network software is configured.

Sybase software uses network software even if Adaptive Server and Sybase client applications are installed on a machine that is not connected to a network.

If you are having connection problems, or to verify your network configuration, ping the host.

15 The operating system shared memory default, for most Linux releases is 32MB. The minimum required by Adaptive Server is 64MB for default Server with 2K pages. A higher value is required if you plan to increase Adaptive Server's total memory.

Use the sysctl(8) method to check and adjust the operating system shared memory parameter.

To check the current shared memory size, enter:

```
# /sbin/sysctl kernel.shmmax
```

To adjust the shared memory size:

```
# /sbin/sysctl -w kernel.shmmax=nnn
```

where *nnn* is the new size in bytes (at least 64MB, which is 67108864 bytes).

To guarantee that this value is applied every time the system is started, add the above line to your */etc/rc.d/rc.local* file. On SuSE systems, the file is */etc/init.d/boot.local*.

16 On Linux RHEL Update 3.0 and greater, Adaptive Server version 15.0 running on multiple engines requires the security feature Exec-Shield to be disabled.

To disable Exec-Shield:

a Add the following lines in */etc/sysctl.conf:*

```
kernel.exec-shield=0
kernel.exec-shield-randomize=0
```

b As SU, enter:

```
/sbin/sysctl -P
```

for the action to take effect.

For additional information, see the Red Hat website at http://www.redhat.com/f/pdf/rhel/WHP0006US_Execshield.pdf.

If after adjusting the SHMMAX parameter the server fails to reboot you may also need to increase the value of another Kernel parameter, SHMALL, which is the maximum amount of shared memory that can be allocated. Its value is in the file */proc/sys/kernel/shmall*. This task requires root permission.

Installing server components

Note Adaptive Server Enterprise 15.0.3 includes new major versions of Adaptive Server and many of the supporting components. Installing Adaptive Server version 15.0.3 into the same directory with existing products should not impact the existing products. However, installing other products on top of Adaptive Server version 15.0.3 results in one or more products not working correctly.

Sybase strongly recommends that you install Adaptive Server version 15.0.3 be installed into its own directory if possible. Where this is not practical and other products must be installed into the same directory, Adaptive Server version 15.0.3 should be installed last.

Be sure that you are logged in as “sybase”, and that you have performed the “Preinstallation tasks” on page 25.

Installation methods

The following instructions are for using the installer in GUI mode. You can also perform a completely silent installation with no interaction or perform the installation, and then configure Adaptive Server separately using either the GUI-based configuration tools or silently with the use of a resource file. For information on alternate methods of installation see Appendix A, “Alternative Installation Methods.”

Installing server components in GUI mode

Sybase recommends installing products while logging in as a "sybase" user.

The installer creates the target directory (if necessary) and installs the selected components into that directory.

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

You must source the environment variables needed for Adaptive Server products by running the *SYBASE.csh* script file after exiting the installer.

To install server components:

1 Stop and shut down all programs before running the installer.

2 Insert the Adaptive Server CD or DVD in the appropriate drive, or download and extract the Adaptive Server install image from the Sybase Product Download Center (SPDC).

3 Launch the installer.

For a CD drive enter:

```
/cdrom/setup
```

The Welcome screen displays. Click Next.

4 Select a directory for the installation. Click Next to accept the default directory, or enter a new directory path.

5 You can choose from four types of installations in the installation Type window:

- Typical
- Full
- Custom
- Update – This option only appears if you are installing over an older version. The installer provides a list of products, features, and version to be updated to the current version.

6 If you select Custom, the Products and Features Selection window displays.

Select the products to install by selecting the box next to the product name. Some features are dependent on other features; therefore, the installer prevents you from unselecting some items without first unselecting others.

7 Select the installation type for Adaptive Server . This step does not appear for some platforms on which you can only install a licensed copy of Adaptive Server. The available types to be selected are different for different platforms.

- Licensed copy of Adaptive Server Suite – Choose this if you have a licensed copy of Adaptive Server.
- Evaluation Edition of Adaptive Server Suite – Choose this if you would like to evaluate Adaptive Server.
- Express Edition of Adaptive Server Suite – Choose this if you would like to install Express Edition.
- Developers Edition – Choose this if you would like to install Developers Edition.

  Click Next.

8 Select the most appropriate country, read the license terms, and then click "I agree." Click Next.

- If you chose Licensed installation, the installer prompts for the SySAM license. In this panel, you can specify the license file, use an existing license server, or proceed with the installation without license.
- If you chose "unlicensed" installation, the software works for 30 days from the original installation date.

9 If you specified a served license, you are prompted to set up the license server. A summary screen appears. Click Next.

10 Select the edition for the license you have license:

- Unknown – select this if you are unsure of the license type.
- Enterprise Edition
- Small Business Edition
- Developers Edition

If you choose either Enterprise Edition or Small Business Edition, you must select the license type under which Adaptive Server is licensed. Select from the available options. Choose Unknown if you do not know this information.

Click Next.

11 The Sybase Software Asset Management Notification screen appears. Click Next.

   The Product Selection Summary window displays the selections you have made.

12 Configuring your server for e-mail notification enables designated users receive information about license management events requiring attention.

   Provide the following information:

   - SMTP server host name
   - SMTP server port number
   - E-mail Return Address
   - Recipient e-mail addresses
   - Message severity that triggers e-mail messages

13 Verify that you have selected the correct type of installation, and that you have enough disk space to complete the process. Click Next.

14 The installation Progress window shows the progress of the installation. Click Next.

15 The installation Status window displays the result of the installation process. Click Next.

16 Select Yes or No to enable or disthe remember passwords feature then click Next.

17 You are prompted to configure new servers depending upon the products you installed. A full or custom installation allows you to:

   - Configure a new Adaptive Server
   - Configure a new Backup Server
   - Configure a new Monitor Server
   - Configure a new XP Server
   - Configure an Unified Agent
   - Configure Job Scheduler
   - Enable Self Management
   - Configure Web Services

Select the servers you want to configure. If you do not want to configure the new servers at this point, unselect the item. Click Next.

A summary windows displays the servers and features you chose to configure. Click Next.

18 The Custom Configure New Server Options window allows you to select servers to custom configure. If you do not select any servers in this window, the installer configures all the servers using default values.

If you choose the default values, the installer chooses everything including the server name, port number, and master device location. It also installs Backup Server, Monitor Server, and the XP Server, choosing the name, port number, and error log.

If you accept the defaults, the server names are:

- Adaptive Server – <*host name*>
- Backup Server – <*host name*>_BS
- Monitor Server – <*host name*>_MS
- XP Server – <*host name*>_XP
- Job Scheduler Agent – <*host name*>_JSAGENT

If you configure the servers with default values, the Configure Server Attributes Summary window appears.

Select the server or feature to custome configure. The choices are:

- Custom configure new Adaptive Server
- Custom configure new Backup Server
- Custom configure new Monitor Server
- Custom configure new XP Server
- Custom configure new Job Schedule
- Custom configure Self Management
- Custom configure Web Services
- Custom configure a new Unified Agent

The Custom Configure Input window displays next.

19 The Custom Configure Input window prompts you for the custom Adaptive Server configuration information.

- Server name
- Port number
- Error log – name and location of the error log file.
- Application type – the choices are:
  - MIXED – both OLTP & DSS. This is the default.
  - OLTP – online transaction Processing generally consists of smaller, less complex transactions.
  - DSS – decision Support dystems gnerally have less update activity with large complex queries.
- Page size:
  - 2KB
  - 4KB – default
  - 8KB
  - 16KB
- Master device – name of master device and the path where it should be located.
- Master device. The default master device sizes are:
  - 2KB page size – 30MB
  - 4KB page size – 60MB
  - 8KB page size – 120MB
  - 16KB page size – 240MB
- Master database . The default master database sizes are:
  - 2KB page size – 13MB
  - 4KB page size – 26MB
  - 8KB page size – 52MB
  - 16KB page size – 104MB
- System procedure device path
- System procedure device
- System procedure device and database default size is 140MB.

- System device. The default sizes are:
  - 2KB page size server – 3MB
  - 4KB page size server – 6MB
  - 8KB page size server – 12MB
  - 16KB page size server – 24MB
- System database size (in MB) The default sizes are:
  - 2KB page size server – 3MB
  - 4KB page size server – 6MB
  - 8KB page size server – 12MB
  - 16KB page size server – 24MB
- Temporary database device path
- Temporary database device size:
  - 2KB page size server – 100MB
  - 4KB page size server – 100MB
  - 8KB page size server – 100MB
  - 16KB page size server – 100MB
- Temporary database database size:
  - 2KB page size server – 100MB
  - 4KB page size server – 100MB
  - 8KB page size server – 100MB
  - 16KB page size server – 100MB
- Enable PCI in Adaptive Server
  - PCI device and PCI database size are the same
  - 2KB page size server – 24MB
  - 4KB page size server – 48MB
  - 8KB page size server – 96MB
  - 16KB page size server – 192MB
- Optimization configuration:

- Available physical memory for Adaptive Server – 80% of RAM
- Available CPU for Adaptive Server – round down 80% of the physical CPU.

Note The current default value for the above items are 80% of the system physical memory and CPU number. Input the value based on the system resource usage. If the value specified is larger than the available resource for allocation to the server, then the optimize configuration may fail causing the server to not start.

Once you have customized the Adaptive Server configuration, select Next to record the input fields.

20 The Custom Configure Backup Server Input window prompts you for the Backup Server information.

Once you have entered the appropriate information, click Next to record the information.

21 The Custom Configure Monitor Server Input window prompts you to enter the Monitor Server configuration information.

Once you have entered the appropriate information, click Next to record the information.

22 The Custom Configure XP Server Input window prompts you to enter the XP Server configuration information.

Once you have entered the appropriate information, click Next to record the information.

23 The Custom Configure New Job Scheduler Input window prompts you to enter Job Scheduler information:

- Agent name
- Port number
- Management device
- Management device size
- Management database size

Once you have entered the appropriate information, click Next to record the information.

24 Custom configure Self Management by entering the following information:

- Self Management user name
- Self Management password

Note If you choose the default user name "sa," you cannot enter the password. The "sa" default password is null.

25 Select the adaptor:

- UDP
- JINI

26 Security Login Modules – choose the security login modules for the Unified Agent. You can choose:

- Simple Login Module

  Note If you double-click Simple Login Module, a dialog asks you to change the user name and password.

- Adaptive Server Login Module
- Unix Proxy Login Module

Select the Enable box to enable a login module. To order the modules according to priority, select the module, and click Move up or Move down.

27 The Configure New Servers Summary window displays a summary of the values that are used to configure the servers. These values are either the default or custom values. After verifying the information, click Next, and the installer proceeds with the server configuration.

28 The Configure Server Progress window displays the progress of the server configuration.

29 The Installation Complete window is the last window.

If you encounter any errors, see the *Troubleshooting Guide*.

30 At the end of a successful installation click Finish.

Adaptive Server and related products have been successfully installed, and minimally configured for use. See "Installing sample databases" on page 50, to begin experimenting with your servers, or see the *System Administration Guide* at Sybase Product Manuals at http://www.sybase.com/support/manuals for more advanced topics.

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 include: • "Initializing Database Devices" and "Creating User Databases" in the *System Administration Guide* – information about creating an Adaptive Server user database and its devices. • *Transact-SQL Users Guide* – 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 *Monitor Server Users Guide*.
XP Server	For information on using extended stored procedures, see the *Transact-SQL Users Guide*.
Job Scheduler	For information on using Job Scheduler, see the *Job Scheduler Users Guide*.
Web Services	*Web Services Users Guide* – explains how to configure, use, and troubleshoot Web Services for Adaptive Server.
Unified Agent	*Unified Agent and Agent Management Console* – describes the Unified Agent, which provides runtime services to manage, monitor and control distributed Sybase resources.

Installing version 15.0.3 over an existing 15.x Adaptive Server

This section provides installation instructions for installing Adaptive Server 15.0.3 over an existing 15.x version.

Determining Adaptive Server version

Verify that your current Adaptive Server installation is at version 15.x by running the following query from isql:

```
1> select @@version
2> go
```

If your server is not running, you can get a version string by running:

```
$SYBASE/$SYBASE_ASE/bin/dataserver -v
```

Note You must source environment variables before executing dataserver -v.

If this shows that the Adaptive Server is not at version 15.x, you must upgrade Adaptive Server. See Chapter 5, "Upgrading Adaptive Server."

If your server is at a 15.x version level, you can begin installing Adaptive Server 15.0.3.

Backing up Adaptive Server

Adaptive Server 15.0.3 provides a script for backing up sysmessages before upgrading to 15.0.3. Use uninstmsgs.ebf to back up sysmessages before running instmsgs.ebf. Refer to the "Post-upgrade tasks," section.

Installing Adaptive Server version 15.0.3 overwrites the current Adaptive Server software. Before installing, verify that your databases are error free and that your *$SYBASE* directory is backed up.

To ensure that your database is error free, run dbcc checkdb, dbcc checkcatalog and dbcc checkstorage before loading any new Adaptive Server binaries, including the master database. If the dbcc commands reveal problems, check the *Error Messages and Troubleshooting Guide* for actions necessary to fix the problem. If the error is not listed in the manual, call Sybase Technical Support.

After you have verified that your database is error free, back up your *$SYBASE* directory in case you need to roll back to the original version of the software.

Installing the Adaptive Server version 15.0.3 binary overlay

1 Read "Special Installation Instructions" in the release bulletin for the latest information that may affect specific 15.0.3 configurations.

  This document may also contain last minute installation information for the 15.0.3 installation.

2 If Java in database feature is enabled perform the following steps:

  - Create the sybpcidb database

The sybpcidb database stores configuration information for the PCI and all PCA components. This database is used by the installpcidb script. For example:

```
1> disk init
2> name = "sybpcidb_dev"
3> physname = "${SYBASE}/data/sybpcidb_dev.dat"
4> size = '24MB'
5> go
1> create database sybpcidb on sybpcidb_dev = 24
2> go
```

- Disable java feature:

```
1> sp_configure 'enable java', 0
2> go
```

Note If you are upgrading from a pre 15.0.x server, do not disable Java in database feature. sqlupgrade automatically disables this feature before an upgrade and re-enables the feature after an upgrade.

3 After backing up your databases, shut down Adaptive Server and back up your *SYBASE* directory.

4 Installing Adaptive Server 15.0.3 overwrites current Adaptive Server software. Before installing 15.0.3, make sure that your databases are error-free as described in "Backing up Adaptive Server" on page 39 and that your *SYBASE* directory is backed up.

5 Shutdown servers that are using the binaries from your *SYBASE* directory.

6 Use InstallShield to load the new software from the CD or DVD.

For Windows installations, InstallShield starts automatically.

For UNIX installations, navigate to the CD or DVD drive and enter `./setup`.

7 Install Adaptive Server 15.0.3 over the *$SYBASE* installation path.

Note Once files are loaded into your *$SYBASE* directory, InstallShield asks if you want to configure the new installed server. Deselect configuring the new server, and click continue to finish the installation.

8 Restart Adaptive Server.

The shell command is:

```
$SYBASE/$SYBASE_ASE/install/startserver [-f RUN_server_name file]
```

9 Run select @@version. The server should now be at version 15.0.3.

10 In Adaptive Server version 15.0.3, several changes have been made to the system stored procedures and many new error messages have been added. After performing a binary overlay you must perform the postinstallation tasks to make these changes available.

Refer to the "Post-upgrade tasks" on page 79 before running *installmaster* or *instmsgs.ebf*.

Upgrading an Adaptive Server configured with high availability

The following procedure explains how to upgrade an Adaptive Server configured with high availability. These upgrade steps are applicable only for major upgrades such as 12.5.x to 15.0.x.

Note Resource groups are used to represent cluster sub-system entities that contain Adaptive Server storage and network resources required for Adaptive Server companions in the cluster. For example: Resource groups are called cluster-packages in HP/MCSG cluster; and ResourceGroups in Solaris/SunCluster and IBM/HACMP and Service Groups in VeritasClusterServices for Sun Solaris and Linux. Similarly, bringing the Resource Group "up" and "down" is referred to as "online" and "offline" and "enable" and "disable" in some clusters.

❖ **Upgrading a High Availability-enabled Adaptive Server in an active-active configuration:**

1 Drop the high availability companionship.

- Asymmetric configuration – on the secondary server, use isql:

  ```
  sp_companion <primary-server-name>, "drop"
  ```

- Symmetric configuration – run the same command as above on both servers.

  Use isql to verify that both servers are in single-server mode:

  ```
  sp_companion
  ```

2 Use the appropriate command for your cluster system to stop monitoring resources associated with Adaptive Server on each cluster node. You may want to offline or unmanage the resources and resource groups on some cluster systems to prevent unwanted failover during the upgrade.

3 Log in to the server using isql. Disable HA by entering:

```
sp_configure 'enable HA', 0
```

4 To complete the change, shut down and restart Adaptive Server.

5 Upgrade each Adaptive Server Enterprise separately, following the instructions in the appropriate upgrade chapter of the installation guide for your platform.

6 Run the new Adaptive Server Enterprise installmaster script against the newly upgraded Adaptive Servers.

7 Enable the HA property on the new server. Log in to the server using isql and configure the server to enable HA by entering:

```
sp_configure 'enable HA', 1
```

8 To complete the change, shut down and restart Adaptive Server.

9 Run the new Adaptive Server *installhasvss* script against the newly upgraded Adaptive Servers.

10 Follow the instructions in *Using Sybase Failover in a High Availability System* to configure the permission and ownership for *$SYBASE/$SYBASE_/bin/sybha* and *$SYBASE/$SYBASE_/install/sybhauser*.

11 Modify high-availability related files such as the *RUN_server_file*, and the *SYBASE.csh* and *SYBASE.sh* files, if those files are required on the cluster platform.

12 Reconfigure each cluster resource associated with Adaptive Server, depending on platform-specific requirements. For example, on Veritas Cluster, update the *HA* resource properties, the *RUN_server_file*, and *Sybase_home*.

13 Manually restart Adaptive Server on each cluster node using trace flag 2209. Use the Adaptive Server command line option -T2209.

14 Use the appropriate command for your cluster system to restart monitoring resources associated with Adaptive Server on each cluster node. You may need to online or manage the resources and resource groups if you offlined or unmanaged them in Step ASE2.

15 Reestablish companionship. See Using Sybase Failover in a High Availability System for information on how to configure companionship.

For an asymmetric configuration on the secondary server, use isql:

```
sp_companion <primary-server-name>, configure
```

If user databases exist on the secondary server, you may see one or more warning messages. You can safely ignore these messages, which look similar to:

```
Msg 18739, Level 16, State 1:
Server 'svr2', Procedure 'sp_hacmpcfgvrfy', Line 102:
Database 'svr2_db1': a user database exists. Drop this
database and retry the configuration again.
```

For a symmetric configuration run the sp_companion configure command as above on both servers. Use isql to verify that both servers are in single-server mode:

```
sp_companion
```

Warning! Do not use trace flag 2209 after the Adaptive Server companionship is re-established.

16 Use the appropriate cluster command to take offline, then bring back online, each resource group associated with Adaptive Server. Make sure you remove the -T2209 option from *run_server_file* if added. Onlining and offlining the Adaptive Server resource shuts down the server and restarts it using the *run_server_file*.

Use isql to connect to each Adaptive Server Enterprise and verify the correct server companionship:

```
sp_companion
```

In asymmetric mode, the output you see on the primary server is similar to the following:

```
Server 'svr1' is alive and cluster configured.
Server 'svr1' is configured for HA services.
Server 'svr1' is currently in 'Primary normal' mode.
(return status = 0)
```

The output you see on the secondary server is similar to the following:

```
Server 'svr2' is alive and cluster configured.
Server 'svr2' is configured for HA services.
Server 'svr2' is currently in 'Secondary normal'
```

```
mode.
(return status = 0)
```

In symmetric mode, the output you see on the primary server is similar to the following:

```
Server 'svr1' is alive and cluster configured.
Server 'svr1' is configured for HA services.
Server 'svr1' is currently in 'Symmetric normal'
mode.
(return status = 0)
```

The output you see on the secondary server is similar to the following:

```
Server 'svr2' is alive and cluster configured.
Server 'svr2' is configured for HA services.
Server 'svr2' is currently in 'Symmetric normal'
mode.
(return status = 0)
```

17 To verify failover and failback, use the cluster command to switch resources associated with Adaptive Server to another node and then switch back.

Monitoring and Diagnostic (MDA) tables

The *installmontables* script for installing Monitoring and Diagnostic tables (MDA) uses the materialized parameter when defining the MDA proxy tables. This results in improved performance for many queries using the MDA tables, making it no longer necessary to define a "loopback" remote server in your sysservers table in order to use the MDA tables.

Sybase recommends you reinstall the MDA tables using the *installmontables* script contained in this release.

Note No changes are needed to the *installmontables* script unless you plan to use the MDA tables to monitor remote servers.

---

v **Monitoring remote servers using MDA tables**

Make these changes to use the MDA tables to monitor remote servers:

1 Update the *installmontables* script by changing all occurrences of "materialized" to "external procedure."

2 Modify the at clause in the proxy table definitions in the *installmontables* script to add the name of the remote server followed by the string "..." before the MDA RPC name.

3 You can identify MDA RPC names by the "$" (dollar sign) preceding the name. The remote server name must be the same as the remote server name as it appears in the *interfaces* file on the server where the MDA tables are installed.

   For example, for the monState table definition, if your remote server name appearing in the *interfaces* file is SALESPROD, change:

```
at "$monState"
```

   to:

```
at "SALESPROD...$monState"
```

If the remote server has not already been registered with the server on which you are installing the MDA tables, use the sp_addserver stored procedure to do so.

When installing the MDA tables in order to reference a remote server as described above, be sure to use the version of the *installmontables* script that came with the version of the Adaptive Server Enterprise installed at the remote server.

Use of the materialized directive has changed the way some error messages from the MDA tables are sent to the client application. If all configuration parameters required by an MDA table used in a query are not enabled, then the client application receives an error message.

New Monitoring and Diagnostic tables in Adaptive Server 15.0.3

You must have the mon_role privilege to retrieve information on the PCI Bridge and its associated slots.

- monPCIBridge – a 1-row MDA table containing ASE/PCI Bridge information.
- monPCIEngine – a multi-row table containing 1 row for each online engine.
- monPCISlots – This is a multi-row table containing 1 rows for each active slot running under the PCI Bridge.

CHAPTER 3

Postinstallation Tasks

After the installation process, you have a minimally configured Adaptive Server. This chapter describes postinstallation tasks to administer Adaptive Server and install stored procedures and sample databases. For more information, see the configuration guide for your platform.

Verifying that servers are running

Note If you have already run the following command do not do it again. Running it more than once can cause problems.

To determine whether the servers you installed are running:

1 From a UNIX command line, set the Sybase environment variables by entering:

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

2 Use showserver to display all Adaptive Server-related processes that are on the system
`$SYBASE/$SYBASE_ASE/install/showserver`

Verifying your connection to the servers

Use isql to perform a quick test:

- At the command prompt, enter:

```
isql -Usa -P<password or leave it blank> -Sserver_name
```

where *server_name* is the Adaptive Server name.

- **Warning!** The first time you log in to Adaptive Server, use the default "sa" user name and leave the password blank. After you log in for the first time, change the system administrator's password. See "Setting the System Administrator password" on page 49.

The isql command prompt is displayed if the login is successful.

- To display the Adaptive Server version number, at the isql prompt enter:

```
1> select @@version
2> go
```

The Adaptive Server version number is displayed. The output should show Adaptive Server at version 15.0.3.

If you encounter errors, see the *Troubleshooting Guide*.

Connecting to Adaptive Server via Sybase Central

Sybase Central provides a graphical user interface where you can perform Adaptive Server administrative tasks. The Sybase Central interface provides a hierarchical list of servers in the left pane and a list of details for the selected server in the right pane. To select a server, click the icon in the left pane.

Note If you have already run the following command do not do it again. Running it more than once can cause problems.

1 From a UNIX command line, enter:

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

2 Then enter:

```
run /$SYBASE/shared/sybcentral600/scjview.sh
```

3 Select Tools | Connect, then select the server to which you want to connect from the drop-down list.

4 In the Login window, enter the system administrator's user name and password.

   You must log in as the system administrator to perform administrative tasks.

5 Click OK.

The Adaptive Server plug-in to Sybase Central does not display all servers listed in the *interfaces* file. Instead, Sybase Central lists only those servers that you connected to earlier, or those servers that are started as Windows services.

To access a new server for the first time, select Tools | Connect to select a server listed in the *interfaces* file.

Setting the System Administrator password

A user account called "sa" is created for the Sybase system administrator when you install the Sybase software. 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 Sybase system administrator should always use a non-default password.

The Sybase system administrator should log in to the new Adaptive Server as "sa" and set a password using sp_password:

```
$SYBASE/$SYBASE_OCS/bin/isql -Usa -P -Sserver_name
1> sp_password null, new_password
2> go
```

where "null" is the default password and *new_password* is the password that you are assigning to the "sa" account.

For greatest security, Sybase recommends that you set the password to have at least eight characters, with a combination of uppercase and lowercase letters and numbers.

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:

- "Running the database scripts" on page 51
- "Installing the interpubs database" on page 52
- "Installing the jpubs database" on page 53

The sample databases contain information about a fictitious business. You can use this information to learn about the Sybase products, without affecting essential data.

Table 3-1 lists the scripts that you can use to install the sample databases.

Table 3-1: Sample database scripts

Script	Description
installpubs2	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.
installpubs3	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.
installpix2	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. Run the *installpix2* script after you run *installpubs2*.

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.

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. Sybase does not recommend this configuration because it uses valuable space that is best used for system tables. Each sample database requires 3MB on a 2K server, and multiples of 3MB on a 4K, 6K, 8K, and 16K server on your database device.

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 *Reference Manual: Procedures*.
- Modify each sample database installation script to specify a different device.

❖ **Running the database scripts**

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 store the pubs2 and pubs3 databases. You must 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.

From the Adaptive Server scripts directory (*$SYBASE/$SYBASE_ASE/scripts*), use isql to log in to Adaptive Server and run the script:

```
isql -Usa -P***** -Sserver_name -iscript_name
```

Where:

- *server_name* – represents the destination server for the database.
- *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/installpubs2
```

5 To install the image data associated with pubs2 (pubs3 does not use image data), run:

```
isql -Usa -Ppassword -Sservername
```

```
-i$SYBASE/$SYBASE_ASE/scripts/installpix2
```

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 *installpix2* script only to use or test the image datatype. Sybase does not supply any tools for displaying image data. You must use appropriate window graphics tools to display the images after you have extracted them from the database.

For more information about running these scripts, see the configuration guide for your platform.

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), ISO 8859-15 (iso15), Roman8, or Roman9 (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**

1. Be sure iso_1, iso15, Roman8, Roman 9, or UTF-8 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 are storing the interpubs database. You must provide this information later.
3. Make a copy of the original *installintpubs* 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:

```
isql -Usa -Ppassword -Sservername -Jiso_1
-i$SYBASE/$SYBASE_ASE/scripts/iso_1/installintpubs
```

For more information on the -J option in isql, see the *Utility Guide*.

jpubs database

If you installed the Japanese Language Module with your Adaptive Server, the scripts file contains the *installjpubs* script for installing the jpubs database. jpubs is a database similar to pubs2 that contains Japanese data. *installjpubs* uses the EUC-JIS (eucjis), UTF-8 (utf8), or the Shift-JIS (sjis) character sets.

❖ **Installing the *jpubs* database**

1 Set your terminal to display 8-bit characters.

2 Verify that the EUC-JIS, Shift-JIS, or UTF-8 character set is installed as the Adaptive Server 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 are storing the jpubs database. You must 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 50.

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
 -i $SYBASE/$SYBASE_ASE/scripts/eucjis/installjpubs
```

or:

```
isql -Usa -Ppassword -Sservername -Jsjis
  -i $SYBASE/$SYBASE_ASE/scripts/sjis/installjpubs
```

For more information on the -J option in isql, see the *Utility Guide*.

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*.

Note Sybase recommends that you remove the guest user from user databases in production systems.

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.

CHAPTER 4

Installing Sybase PC-Client Products

Adaptive Server also includes PC-Client products, and this chapter describes how to install client products.

Overview

Clients, such as Sybase Central and Open Client, are used to access Adaptive Server. See the *Configuration Guide Open client and Open Server* for your platform.

Sybase Central, Adaptive Server and SySAM plug-ins

Sybase Central allows you to connect to Adaptive Server via client connections. You can use Sybase Central to connect to remote servers, local servers (installed on the same machine), and multiple servers. See “Configuring network connections for client products” on page 59. Before using the plug-in, restart your computer to implement changes made to the PATH and CLASSPATH environment variables during installation.

Open Client runtime

The Sybase PC-Client CD includes:

- Software Developer’s Kit (SDK) for Windows platforms. SDK includes:
  - Open Client (CT-Library, DB-Library™)
  - Embedded SQL™/C (ESQL/C)
  - Embedded SQL/Cobol (ESQL/Cobol)

    - Extended Architecture (XA)
    - jConnect for JDBC
    - ASE ODBC driver by Sybase
    - ASE OLE DB provider by Sybase
    - ASE ADO.NET Data provider by Sybase
    - Language modules
- PowerDesigner
- PowerTransfer
- InfoMaker®

Note PC-Client now contains 32-bit and 64-bit SDK.

Monitor Client Library requires Open Client™/C with the SDK option.

Before you install the PC-Client products

Before starting the installation process for PC-Client products, be sure that you have at least an extra 5MB of disk space.

The installation program uses the extra space and directory to write files temporarily during the installation. The installation program frees this space after installation is complete.

Installing PC-Client products

The PC-Client CD contains several products that are each packaged with their own installer. When you insert the PC-Client CD, a menu program launches automatically. The menu program presents the list of products that can be installed from the CD and allows you to install them one at a time. The major products on the CD are described in Chapter 1, “Before You Start.”

These are the menu selections:

- View *readme.txt*
- Install PC-Client components 15.0.3
- Install PowerDesigner® 12.5
- Install PowerTransfer 15.0.3
- Install InfoMaker 11.5
- View our (Sybase) Web site
- Exit

Before installing any products, review the *readme.txt* file, which contains a brief description of each of the products, lists dependencies, and contains any last-minute instructions or changes.

It is best to install the PC-Client components first, because other products use PC-client components.

Table 4-1: PC-Client system requirements

Operating system	Service pack level
Windows 2003	Service pack 2
Windows XP Professional	Service pack 2
Windows Server 2003 Edition x64	Service pack 2

Note If you are using ODBC, OLE DB or ADO.NET Drivers, then you must have Microsoft .NET Framework 2.0 Service Pack 1 installed on your system. The installer produces errors during installation and the drivers do not function without this service pack installed.

To check whether you have this service pack installed:

- Open Add or Remove Programs item from the Control Panel. If NET Framework is listed under the Currently installed programs then you do not need to update your system.

❖ Installing PC-Client Components on Windows

Warning! The PC-Client now contains 32-bit and 64 bit SDK. It installs 32-bit SDK on 32-bit OS; and 64-bit SDK on 64-bit OS. If your 64-bit OS computer already has the 32-bit SDK/Adaptive Server, you must run the 32-bit PC-Client installer in the "*pcclient32*" folder.

PC-Client Components are provided so they can be installed on client computers. You may install PowerDesigner, PowerTransfer, and InfoMaker on the same computer as Adaptive Server.

1 Verify that your computer has sufficient disk space for each product.

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

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

4 Insert the PC-Client CD in the appropriate drive. The menu program should start automatically.

   Alternatively, you can start the menu program from the Windows Start menu. Select Start | Run, and enter the following, where *X* is your CD drive:

   ```
   X:\autorun.exe
   ```

5 Select Install PC Client Components 15.0.3 from the menu.

6 When the installer starts, the Welcome window displays. Click next.

7 When the Sybase license agreement displays, select a country, click Agreement, then click Next.

8 Enter the directory path and click Next.

9 Select the type of installation to be performed.

   - Typical Install – installs the default components that most users need.
   - Full Install – installs every component on the CD.
   - Customized Install – allows you to select the components to install. Certain components are automatically installed if they are required to run other selected components.

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

   Components that would be installed in a typical installation appear with a check in the check box to the left of the product name. You may select or unselect components from this list.

11 Click Next.

   The Summary window displays every component to be installed by the installer, the required disk space, and the available disk space.

If the target directory does not have enough free space, the available space appears in red. You must either click Previous to return to the earlier window and change your selections, or Cancel to quit the installer.

12 Click Next.

13 You are given the option to have ASE plug-in remember passwords. select Yes or No. Click Next.

14 The installer displays a progress indicator as it installs components.

To configure client network connections to Adaptive Server, see the *Configuration Guide* for your platform.

Installing PowerDesigner, PowerTransfer, and InfoMaker

Install PowerDesigner by selecting Install PowerDesigner 12.5 from the menu.

Select Install InfoMaker 11.5 to install InfoMaker from the menu.

You must install PC-Client components, and the Microsoft .NET framework before installing PowerTransfer. To install PowerTransfer, select Install PowerTransfer 15.0.3 from the menu.

Configuring network connections for client products

Note Kerberos security driver name has changed in 15.0 and above. The "Using Kerberos" section in the "External Authentication" chapter of the *System Administration Guide* can be referenced for details on how to configure *libtcl.cfg* and *libtcl64.cfg* appropriately.

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 must know where the others reside on the network. This information is stored in the *sql.ini* file on Windows or in a Lightweight Directory Access Protocol (LDAP) server.

Configuring *libtcl.cfg* for LDAP

Use the *libtcl.cfg* files to specify an LDAP server name, port number, DIT base, user name, and password to connect to an LDAP server.

The default *libtcl.cfg* file is located in *%SYBASE%\%SYBASE_OCS%\ini*.

In its simplest form on 32-bit LDAP drivers, the *libtcl.cfg* file is in this format:

```
[DIRECTORY]
ldap=libsybdldap.dll
```

where *ldapurl* is defined as:

```
ldap://host:port/ditbase
```

The file format is same for both 32 and 64-bit LDAP drivers on Windows.

When an LDAP server is specified in the *libtcl.cfg* file and the *libtcl64.cfg* file (when applicable to your platform), the server information is accessible only from the LDAP server. Adaptive Server ignores the *interfaces* file. Open Client and Open Server applications that use the -i option at start-up override the *libtcl.cfg* file and use the *interfaces* file.

To use a directory service, you must:

1 Configure the *libtcl.cfg* file, and the *libtcl64.cfg* file (when applicable), to use directory services.

  Use any standard ASCII text editor to:

  - Remove the semicolon (;) comment markers from the beginning of the LDAP URL lines in the *libtcl.cfg* file under the *[DIRECTORY]* entry.
  - Add the LDAP URL under the *[DIRECTORY]* entry. See the *Configuration Guide* for supported LDAP URL values.

  Warning! You must enter the LDAP URL on a single line.

  ```
  ldap=libsybdldap.dll
  ldap://host:port/ditbase??scope??
  bindname=username password
  ```

For example:

```
[DIRECTORY]
ldap=libsybdldap.dll
ldap://huey:11389/dc=sybase,dc=com??one??
bindname=cn=Manager,dc=sybase,dc=com secret
```

Note On Windows x64, the *.dll* file is called *libsybdldap64.dll*.

2 Verify that the appropriate environment variable points to the required third-party libraries. The Netscape LDAP SDK libraries are located in:

- *%SYBASE%\%SYBASE_OCS%\lib3p* on 32-bit platforms
- *%SYBASE%\%SYBASE_OCS%\lib3p64* on Windows x64

The Windows PATH environment variable must include this directory.

3 Once you have edited the *libtcl.cfg* file, use dsedit to add a server to the directory service:

a From the Windows task-bar, select Start | Programs | Sybase | Connectivity | Open Client Directory Service Editor.

b Select LDAP from the list of servers, and click OK.

c Click Add New Server Entry.

d Enter:

- The server name – this is required.
- Security mechanism – optional. A list of security mechanism OIDs are located in *%SYBASE%\ini\objectid.dat*.
- HA server name – optional. This is the name of the high-availability failover server, if you have one.

e Click Add New Network Transport.

- Select the transport type from the drop-down list.
- Enter the host name.
- Enter the port number.

f Click OK twice to exit the dsedit utility.

For more information, see the *Configuration Guide* for your platform.

Testing the Sybase Central installation

After you install Adaptive Server, Sybase Central v6.0, and the Java Runtime Environment, test the installation and network connections:

1 Select Start | Programs | Sybase | Sybase Central from the Windows taskbar to start Sybase Central.

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

3 Log in using the default user ID, "sa", without a password. If you changed the password for Adaptive Server according to the postinstallation instructions, use the new password.

4 From the drop-down list, select the Adaptive Server to which you want to connect.

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.

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 a server, select Tools | Disconnect.

6 Exit Sybase Central.

If Adaptive Server fails any of these tests, see Chapter 8, "Troubleshooting." Before retrying the installation, follow the instructions in Chapter 3, "Postinstallation Tasks." For more details on Unified Agent installation and administration, see the *Unified Agent / Agent Management Console User Guide*.

CHAPTER 5

Upgrading Adaptive Server

This chapter describes the various steps for upgrading Adaptive Server to version 15.0.3. If you are installing Adaptive Server 15.0.3 on top of an earlier 15.x version see “Installing version 15.0.3 over an existing 15.x Adaptive Server” on page 38. If you need information on recovering from a failed upgrade see “Recovering from a failed upgrade” on page 128.

Overview

You can upgrade to Adaptive Server 15.0.3 from any of these versions:

- 12.5.x (except 12.5.3a)

- 15.x (except 15.0.1 Cluster Edition)

Note Adaptive Server version 15.0.3 does not support upgrade from Adaptive Server version 12.5.3a.

For a server installation 12.0.x and older, Sybase recommends that you upgrade to version 12.5.4, then upgrade to version 15.0.3.

You can upgrade Adaptive Server from a 32-bit version to a 64-bit version, but you cannot move from a 64-bit version to a 32-bit version. Likewise, you can upgrade only from an earlier version of Adaptive Server to a more recent version.

Only upgrades to and from the same page size are supported. Changing the server schema from one page size to another is a database migration. See sybmigrate in the *Utility Guide* for information about migration.

Upgrading Adaptive Server consists of three processes:

1 Install Adaptive Server 15.0.3 into its own installation directory.

Note You must have both the old installation and the new installation to perform an upgrade.

2 If your server is a pre-15.x version then, from the 15.0.3 server installation, perform the pre-upgrade checks on the old server using the preupgrade utility, which is located at *$SYBASE/ASE-15_0/upgrade*. If necessary, fix any problems that pre-upgrade process reports. If your server is already at Adaptive Server 15.x or later most of this process is automatic when you install the new server.

3 preupgrade runs against the pre-15.0.x servers. It checks that all required databases exist and that they are large enough. It verifies that stored procedures have the text required for upgrade, and that configuration parameters are correct for the new server and for upgrading. It verifies that datatype definitions do not conflict with the new server's requirements. When preupgrade runs without reporting any errors, you can then:

   a Shut down the pre-15.0.x server.

   b Copy the server entry from the old *interfaces* file to the new *interfaces* file

   c copy the <*server_name*>*.cfg* file from old directory to new *$SYBASE* directory.

d Run the upgrade process. If problems occur, fix them and then run the upgrade process again.

e Reinstall Sybase-supplied stored procedures to prevent any errors caused from changes to system catalogs.

Note Adaptive Server issues advisory warnings when configuration parameters are not set to the default. These do not require any action.

The preupgrade and upgrade utilities are internally called by sqlupgrade or sqlupgraderes. If your server is already at a 15.x level, do not upgrade using sqlupgrade or sqlupgraderes. The message "Adaptive Server is already at version 15.0" appears if you are already at a 15.0 level. All required changes happen automatically while Adaptive Server 15.0.3 is starting for the first time. However you must reinstall system stored procedures by running the install scripts noted in the steps above. If you are starting from a pre-15.x server you must run preupgrade before upgrading to the new 15.x server.

Each new version of Adaptive Server contains features that introduce new parameters, commands, reserved words, and so on. For this reason, preupgrade is needed to prepare the old server for upgrade. It is not necessary to start the server before running sqlupgrade. sqlupgrade starts the server when needed. However, if you are running preupgrade, then you must manually stop and start the server.

preupgrade runs various checks to determine how much space you must add to the old server to successfully upgrade.

As part of the pre-upgrade tasks, preupgrade scans all databases and catalogs and determines how much free space is required to upgrade successfully. preupgrade searches for the largest catalog, then calculates the required free space by doubling the size of the largest catalog, and adding 10 percent for logging the upgrade changes for each catalog.

During the pre-upgrade process, preupgrade returns informational messages as it checks the old server. You must fix all reported problems, and run preupgrade cleanly before beginning the upgrade process. Once the old server is eligible to be upgraded you must manually shut down the old server, and start the new server against the existing databases. Then begin the upgrade process.

Following an upgrade to other platforms, Adaptive Server internally rebuilds procedures from the text in *syscomments* the first time Adaptive Server is executed. The procedure may not execute properly if it has code that drops an existing object and recreates it. This is a problem when the object already exists at the time the procedure is first executed. To avoid problems manually drop the object prior to executing the procedure for the first time.

System catalog changes during upgrade

Adaptive Server version 15.0.3 introduces some new system catalogs and some changes to existing catalogs.

The catalog upgrade in 15.0.3 may affect your existing applications. If you are upgrading, see the *Adaptive Server Enterprise New Feature Guide for 15.0.3* for a complete list of catalogs that are affected.

Pre-upgrade tasks

Note Before you begin the upgrade process, install Adaptive Server 15.0.3 onto your system.

Note If your server has replicated databases, consult "Upgrading Servers with Replicated Databases," before starting the pre-upgrade tasks.

To ensure a successful upgrade, review the following pre-upgrade tasks and perform them as necessary. Depending on the old server configuration, you may not need to perform all pre-upgrade tasks.

1 Check system and upgrade requirements.

2 Check *RUN_server* file location.

3 Read the password encryption algorithm documentation for 15.0.2 in the *Adaptive Server Enterprise New Features Guide for 15.0.2*. You should set the password policy option 'allow password downgrade' to 1. Then passwords are encrypted with old and new algorithms aiding in transition should you ever downgrade to an earlier version.

4 If you are upgrading Adaptive Server, the previously installed version of the server **must** be running. If you are upgrading Backup Server, Historical Server, Monitor Server, or XP Server, those servers must **not** be running.

5 Stored procedure text in the syscomments table is required for upgrade.

6 Reserved words are resolved using quoted identifiers.

7 Verify that users are logged off.

8 Check database integrity.

9 Back up databases.

10 Dump transaction log.

11 Make sure that master is the default database for the "sa" user.

12 Prepare the database and devices for upgrade using the preupgrade utility.

- Create a sybsystemdb database if it does not already exist.
- Disable auditing using the command:

  ```
  sp_configure 'auditing', 0
  ```

  Save the current audit settings for the pre-15.0.3 Adaptive Server using the command:

  ```
  sp_displayaudit
  ```

- Disable disk mirroring.
- Verify that your SYBASE environment variable points to the location of the new Adaptive Server software files you just installed.

  You also can set the OLDSYBASE, OLDSYBASE_ASE, and OLDSYBASE_OCS environment variables to the location of the server you are upgrading, to avoid having to type this path when you run sqlupgrade.

- Disable Job Scheduler.

13 Ensure that the procedure cache size is at a minimum of 150 percent of the default procedure cache size, or between 53248 and 2147483647 2K pages.

14 Copy the following files from earlier versions of Adaptive Server to their corresponding Adaptive Server 15.x installation.

For UNIX platforms:

- *$SYBASE/interfaces*
- *$SYBASE/$SYBASE_ASE/<servername>.cfg*
- *$SYBASE/$SYBASE_OCS/config/libtcl.cfg*
- *$SYBASE/SYSAM-2_0/licenses/license.lic*

15 If the Java in database feature is enabled, create sybpcidb database. The sybpcidb database stores configuration information for the Pluggable Component Interface (PCI) and all Pluggable Component Adapter (PCA) components. This database is used by installpcidb script. For example:

```
1> disk init
2> name = "sybpcidb_dev"
3> physname = "${SYBASE}/data/sybpcidb_dev.dat"
4> size = '24MB'
5> go
1> create database sybpcidb on sybpcidb_dev = 24
2> go
```

Checking system and upgrade requirements

To verify that your system environment is configured correctly:

1 Determine whether your server supports an upgrade to Adaptive Server 15.0.3.

2 Verify that the computer on which you plan to upgrade the Sybase products meets the system requirements specified in "System requirements" on page 4.

3 Set the environment variables by sourcing the *SYBASE.[csh, sh, env]*. file. Running this script multiple times can cause problems. Only run it once.

4 Verify that you installed Adaptive Server 15.0.3 in a **different** directory than your earlier Adaptive Server installation.

If you overwrote your earlier server installation:

a Restore it from your most recent backup.

b Reinstall the product files for Adaptive Server in a different directory.

c Continue with the upgrade.

Checking RUN_*server* file location

Verify the name and location of the *runserver* file. Be sure the *runserver* file for your current server is located in:

$SYBASE/$SYBASE_ASE/install for version 12.0.x and higher

Verify that the file is renamed *RUN_servername*, where *servername* is the name of the old server. The *servername* must appear exactly as it appears in the *interfaces* file.The *RUN_servername* file for a server SYBASE is called *RUN_SYBASE*. If the *RUN_servername* file for your current Adaptive Server is named differently, you must change the name during the upgrade process.

Procedure text is required for upgrade

If you created any compiled objects or stored procedures in a pre-15.0.x server, then removed the syscomments text, the upgrade succeeds but you encounter runtime problems. To upgrade stored procedures, the stored procedure text must be available in syscomments.

To upgrade successfully to Adaptive Server version 15.0.3:

- Reinstall the procedures with text, or
- Remove them and reinstall them after the upgrade.

You can also hide the text using the sp_hidetext stored procedure.

Reserved words

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. If you are upgrading Adaptive Server, and the identifiers in your user databases match new reserved words, errors result when you run queries, stored procedures, or applications that use these identifiers.

Note Before performing your upgrade, change the name of any user database that is a reserved word using the sp_renamedb stored procedure.

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. Rename all objects that use reserved words.

As part of the pre-upgrade process, sqlupgrade, sqlupgraderes, or preupgrade can perform the reserved word check for you. See the *Reference Manual* for a complete list of reserved words.

Note If you change an object name, change applications and stored procedures that refer to that object.

Running a reserved word check

If you plan to use sqlupgrade to perform the upgrade process, you do not have to check for reserved words as a separate step. In sqlupgrade, you can check for reserved words at the start of the upgrade process, and then continue with the upgrade if no problems are found.

If you plan to use sqlupgraderes to perform the upgrade process using a resource file, you can run sqlupgrade first to identify reserved word conflicts and other potential upgrade eligibility problems. You can specify that you do not want the upgrade to proceed even if no problems are found.

Both sqlupgrade or sqlupgraderes, automatically install new reserved words and sp_checkreswords. sp_checkreswords is a stored procedure used to detect and display identifiers in your existing databases that conflict with reserved words in the new database. You can then run the new version of sp_checkreswords at any time while preforming pre-upgrade tasks.

Note You must use the sp_checkreswords stored procedure from the new version of Adaptive Server to verify that the old installation of Adaptive Server does not use any reserved words that have been introduced with the new server.

Checking for reserved words generates a list of identifiers that conflict with reserved words, and the owners of those identifiers, in the file *$SYBASE/$SYBASE_ASE/init/logs/sqlupgradeMMDD.nnn*. Review this file to determine which identifiers must be changed.

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 the *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.
- Quoted identifiers.
- Brackets around the identifier. For example:

```
create table [table] ( [int] int, [another int] int )
```

Run sp_checkreswords 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 *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.

Preparing the database and devices for the upgrade

If you ran the pre-upgrade option in preupgrade, the utility scanned the system catalogs and calculated how much additional space needed to perform the upgrade.

If you did not run the pre-upgrade check, you must manually calculate how much free space you must add to your system catalogs and databases.As a general rule, you must double the size of the largest catalog that you are going to upgrade, and add approximately 10 percent more to calculate the free space required for the upgrade to succeed. For example, if you have a large number of stored procedures or compiled object in any database, the syscomments and sysprocedures catalogs require additional space.

Note Sybase recommends that you use preupgrade to determine how much free space is required for the upgrade.

❖ **Increasing default database sizes**

You can use sp_helpdb or Sybase Central to determine the current size of the master, model, sybsystemprocs, and tempdb databases.

To enlarge the master, tempdb, and model databases:

1 In isql, use alter database to increase the size of the master database. For example:

```
1> use master
2> go
1> alter database master on master=x
2> go
```

This example increases the size of the master database; *x* is the number of megabytes of space added to the existing database size.

2 Repeat this step to increase the size of each of the tempdb and the model databases. For example:

```
1> alter database tempdb on master=x
2> go
1> alter database model on master=x
2> go
```

Note The model database cannot be larger than the tempdb. If your changes would cause the model database to be larger than the tempdb, then you must first increase the size of tempdb, before increasing the size of the model database.

3 Verify the size of each database. Enter the following, where *database_name* is the name of the system database you are checking:

```
sp_helpdb database_name
```

4 Update the values in *%OLDSYBASE%\%OLDSYBASE_ASE%/<servername>.cfg* file as indicated by the *preupgrd.exe* script.

Create a *sybsystemdb* database

In version 11.9.x, the sybsystemdb database was required only for servers using two-phase commit transactions. Beginning with version 12.0, all servers must have a sybsystemdb database. Adaptive Server 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).

If you have a *sybsystemdb* database

If you have a sybsystemdb and the database is at least 4MB, 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 are not using two-phase commit or DTM applications, create a sybsystemdb with a minimum of 4MB.

If you are 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 percent of the database should be data storage, and 75 percent should be log storage.

sybsystemprocs

sybprocsdev is the default name for the device-holding database sybsystemprocs. It is frequently referred to as the sybsystemprocs device in Adaptive Server.

Verify that the sybsystemprocs database is large enough. For an upgrade, the default size for sybsystemprocs is 124MB, or enough free space to accommodate the existing sybsystemprocs database, and the largest catalog that is to be upgraded, plus an additional 10 percent for logging upgrade changes. You may need more space if you are adding user-defined stored procedures. 124MB accommodates additional internal data structures, but does not account for the possibility of a larger number of user-defined system procedures.

Enabling PCI in Adaptive Server

To enable Java in database feature you must enable PCI and configure sybpcidb database. For sqlupgrade[res], the enable java setting in the old server is detected. If it is set at 1, then preupgrade asks you to create a sybpcidb device and database before you run upgrade.

Upgrading to Adaptive Server 15.0.3

To assist with the upgrade process, Sybase recommends you set the *OLDSYBASE*, *OLDSYBASE_ASE*, and *OLDSYBASE_OCS* environment variables to point to the old installation of Adaptive Server. If you set these environment variable to the old installation of the Adaptive Server, the upgrade utility automatically populates input fields with the correct information as you upgrade.

Set the OLDSYBASE_ASE variable to the SYBASE_ASE appropriate to your older server. If you are upgrading from 12.5 for example, it should be *ASE-12_5*.

If upgrading from Adaptive Server 12.5:

```
setenv OLDSYBASE <old_$SYBASE_directory>
setenv OLDSYBASE_ASE ASE-12_5
```

This is required if you are using the sqlupgraderes utility to perform your upgrade.

Use either of the following methods to upgrade Adaptive Server:

- sqlupgrade – provides an X-Windows or Motif GUI for the upgrade process. See “Using sqlupgrade” on page 75.

- sqlupgraderes – provides a noninteractive, file-based interface for the upgrade process. sqlupgraderes allows you to upgrade Adaptive Server using a resource file. This is useful for customer sites that want to upgrade many similar servers. See “Using sqlupgraderes” on page 77.

Using *sqlupgrade*

sqlupgrade verifies that the server is eligible for the upgrade. Perform all pre-upgrade tasks before running sqlupgrade.

To upgrade using sqlupgrade:

1 Make sure your old server is running.

2 Verify that you have performed the tasks mentioned on the window, before beginning the upgrade.

3 Source *SYBASE.csh* before running sqlupgrade if you have not already done that.

4 Execute sqlupgrade, by entering at the UNIX prompt:

```
$SYBASE/$SYBASE_ASE/bin/sqlupgrade
```

A sqlupgrade window now displays.

5 The first screen warns you to back up the databases, devices, and so on. Click Next to proceed to the next screen.

6 Click OK.

7 The Next screen prompts you to enter the old Sybase directory, and the old Adaptive Server directory.

8 Click OK. The Adaptive Server Selection window displays.

9 From the list of server names provided, select the server you want to upgrade.

If the server you are upgrading is not running, sqlupgrade prompts you to start the server. The server you are upgrading **must** be running.

10 Click OK. The SA Password window is displayed.

11 Enter the password for the System Administrator (sa) login.

12 Click OK. The Specifying Upgrade Options window is displayed.

13 Specify an upgrade option.

The upgrade eligibility tests verify that your current server meets the requirements for upgrading to the new version. (The online help provides a partial list of what the upgrade eligibility tests check.) If your current server fails the upgrade eligibility test, you must fix the problem.

14 Click OK to upgrade your server.

sqlupgrade displays the Status Output window.View the Status Output window for the completion status and informational messages about the upgrade process.

Warning! Do not interrupt the upgrade, and do not try to connect to Adaptive Server or run any stored procedures while the upgrade is in progress.

You can also check the progress of the upgrade by viewing the sqlupgrade log in *$SYBASE/$SYBASE_ASE/init/logs/sqlupgradeMMDD.NNN MM* is the month, *DD* is the date, and *NNN* is a three-digit number identifying the srvbuild session.

After all pre-upgrade checks are successful, the old server is shut down and the new Adaptive Server dataserver binary is started on the old master device. sqlupgrade internally runs the upgrade binary to perform the upgrade.

If the upgrade is successful, a "Done" message is displayed in the Status Output window.

15 The upgrade process:

- Creates the *RUN_servername* file
- Runs the *installmaster* script

16 Check that the upgrade has been successful by logging in to the server and checking `select @@version` to confirm that it is at 15.0.3. Also, sp_configure "upgrade version" should return 15000.

17 For information about compiled objects, see Chapter 8, "Troubleshooting."

When the upgrade completes successfully, you can:

- Click OK to specify another server to upgrade, or
- Exit sqlupgrade, and go to "Post-upgrade tasks" on page 79.

Using *sqlupgraderes*

You can upgrade Adaptive Server in noninteractive mode by using values from a resource file that defines the attributes for the server to be upgraded.

To upgrade an Adaptive Server using a resource file, either:

1 Edit the sample resource file included in your Adaptive Server distribution in *$SYBASE/$SYBASE_ASE/init/sample_resource_files directory*. Use an ASCII text editor to edit the resource file as described in Appendix A, "Alternative Installation Methods."

2 Run the sqlupgraderes utility. This utility creates a new file containing the values you specified for the upgrade session, and writes it to the sqlupgradeMMDD.NNN-server_name.rs file in *$SYBASE/$SYBASE_ASE/init/logs/*.

   Where *server_name* is the name of the upgraded server, *MM* is the month, *DD* is the date, and *NNN* is a three-digit number identifying the srvbuild session.

   For details on the attributes used in a resource file, see "Resource file attributes for upgrading Adaptive Server," below.

Resource file attributes for upgrading Adaptive Server

Table 5-1 shows the resource file attribute names, their default values, and other options, which you use in the resource file for upgrading Adaptive Server. The sample resource file in the *$SYBASE/$SYBASE_ASE/init/sample_resource_files* file included in your Adaptive Server distribution shows examples of these attributes.

All attributes are required, and all values are case sensitive.

If the resource file you are modifying was created by sqlupgrade, the prefix of the attribute name may vary. sqlupgraderes ignores this prefix when processing the resource file.

Table 5-1: Resource file attributes for upgrading Adaptive Server

Attribute	Default value [other options]
sybinit.release_directory	$SYBASE [*path = _name_of_old_release*]
sybinit.product	sqlsrv
sqlsrv.server_name	*server_name*
sqlsrv.new_config	No
sqlsrv.sa_login	*current_login*
sqlsrv.sa_password	*current_password*
sqlsrv.do_upgrade	Yes
sqlsrv.do_reserved_word_check	Yes

Upgrading using *sqlupgraderes*

When you have finished editing your resource file, you can run the file using sqlupgraderes.

Note sqlupgraderes is a command line tool; therefore, unlike sqlupgrade, it does not require any X libraries.

Source the version 15.0.3 *SYBASE.csh* file before running sqlupgraderes and set OLDSYBASE and OLDSYBASE_ASE.

To execute sqlupgraderes, at the UNIX prompt, enter the following, where *resource_file* specifies the resource file containing the attributes that describe the server to upgrade:

```
$SYBASE/$SYBASE_ASE/bin/sqlupgraderes -r resource_file
```

Enabling PCI in Adaptive Server

To enable Java in database feature you must enable PCI and configure sybpcidb database. For sqlupgrade[res], the enable java setting in the old server is detected. If it is set at 1, then preupgrade asks you to create a sybpcidb device and database before you run upgrade.

Post-upgrade tasks

After you have upgraded to the new version of Adaptive Server, perform these tasks to make sure your new Adaptive Server is up and running.

Note After you have upgraded, you do not need to run update statistics on any tables. The upgrade process does not cause any changes in existing statistics.

- If you upgraded from Adaptive Server version 12.5.2 or lower, after the upgrade you must run dbcc checkcatalog with the fix option to ensure there are no issues with OAM pages.

  dbcc checkcatalog (*database_name*, fix)

Installing 15.0.3 stored procedures after upgrade

This section explains how to install new 15.0.3 system stored procedures in the upgraded server. The new system stored procedures must be installed before any application activity starts. The scripts can be installed using the following isql commands:

isql -Usa -P<*sa_password*> -S<*server_name*>
-i$SYBASE/$SYBASE_ASE/scripts/<*script_name*> -o<*output_file*>

The output of the script is saved in output_file.

If you have modified the system stored procedures without altering their original names, executing some of these scripts overwrites your modifications. You must reload the modified stored procedures after running these scripts:

- installmaster – contains system administrator procedures and must be installed.
- installcommit – If you use two-phase commit or distributed transactions, you must rerun the installcommit SQL script to restore the following stored procedures:
  - sp_start_xact
  - sp_abort_xact
  - sp_remove_xact
  - sp_stat_xact
  - sp_scan_xact

    - sp_probe_xac
- installsecurity – Run this script if the Adaptive Server Auditing functionality was enabled in your earlier installation.
- installhasvss – Run this script if the HA functionality is enabled and the HA feature is currently in use in the upgraded installation of Adaptive Server.
- installmsgsvss – Run this script if the RTDS ASE MESSAGING functionality is enabled and the RTDS ASE MESSAGING feature is being used in this installation.
- installpcidb – Run this script if Java in database feature was enabled in your earlier installation.
- installjsdb – Run this script if Job Scheduler functionality was enabled in your earlier installation.

Running the *instmsgs.ebf* script

Follow these instructions if you are upgrading from Adaptive Server version 15.0 to Adaptive Version 15.0.3.

Adaptive Server 15.0.3 now has a way to restore error messages back to the 15.0.x release from which you are upgrading. Before installing the new messages for 15.0.3 you must run uninstmsgs.ebf to safeguard the modified messages in your master device.

Note If you are upgrading from a pre 15.x release then ignore this step to produce the *restore_msgs.ebf* file and proceed to run the instmsgs.ebf file.

To run uninstmsgs.ebf use the following command:

```
isql -Usa -P<sa-password> -w1000 -iuninstmsgs.ebf -orestoremsgs.ebf
```

Run the instmsgs.ebf script after you have completed running the uninstmsgs.ebf script. Use the following syntax to run instmsgs.ebf:

```
isql -Usa -P<sa-password> -iinstmsgs.ebf
```

If you are a localized customer:

- First run the instmsgs.ebf command, and then install any localized language using langinstall, sqlloc, or syconfig.

- If you run instmsgs.ebf after installing the 15.0.3 localized message, this script may delete some new messages.

  If you need to undo the instmsgs.ebf changes, run the following script once you have downgraded to the version from which you upgraded.

  ```
  isql -S -Usa -P <restore_msgs.ebf>
  ```

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 upgrading, use sp_configure to set them back to their earlier values.

2 Use sp_dboption to reset any database options you disabled before upgrading.

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 15.0.3.

4 Verify procedure cache allocation after upgrading.

  This section is for information only. Adaptive Server ensures that procedure cache size after upgrade is the same as before upgrade, unless the original size was less than the default value.

  If you are upgrading from a version of Adaptive Server that is earlier than version 12.5.x, procedure cache percent has been changed to procedure cache size. Adaptive Server now allocates memory dynamically and determines the size of the procedure and data caches in terms of megabytes. During the upgrade process, Adaptive Server converts the procedure cache percent to an absolute value and sets procedure cache size based on this value.

For example, if procedure cache percent is configured as 20 percent of 200MB of memory, then the absolute value of procedure cache percent is 40MB. During the upgrade process, Adaptive Server converts procedure cache percent at 20 percent to procedure cache size at 40MB. If the value for procedure cache size is less than the default value, Adaptive Server sets procedure cache size to the default value. For example, if procedure cache percent is set to 10 percent in the example above, and the absolute value of 10 percent is less than the default value of procedure cache size, then procedure cache size is set to the default value.

With the introduction of dynamically reconfigured memory configuration parameters in Adaptive Server 12.5.x, an increase in Adaptive Server's memory use does not decrease the size of the procedure cache or the data cache. That is, if your default data cache is set to 40MB, and you increase your procedure cache, the default data cache is still 40MB.

For more information about sp_configure, see the *Reference Manual*.

5 Check the procedure cache requirements.

Stored procedures, triggers, and other compiled objects require much more memory to run Adaptive Server 15.0.x than older versions.

You may increase the procedure cache size during runtime, using sp_configure. You can use the verify option in sp_configure to verify any changes you make to the configuration file without having to restart Adaptive Server. The syntax is:

```
sp_configure "configuration file", 0, "verify", "full_path_to_file"
```

For example:

```
sp_configure "configuration file", 0, "verify",
   "/work2/Sybase/ASE125.cfg"
```

For more information about sp_configure and sp_sysmon, see the *Reference Manual* and the *Performance and Tuning Guide*. For more information about configuring memory, see the *System Administration Guide*.

6 Verify data cache allocation after upgrading. This section is for information only. Adaptive Server ensures that all the data cache sizes after upgrading are the same as before upgrade.

In pre-12.5 versions of Adaptive Server, the default data cache available depended on the amount of memory available to Adaptive Server. If the default data cache was set to 2MB, Adaptive Server allocated 2MB to the default data cache. If, after memory was allocated to all user-defined data caches and to the procedure cache, there was more memory available, that memory was allocated to the default data cache. However, if there was not enough memory available for Adaptive Server to set up the user-defined caches and the procedure cache, then memory was taken from the default data cache regardless of the designated configuration parameter. Therefore, it was possible to set default data cache to the default value and have all remaining available memory allocated to the default data cache.

Adaptive Server 12.5.x and later treats the default data cache size as an absolute value and sets it in the *config* file. The string DEFAULT in the *config* file has a different meaning for default data cache size in Adaptive Server 12.5.x and later.

In pre-12.5 Adaptive Server, it meant all the memory left after allocating memory for other configurations, procedures, and user-defined named caches. In Adaptive Server 12.5.x and later, it means a default value of 8MB.

During the upgrade process, Adaptive Server ensures that the default data cache size remains the same. Therefore, during the pre-upgrade process, the size of the default data cache is obtained and written to the configuration file as an absolute value, not as "DEFAULT". This enables Adaptive Server to have the same default data cache size as before the upgrade. If this size is less than the default size of default data cache of 8MB, then Adaptive Server allocates a default data cache of size 8MB.

7 If you unmirrored devices, remirror them, using the disk remirror command.

8 For information about upgrading compiled objects, see "Upgrading compiled objects with dbcc upgrade_object" on page 131.

9 If you used two-phase commit in 11.9.x, run the script to install the two-phase commit tables:

```
isql -Usa -Psa_password -Sserver_name
-i$SYBASE/$SYBASE_ASE/scripts/installcommit
```

You do not need to run this script if you do not use two-phase commit.

Reenabling Replication Server after the dataserver upgrade

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 tran command to dump the database and transaction logs to remove the older format log records from your database. This prevents Replication Agent™ and other log readers 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 dumpdev
2> go
1> dump transaction sales with truncate_only
2> go
```

Restoring Replication on destination databases

Follow the steps in this section if you have upgraded a dataserver which is destination only in a replication system. If the target database is also a source for replication, follow the steps in the next section.

For each primary database and RSSD:

1 Start Adaptive Server if it is not already running.

2 Log in to the server.

3 If you zeroed out the locator point before the upgrade you don't need to execute this step.

Otherwise, clear the locator for the database by executing the following command in the RSSD for this database:

```
1> use RSSD
2> go
1> rs_zeroltm dataserver, database
```

```
2> go
```

Warning! You must stop Replication Server before executing rs_zeroltm

4 Restart the Replication Servers.

5 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 15.0.x, 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.

For more information about establishing client/server connections, see the *Open Client Configuration Guide* or Chapter 4, "Installing Sybase PC-Client Products."

Restoring replication on primary databases

Follow the steps in this section if you have upgraded a source database, or primary database, in a Replication Server system, or the destination database is also a source for other Replication Servers.

1 If you zeroed out the locator point before the upgrade or you have already resumed replication on the earlier section, you don't need to execute this step.

Otherwise, clear the replication locator by executing the following command in the RSSD database:Log in to the RSSD for each replicated primary, and for each replicated RSSD, and issue:

```
1> use RSSD_name
2> go
```

```
1> rs_zeroltm dataserver, database
2> go
```

Warning! You must stop Replication Server before executing rs_zeroltm

2 Log in to each replicated primary, and replicated RSSD and issue:

```
1> use database
2> go
```

```
1> dbcc settrunc ('ltm', 'valid')
2> go
```

3 Restart the Replication Server.

4 If the database is also used as a RSSD, resume the Replication Server connection to the RSSD by issuing the following command to the Replication Server:

```
1> sysadmin hibernate_off, 'Replication Server'
2> go
```

Make sure to specify the same string that was specified during the 'hibernate_on' command.

5 Log in to the Replication Server, and resume the Log Transfer connection for each replicated primary and each replicated RSSD:

```
1> resume log transfer from server.database
2> go
```

If this is a replicated RSSD, you must log in to the replicate Replication Server.

6 If you are using Rep Agent, log in to the Adaptive Server and restart the Rep Agent:

```
1> use database
2> go
1> sp_start_rep_agent database
2> go
```

7 If you are using LTM, restart the LTM.

Reenabling auditing

If the server you are upgrading from was configured for auditing, reenable auditing in the upgraded server using the following command:

```
sp_configure 'auditing', 1
```

Installing system stored procedures drops audit information about the system stored procedures. You should reenable auditing for all system stored procedures for which auditing was enabled before upgrade. Use the output of sp_displayaudit recorded during pre-upgrade to help determine the system stored procedures for which auditing was enabled. Reenter the audit options using sp_audit.

For example, if you had enabled stored procedure auditing for sp_addlogin stored procedure in your server before upgrade, run the following sp_audit command to reenable auditing on sp_addlogin:

```
sp_audit "exec_procedure", "all", "sp_addlogin", "on"
```

Special considerations for threshold procedures for audit segments

If your installation used a threshold procedure to archive the sysaudits table using T-SQL similar to the following example:

```
INSERT MyPre15SysAuditHistoryTable SELECT * FROM
sysaudits_0n
```

Where *n* corresponds to the sysaudits table number 1 – 8 and *MyPre15SysAuditHistoryTable* is a table defined prior to Adaptive Server version 15.0.3, then you must alter *MyPre15SysAuditHistoryTable* to add a nodeid column using the following command:

```
alter table MyPre15SysAuditHistoryTable
    add nodeid tinyint NULL
```

See the *Reference Manual* for system tables sysaudits01 through sysaudits08 for further details about the sysaudits tables.

Shutting down SySAM servers

Shut down the old SySAM servers if they are no longer used by earlier versions of Adaptive Servers.

Upgrading Backup Server, Monitor Server, and XP Server

Before you can upgrade Backup or Monitor Server, you must upgrade Adaptive Server.

XP Server does not have a formal upgrade process.

Note Back up all databases, including master, after successfully upgrading Adaptive Server and Backup Server.

❖ **Upgrading Backup and Monitor Servers**

The procedures for upgrading Backup Server and Monitor Server are similar.

- If you are upgrading during the initial installation of Adaptive Server 15.0.3, select Upgrade Existing Servers from the drop-down menu when the installer prompts Build or Upgrade Adaptive Server, Backup, and Monitor Servers.

  This launches the sqlupgrade utility. Click OK.

- If you are upgrading after the initial installation, start the sqlupgrade utility from the command line. Enter:

  ```
  $SYBASE/$SYBASE_ASE/bin/sqlupgrade
  ```

1 A warning message appears. Click OK to continue.

2 The next screen prompts you to enter the old Sybase directory and the old Adaptive Server directory.

3 From the Server selection window, select the server to upgrade. Click OK.

4 When you are prompted for the password, enter the password for the System Administration, and click OK.

5 The Status output window display the upgrade progress. When the upgrade is complete it displays, “Done.” Click OK.

6 You return to the sqlupgrade window. You can either upgrade another server, or click Exit to leave the utility.

Repeat this procedure to upgrade Monitor Server.

Upgrading Java in database

You must run installpcidb script if the Java in database functionality is currently enabled. This script creates tables and stored procedures in the sybpcidb database. Using isql, run the installpcidb script that is included with the release. Save the output of this step to an operating system file.

```
isql -Usa -P<sa_password> -S<server_name>
  -i$SYBASE/$SYBASE_ASE/scripts/installpcidb -o<output_file>
```

You have to enable the following two configuration parameters in order to enable the Java in database functionality.

```
1> sp_configure 'enable pci', 1
2> go
1> sp_configure 'enable java', 1
2> go
```

You may need to increase the 'max memory' in order to enable these parameters. After they are enabled it is necessary to restart the server for changes to take affect. You can configure the maximum size of the PCI Bridge memory pool through the 'pci memory size' configuration parameter. For more information see *Java in Adaptive Server Enterprise for 15.0.3*.

Enabling Java in database feature in a high availability system

Java in database may be used on a high availability system. High availability companionship must be dropped prior to installation of the sybpcidb and re-established afterwards.

Java in database feature must be enabled or disabled on both nodes of the HA system. Enabling Java in database feature on only one node is not supported.

Upgrading Job Scheduler

After upgrading to the new Adaptive Server, perform the following steps to upgrade Job Scheduler.

Note You must have *$SYBASE/$SYBASE_OCS/bin* directory in *$PATH* so the isql executable is accessible.

❖ **Upgrading Job Scheduler**

1 Copy the directory services entry for JSAGENT (or jsagent) from the old server to the new 15.0.3 server.

2 Make sure the new15.0.3 server is running.

3 Stop the Job Scheduler. From isql, issue:

```
1> sybmgmtdb..sp_js_wakeup "stop_js", 1
2> go
```

4 Ensure that at least 9000 locks are configured. If the number of locks on the server is less than 9000, use sp_configure to increase the number of locks:

```
1> sp_configure "number of locks", 9000
2> go
```

5 Upgrade the internal Job Scheduler SQL using isql:

```
1> use sybmgmtdb
2> go
1> dbcc upgrade_object
2> go
```

There is no need to specify any parameters.

6 Restart Adaptive Server.

7 If the sybmgmtdev device is less than 100MB, change the device to be a minimum of 100MB. From isql enter the following, where *nn.nM* is the number of megabytes needed to get to 100 MB:

```
1> use master
2> go
1> disk resize name = 'sybmgmtdev' , size = 'nn.nM'
2> go
```

8 Optionally, add more log space. On some 64-bit platforms more space is need for the sybmgmtdb log. From isql enter:

```
1> use master
2> go
1> alter database sybmgmtdb LOG on sybmgmtdev=20
2> go
```

9 Upgrade the sybmgmtdb. Using isql, run the *installjsdb* script that is included with this release and save the output to a file:

```
isql -Usa -Psa_password -Sservername -n -
i$SYBASE/$SYBASE_ASE/scripts/installjsdb
```

-ooutput_file

10 Enable Job Scheduler to start when Adaptive Server starts. From isql enter the command:

```
sp_configure "enable job scheduler", 1
```

11 Start Job Scheduler. From isql enter the command:

```
sybmgmtdb..sp_js_wakeup "start_js", 1
go
```

Upgrading Job Scheduler templates

After upgrading to the new Adaptive Server, perform the following steps to upgrade templates and jobs created from Job Scheduler templates.

Note For the Adaptive Server version 15.0.3 release, there are several changes that impact Job Scheduler templates. These changes make some templates incompatible with earlier versions of Adaptive Server. These templates are version 3.0 in the XML files.

❖ **Upgrading Job Scheduler templates**

1 Disable Job Scheduler before ugrading Job Scheduler templates.

2 Update any environment variables, scripts, or applications that refer to the Job Scheduler directory path. The Job Scheduler directory has been renamed and moved beneath the *ASE-15_0* directory. New location is *$SYBASE%\$SYBASE_ASE/jobscheduler* .

Directories below *jobscheduler* remain the same.

3 If you have any of your own files in the old Job Scheduler directory, copy them to the new 15.0.3 directory. If you are installing Adaptive Server over the old server directories, the installer moves your files to the new *jobscheduler* directory already.

4 If you have modified any of the Sybase-supplied templates stored procedures or XML documents, do not overlay the new templates with your versions. If you do, you lose the enhancements provided by the revised templates. Carefully merge your template changes into the Sybase template files, or better yet, rename your modified templates.

Note Sybase recommends that if you modify Sybase-supplied templates that you save the changes under new names and in new files.

5 You may need to make minor modifications to jobs you created from 2.0 or earlier templates. In some templates, parameters changed from varchar(5) to int. The following table lists the templates that changed in version 2.1 and the changes you must make to jobs created from them.

Table 5-2: Changed Job Scheduler templates

Template	Modified files	Change description	Modify jobs created from this template
dump database	*SybBackupDbToDiskTemplate.xml* *jst_dump_databases*	Changed the datatype for the @use_srvr_name parameter from varchar(5) to int	Required, modify job SQL to change @use_srvr_name to int datatype.
dump database log	*SybBackupLogToDiskTemplate.xml* *jst_dump_log*	Changed the datatype for the @truncate_flag and @use_srvr_name parameters from varchar(5) to int	Required, modify job SQL to change @truncate_flag and @use_srvr_name to int datatype.
update statistics	*SybUpdateStatsTemplate.xml* *jst_update_statistics*	Changed the datatype for the @index_flag parameter from varchar(5) to int	Required, modify job SQL to change @index_flag to int datatype.
rebuild indexes	*SybRebuildIndexTemplate.xml* *jst_reorg_rebuild_indexes*	Changed the datatype for the @dump_flag parameter from varchar(5) to int	Required, modify job SQL to change @dump_flag to int datatype.
rebuild table	*SybRebuildTableTemplate.xml* *jst_reorg_rebuild_tables*	Changed the datatype for the @dump_flag parameter from varchar(5) to int	Required, modify job SQL to change @dump_flag to int datatype.
reclaim indexes	*SybReclaimIndexTemplate.xml* *jst_reclaim_index_spac*	Required, modify job SQL to change @dump_flag to int datatype.	Required, modify job SQL to change @resume_flag to int datatype.
reclaim tables	*SybReclaimTableTemplate.xml* *jst_reclaim_table_space*	Changed the datatype for the @resume_flag parameter from varchar(5) to int	Required, modify job SQL to change @resume_flag to int datatype.

6 Some Job Scheduler templates were modified to support new 15.0.3 Adaptive Server functionality. The changes are related to new parameters for specifying a partition name or a datachange value for the Adaptive Server command that have added these options. If you have jobs created from any of the enhanced templates, modify the SQL of the jobs for 15.0.3 servers.

Note If you have a job scheduled to run on a pre-15.0.3 server and you need it to run on 15.0.3 servers too, leave the existing job alone and create a new job for 15.0.3 servers as the job commands are different.

Jobs intended to run on pre-15.0.3 servers do not need to be modified. The following table lists the templates that changed in version 3.0 and the changes you must make to jobs created from them.

Note All templates listed below, except Delete Statistics, are incompatible with pre-15.0.1 servers. Do not use them to create jobs that are scheduled on pre-15.0.1 servers; you must use the 2.1 or 2.2 versions for pre-15.0.1 servers.

Table 5-3: Modified Job Scheduler templates

Template	Modified file	Change description	Modify jobs created from this template
delete statistics	*SybDeleteStatsTemplate.xml* *jst_delete_statistics*	Added @ptn_name as third parameter.	Optional.
update statistics	*SybUpdateStatsTemplate.xml* *jst_update_statistics*	Added @ptn_name as fifth parameter and @datachg_threshold as the 10th parameter and added reference	Required, modify job SQL to include values (or NULL) for new parameters.
rebuild indexes	*SybRebuildIndexTemplate.xml* *jst_reorg_rebuild_indexes*	Added @ndx_ptn_name as third parameter.	Required, modify job SQL to include value (or NULL) for new parameter.
reclaim indexes	*SybReclaimIndexTemplate.xml* *jst_reclaim_index_space*	Added @ptn_name as third parameter	Required, modify job SQL to include value (or NULL) for new parameter.
reclaim tables	*SybReclaimTableTemplate.xml* *jst_reclaim_table_space*	Added @ptn_name as second parameter	Required, modify job SQL to include value (or NULL) for new parameter.

Template	Modified file	Change description	Modify jobs created from this template
multiple	*jst_get_freespace,jst_get_usedspace*	Replace reserved_pgs and data_pgs with reserved_pages and data_pages	No impact on job SQL.

7 Install the Template stored procedures.

- Move to the JS template stored procedure directory. For example:

```
cd $SYBASE/$SYBASE_ASE/jobscheduler/Templates/sprocs
```

- Run the stored procedure install script for each server being upgraded:

```
installTemplateProcs <servername> <username> <password>
```

Note Template stored procedures should be upgraded on all Job Scheduler servers and target servers upgraded to Adaptive Server version 15.0.3. Do not install them on pre-15.0.3 servers.

8 Install the template XML documents.

1 Move to the JS template XML directory. For example:

```
cd $SYBASE/$SYBASE_ASE/jobscheduler/Templates/xml
```

2 Run the XML install script on 15.0.1 servers with Job Scheduler installed:

```
installTemplateXml <servername> <machinename> <serverport>
    <username> <password> [<language_code>]
```

Use “en” for the *language_code* or you may omit the parameter completely as “en” is the default.

Note Template XML should be upgraded on all Job Scheduler servers upgraded to Adaptive Server version 15.0.1. Do not install them on pre-15.0.1 servers or servers where Job Scheduler is not installed.

Upgrading high availability

Adaptive Server version 15.0.3 supports the following cluster platforms for High Availability:

- HP-UX – MCSG 11.17
- HPIA – MCSG 11.18
- IBM AIX – HACMP 5.4
- Sun Solaris – VCS4.0, SunCluster 3.2
- Linux-AMD – VCS4.1
- Win2003 – Cluster Manager 5.2

Upgrading High Availability and cluster support

Upgrading the cluster subsystem

You can upgrade the cluster subsystem in two ways:

- Perform a major upgrade, which involves cluster down time, then shutting down and restarting all servers. In this case, you must:

  a Run sp_companion suspend, as described in *Using Sybase Failover in a High Availability System*.

  b Take the resource groups of primary and secondary companions on both nodes offline. Make sure this shuts down both the companion server and corresponding resource groups, and that they are not automatically brought online until the cluster system upgrade is complete.

  c Upgrade the cluster subsystem following the instructions from the cluster system vendor.

  You may find options to migrate the current resource groups to the new cluster version. If such an option is not available (or if the resource groups get deleted or corrupted), re-create the resource groups and configure them appropriately after you have upgraded the cluster system.

  d Bring the resource groups online. This should bring primary and secondary companions online on their respective nodes.

e Run sp_companion resume as described in *Using Sybase Failover in a High Availability System*.

- Perform a minor upgrade, which does not involve a cluster downtime. In this case, each node is failed over to another node and upgraded one at a time. Assuming ASE1 is the primary companion on node N1, and ASE2 is secondary companion running on node N2:

  a Upgrade the primary companion:

    1 Fail over ASE1 from N1 to N2. You can achieve this by relocating the primary resource group to N2 or by shutting down ASE1.

    2 Upgrade the cluster subsystem on N1 following the upgrade instructions provided by the vendor.

    3 Fail back ASE1 from N2 to N1. See the appropriate cluster chapter in *Using Sybase Failover in a High Availability System* for more details on Adaptive Server failback.

  b Upgrade the secondary companion.

    - If you are using an asymmetric configuration:

      1 Take the secondary resource group offline and verify ASE2 is shut down. ASE2 is not available during this upgrade.

      2 Upgrade the cluster subsystem on N2 following the upgrade instructions from the vendor.

      3 Start ASE2 by bringing the secondary resource group online to N2.

    - If you are using a symmetric configuration, follow the steps in "upgrade the primary companion," above, for ASE2.

Upgrading compiled objects

Sybase recommends that you read "Upgrading compiled objects with dbcc upgrade_object" on page 131.

Migrating from 32-bit to 64-bit versions on different computers

sqlupgrade upgrades Adaptive Server only from one version to another. This section describes how to migrate a 32-bit version of Adaptive Server to a 64-bit version of Adaptive Server.

Following an upgrade and migration to other platforms, Adaptive Server internally rebuilds procedures from the text in *syscomments* the first time it is executed. The procedure may not execute properly if it has code that drops the object if it exists and recreates the object. This is a problem when the object already exists at the time the procedure is first executed. To avoid problems manually drop the object prior to executing the procedure for the first time.

To migrate Adaptive Server from the 32-bit to the 64-bit version, you must first install and configure the 64-bit operating system.

Method #1: Dump and load

1 Run dbcc checks on all databases in the 32-bit Adaptive Server and make sure they run cleanly.

2 Create a 64-bit Adaptive Server in a new directory.

3 Create devices and databases to match those in the 32-bit server. Make sure that the sysusages mapping is correct. See document ID #1324 at http://my.sybase.com/detail?id=1324.

Note Allow 10 percent additional space for the sybsystemprocs database.

4 Dump the databases on the 32-bit server.

5 Load the databases to the 64-bit server.

6 If you have partitioned tables, update partition statistics.

7 Run dbcc checks on the 64-bit server and make sure they run cleanly.

8 For information on upgrading compiled objects, see “Upgrading compiled objects with dbcc upgrade_object” on page 131.

Method #2: BCP data out and in

If you have DDL scripts to create devices, databases, tables, rules, stored procedures, triggers, and views, you can use bcp to move data out of the old database and into the new.

If you do not have DDL scripts, use the ddlgen utility to re-create the schema for the Adaptive Server you are about to upgrade. See the *Utility Guide*.

1 Run dbcc checks on databases to verify data integrity.

2 Use bcp to extract all the data from all the tables in the databases.

3 Create a new 64-bit Adaptive Server in a new directory.

4 Create devices, databases, and tables.

5 Use bcp to bulk copy data into tables.

6 Re-create all views, triggers, stored procedures.

7 Run dbcc checks on the 64-bit server and make sure they run cleanly.

Method #3: Replacing the binary

The third method requires you to modify some key files, re-create stored procedures, then replace the binary.

1 Run dbcc checks (checkdb, checkalloc, checkcatalog and checkstorage) on all databases in the 32-bit Adaptive Server and make sure they run cleanly.

2 In a new directory, copy the files for the 64-bit Adaptive Server.

3 Shut down the 32-bit server.

4 Copy the *interfaces* file and the configuration file from the 32-bit *$SYBASE* directory to the 64-bit *$SYBASE* directory.

5 Copy the 32-bit *$SYBASE/$SYBASE_ASE/install/RUN_<server>* file to the equivalent 64-bit *$SYBASE/$SYBASE_ASE/install* directory.

6 Edit the *RUN_server* file to reflect the new location of the *interfaces*, configuration, and log files

7 Remove all references to the 32-bit *$SYBASE* directories from your *$PATH* definition.

8 Change to the 64-bit *$SYBASE* directory and source the *SYBASE.csh* script (C shell).

9 Change to the 64-bit *$SYBASE/$SYBASE_ASE/install* directory and execute:

```
startserver -f RUN_server
```

10 After the 64-bit server starts, run installmaster, installmodel, and instmsgs.ebf.

11 If you used dbccdb for dbcc checkstorage, run *installdbccdb*. This re-creates some tables in the dbccdb, and you may lose history data.

12 Drop and re-create all your compiled objects, such as stored procedures, triggers, views, and defaults.

13 If you have partitioned tables, update partition statistics.

14 Run dbcc again on all databases to verify that they run cleanly.

Upgrading using *allrows_dss* in parallel

If you are using the configuration option allrows_dss when upgrading from a 15.0.x version to 15.0.2 in parallel mode, the server may stack trace when the optimizer selects a plan that requires tempdb, which has not yet been onlined.

Workaround: Change configuration from allrows_dss when rebooting with the new binary. After minor upgrade is complete the server can be returned to its earlier configuration.

Upgrading compiled objects

Sybase recommends that you read "Upgrading compiled objects with dbcc upgrade_object" in Troubleshooting in the *Adaptive Server Installation Guide for Linux*.

Recovering from a failed upgrade

The procedure for recovering from a failed upgrade is:

1 Fix the underlying problem

2 Rerun the upgrade utility, *$SYBASE/$SYBASE_ASE/upgrade/upgrade*

3 Reinstall system stored procedures using the scripts from the new version
```
isql -Usa -P<password> -i
```

```
$SYBASE/$SYBASE_ASE/scripts/installmaster
```

Note If Adaptive Server crashes (if there's a power failure) while upgrade is in progress, when it is restarted it attempts to upgrade databases while it is booting. Messages for this upgrade go to Adaptive Server's console (the terminal or window where it was started). After this finishes, and the installation is fully recovered, re-run the upgrade utility. This assures that all post-upgrade configuration work is done. Then reinstall system stored procedures as previously described.

- During the upgrade process, the log may get full due to the catalog changes that are made. If so, log in to the 15.0.3 server using isql, and issue:

  ```
  isql> dump tran dbname with truncate_only
  ```

  If "truncate_only" indicates that it could not truncate the log, try again using option "no_log" instead. If this too does not truncate the log successfully, then use the "alter database" command to extend the database as explained below.

  This frees the log space, and allows the upgrade process to continue.

- In some cases, the pre-upgrade space estimations are insufficient for the data copy phase of upgrade. In this case, you receive an error that there is insufficient space in the system segment for the upgrade. The upgrade process hangs, waiting for space to be provided. You can log in to the new server using isql, and use alter database to increase the size of the database.

  ```
  isql> alter database dbname on device_name = "2m"
  ```

  Note In 15.0.3 Adaptive Server, alter database allows you to specify the size to alter the database with the unit-specifier 'm', or 'M'.

If you downgraded back to original installation after upgrading to 15.0.3

You must restore the original messages by running the following script after downgrading the server.

```
isql -Usa -P<sa-password> -irestoremsgs.ebf
```

CHAPTER 6

Downgrading from Adaptive Server 15.0.3

This chapter provides instructions for downgrading from Adaptive Server 15.0.3.

Downgrading from 15.0.3 release

Note Downgrade is not supported on the Linux Itanium platform.

This section describes how to downgrade from Adaptive Server 15.0.3 to an earlier Adaptive Server 15.0, 15.0.1 or 15.0.2 release. Downgrading to a 12.5.x or earlier release is not supported. Instructions to downgrade to a 15.0, 15.0.1 and 15.0.2 version include:

- Basic downgrade steps using new system procedure sp_downgrade.
- Post-downgrade tasks.
- Information regarding downgrading if you used 15.0.3 features.
- Returning to Adaptive Server version 15.0.2.

Note Sybase recommends that you do not use the new features offered in Adaptive Server version 15.0.3 until you are committed to staying with 15.0.3.

Basic downgrade steps

This section describes the basic steps for downgrading from Adaptive Server 15.0.3 to a 15.0, 15.0.1 or 15.0.2 version. Additional actions are required if you used 15.0.3 features, or if you used 15.0.2 features and are downgrading to a 15.0 or 15.0.1 version of Adaptive Server. If that is the case, follow the steps in the "Additional steps required if you used new features," section of this chapter.

If you used replicated databases with your server you must complete additional steps in order to downgrade your server. See "Downgrading Adaptive Server with replicated databases" on page 108.

Adaptive Server 15.0.3 provides a procedure called sp_downgrade that is used to help with the downgrade process. This procedure requires 'sybase_ts_ role' to be on. The 'sa_role' or 'sso_role' permissions are expected when running this procedure. For more detailed information on this system procedure and its syntax see 'The New System Procedures' section in the 'System Changes' chapter of the *Adaptive Server New Feature Guide for 15.0.3*.

Note In case you have used new features of 15.0.3, returning to 15.0.2 ESD#3 is preferable, because this version can handle a number of error conditions that may arise as a result of downgrading for several reported errors.

If you return to a pre-15.0.2 ESD3 version of Adaptive Server, no error handling is provided. Using the new features can result in inexplicable behavior, misleading error messages and stack traces.

---

1 Save the current audit settings for the 15.0.3 Adaptive Server by saving the output of the following command in all system and user databases where any audit options have been turned on:

```
1> sp_displayaudit
2> go
```

2 Back up all of your databases and the *$SYBASE* release area prior to the 15.0.3 downgrade.

3 Start the 15.0.3 server in single user mode using dataserver -m option to guarantee that no other user can access Adaptive Server while you are going through the downgrade steps. See *Utility Guide* for more details on starting the server in single user mode.

4 Make sure Adaptive Server 15.0.3 is prepared for downgrade by executing.

```
sp_downgrade 'prepare', <'version'>
```

The value of “version” may be written as “15.0”, “150”, “15.0.1”, “1501”, “15.0.2” or “1502.” However, the version entered should be the Adaptive Server version to which you want to downgrade.

Note If you have used the 15.0.2 features for encrypted columns and

- You are reverting back to Adaptive Server 15.0 GA or Adaptive Server 15.0 ESD #1 you must specify the version as '15.0.'
- You are reverting back to Adaptive Server 15.0 EC, 15.0 ESD #2, 15.0.1 or 15.0.1 ESD you must specify the version parameter as '15.0.1.'
- You are reverting back to Adaptive Server 15.0.2 or a 15.0.2 ESD, you must specify the version parameter as '15.0.2.'

sp_downgrade 'prepare' validates the readiness of Adaptive Server 15.0.3 for downgrade. This means that sp_downgrade 'prepare' may print messages regarding manual changes required before the downgrade can be completed. Errors reported must be corrected and implications of warnings reported must be understood before you can proceed with further downgrade steps.

5 Repeat step 3 until sp_downgrade 'prepare' reports no errors. Your system is now ready to downgrade.

6 Begin the downgrade process by executing:

```
sp_downgrade 'downgrade', <'version'>
```

The version number should be the same as the version you entered in step 3. Once the above command completes successfully there can be no more activity on the 15.0.3 server. You must immediately shutdown the 15.0.3 server.

7 Copy the *RUN_SERVER* file to the 15.0, 15.0.1 or 15.0.2 release area you are downgrading to. Modify the *RUN_SERVER* file to use the dataserver binary from the 15.0 to 15.0.1 release.

```
/pudong1/releasedirs/ase1502/ASE-
  15_0/bin/dataserver \
-spudong_weic \
-d/pudong1/releasedirs/ase1502/data/master1.dat \
-e/pudong1/releasedirs/ase1502/ASE
  -15_0/install/pudong_weic.log \
-c/pudong1/releasedirs/ase1502/ASE-
```

```
15_0/pudong_weic.cfg \
```

- Change the dataserver binary.
- You can use -e, -c, -M option point to the old server.

8 Restart the old server using the modified *RUN_SERVER* file. Ensure that the environment variable points to the old server release such as *$SYBASE, $SYBASE_ASE, or $SYBASE_OCS*

Note When downgrading to a 15.0 or a 15.0.1 server, user passwords may be reset depending on the value of sp_passwordpolicy 'allow password downgrade'. If 'allow password downgrade' is set to '0', user passwords are reset and printed on the console. Be sure to save the output of sp_downgrade 'downgrade', <*version*> into a file. So the passwords are not lost. The old password do not work.

9 Run any scripts that may be applicable to your site listed in the post-downgrade tasks.

These are the tasks needed for downgrade to Adaptive Server 15.0, 15.0.1 or 15.0.2 if you have not used any 15.0.3 functionality. If you have used 15.0.3 functionality then follow the additional steps described in the rest of the section.

Post-downgrade tasks

After you perform the basic downgrade steps, some changes from the 15.0.3 upgrade still persist.

Component Integration Services compatibility

Sybase certifies that each version of Adaptive Server can connect to earlier releases through Component Integration Services. Component Integration Services is tested and certified to connect to earlier versions of Adaptive Server.

Sybase does not certify that Component Integration Services running on earlier versions of Adaptive Server can connect to later versions. You may encounter errors if an earlier version of Adaptive Server maps a proxy table to a later version and the remote table uses functionality not available in the earlier release.

For example, if you have a local and a remote server, both running Adaptive Server version 15.0, be sure to upgrade the local server first, if you are performing an upgrade on each of them. If one is to be upgraded but not the other, the local server should be upgraded first.

System stored procedures

After you run *installmaster*, *installmodel*, *installcommit*, *installsecurity*, *installhasvss*, *installjsdb*, and *installmsgsvss* on your downgraded server, any changed system stored procedures are returned to their earlier form. Any new stored procedures introduced to Adaptive Server in releases subsequent to the downgraded server are not removed. Attempts to execute such stored procedures against an older binary have unpredictable results.

Installing system stored procedures drops audit information about the system stored procedures. You should reenable auditing for all system stored procedures for which auditing was enabled before downgrade. Use the output of sp_displayaudit recorded during pre-downgrade to help determine the system stored procedures for which auditing was enabled. Reenter the audit options using sp_audit. For example, if you had enabled stored procedure auditing for sp_addlogin stored procedure in your server before upgrade, run the following sp_audit command to reenable auditing on sp_addlogin:

```
sp_audit "exec_procedure", "all", "sp_addlogin", "on"
```

System messages

During upgrade to Adaptive Server 15.0.3 you should have created a *restore_msgs.ebf* file. Now you must run this script to restore your messages back to the version from which you upgraded.

```
isql   -Usa  -P <sa_password>  -S <server_name> -i <restore_msgs.ebf>
```

Note If you upgraded from a 15.0 or 15.0.1 release and are reverting back to the 15.0 or 15.0.1 release, then you must only run *instmsgs.ebf* file from the relevant release.

Unrecognized tokens or objects

The on-disk structures of stored procedures, triggers, and views may contain statement identity tokens, datatypes and object references that are not understood by the earlier Adaptive Server versions. You must drop all compiled objects that use features introduced into Adaptive Server subsequent to the release to which you are downgrading.

System tables

After returning to a pre-15.0.3 binary:

- If during the upgrade process you ran the 'update all statistics' on syslogins then you must delete statistics for syslogins and recreate them.
- spt_values is dropped and re-created when you run installmaster from the release area you downgraded to. Any new types are eliminated from this table.

Configuration parameters

New configuration parameters have been added in 15.0.3. If a downgraded server is booted using the 15.0.3 configuration file, the new options cause the message 'Unknown parameter' the unknown options are reported the first time the server is booted. These messages can be ignored because the configuration file is rewritten without the unknown options.

Running installmaster from the release area of the server to which you downgraded removes configuration parameters, that belong to 15.0.3, by deleting sysconfigures rows for configuration parameters that do not exist in syscurconfigs. After running installmaster the error messages no longer appear when you start the server.

Keywords

Keywords decrypt_default, xmltable, were added in Adaptive Server 15.0.2, making it impossible to create identifiers using these names. You must change applications if you used these names.

See "Additional steps required if you used new features" on page 107 for more information.

Reenabling Replication activities

If you disable replication before the downgrade process, you must enable it again. Consult "Reenabling Replication Server after the dataserver upgrade" on page 84 for more information.

Additional steps required if you used new features

If you have used Adaptive Server 15.0.3 features that are not available in the Adaptive Server version you are downgrading to, additional steps may be necessary before downgrading your server. In addition, some actions must be performed immediately after downgrading. Below is a list of 15.0.3 features that require manual downgrade procedures.

- Java in Adaptive Server – This is a new feature in Adaptive Server 15.0.3. If user classes compiled by a Java version above 1.2 are installed, these classes do not work in pre-15.0.3 Adaptive Server versions. Earlier versions of Adaptive Server ignore the enable pci parameter. You can remove it. sybpcidb is not used by pre-15.0.3 Adaptive Server versions. This can be dropped if desired.
- SQL Replication – See "Upgrading Servers with Replicated Databases,"
- sp_addserver with <filter> parameter – If you used sp_addserver to create server entries with the filter parameter specified, you may have entries in sysservers.srvnetname column which are longer than 32 bytes. You must delete these entries before downgrade and add them back after downgrade.

If you are returning to version 15.0 or 15.0.1, you may need to take the additional manual steps described in the Downgrade chapter of the Installation Guide for Adaptive Server 15.0.2.

In general, no additional steps are required when you are returning to an Adaptive Server version in which the feature was already available.

Downgrading Adaptive Server with replicated databases

When downgrading an Adaptive Server 15.0.3 that has replication enabled on databases, you must complete additional steps before starting the downgrade procedure.

If the server you are downgrading from has replicated databases and SQL replication has been enabled you must follow different procedures depending upon the version of Adaptive Server you are downgrading to.

If your replication system is using RepAgent and you are downgrading to a 15.0.2 ESD #3 or higher there are no additional steps required. Adaptive Server 15.0.2 ESD #3 can keep the data synchronized.

If you are not using RepAgent to replicate data, consult the specific documentation for the product.

If you downgrade to a version lower than 15.0.2 ESD #3, Sybase recommends that you use the standard documented procedure to downgrade an Adaptive Server with replicated databases.

The standard procedure to downgrade Adaptive Server with replicated databases consist of ensuring that all replicated data in the primary database transaction log has been successfully transferred to the standby or replicate database. Once RepAgent is started again after the downgrade process, you must ensure that it does not read logs written with version 15.0.3.

The steps to achieve this state are the same as the steps you execute before an upgrade:

1 Suspend transaction processing and replication activities

2 Draining the transaction logs for primary databases

3 Disabling the secondary truncation point.

See “Upgrading Servers with Replicated Databases,” for more detailed information.

Downgrading Job Scheduler

If you are downgrading to Adaptive Server versions 15.0 or 15.0.1, you must run installjsdb script from the lower version anytime you downgrade Job Scheduler.

❖ **Downgrading Job Scheduler**

1 Disable Job Scheduler before you downgrade Adaptive Server:

```
sp_configure "enable job scheduler", 0
```

2 Downgrade Adaptive Server. See the installation guide for details.

3 Run the *installjsdb* script from the version you are downgrading to:

```
isql –Usa –Psa_password –Sservername
–i$SYBASE_ASE/scripts/installjsdb
```

Note The directory with the location of the isql executable (*$SYBASE_OCS/bin*) must be in your path.

4 Enable Job Scheduler:

```
sp_configure "enable job scheduler", 1
```

5 To start Job Scheduler, either restart the server, or enter:

```
1> use sybmgmtdb
2> go
1> sp_js_wakeup "start_js",1
2> go
```

Returning to Adaptive Server version 15.0.3

If you return to Adaptive Server version 15.0.3, follow the instructions in Chapter 5, “Upgrading Adaptive Server.”

If you downgraded back to original installation after upgrading to 15.0.3

You must restore the original messages by running the following script after downgrading the server.

```
isql -Usa -P<sa-password> -irestoremsgs.ebf
```

CHAPTER 7

Troubleshooting SySAM Issues

Note If SySAM 2.0 related errors are not addressed in a timely fashion, Adaptive Server may cease to function.

For the most up to date information about troubleshooting SySAM, see the SySAM FAQ at http://www.sybase.com/sysam. For the most up-to-date troubleshooting information in this installation guide, go to Product Manuals at http://www.sybase.com/support/manuals/.

This section includes information about troubleshooting the most common SySAM 2.0-related errors.

Calling Sybase technical support for SySAM-related issues

If you call Sybase technical support for SySAM-related issues, be sure to have the following information available:

- The Adaptive Server error log located in the *install* directory.

  On UNIX:

  $SYBASE/ASE-15_0/install/<servername>.log

  On Windows:

  %SYBASE%\ASE-15_0\install\<servername>.log

- If Adaptive Server has started in grace mode – the output from the sp_lmconfig command.
- If Adaptive Server does not start – the server's properties file

  On UNIX:

  $SYBASE/ASE-15_0/sysam/<servername>.properties

  On Windows:

  %SYBASE%\ASE-15_0\sysam\<servername>.properties

  servername must correspond to the name of the Adaptive Server that does not start.
- The license files saved in the SYSAM-2_0 *licenses* directory on the machine running Adaptive Server.
- The value of SYBASE_LICENSE_FILE and LM_LICENSE_FILE environment variables, if they have been defined.
- Output from lmutil lmpath -status command. The *lmutil* binary is located in the *bin* directory under *SYSAM-2_0* folder.
- If you are using a served license model:
  - The licenses saved in the *$SYBASE/SYSAM-2_0/licenses* directory of the license server.
  - The license server log file in the *$SYBASE/SYSAM-2_0/log* directory.

Where to look for SySAM-related errors

All SySAM related errors are printed in the Adaptive Server error log. All SySAM-related messages are prefixed with `"kernel SySAM:"` in the Adaptive Server error log. For example:

```
<timestamp> kernel  SySAM: Failed to obtain 1 license(s)
for ASE_CORE feature from license file(s) or server(s).
```

If e-mail alerts are configured, recipients receive an e-mail whenever a SySAM event occurs.

You can always check the current state of SySAM licenses in Adaptive Server using the sp_lmconfig command. The output shows the current SySAM configuration and the status of each license.

If you are using a served license model, the license server's debug log located in the *log* directory provides information about any license check-out issues.

Troubleshooting SySAM

Table 7-1 lists methods for troubleshooting SySAM.

Table 7-1: Troubleshooting SySAM

Description	What to do
Cannot find license type during the Adaptive Server installation	The Adaptive Server installation program displays only the most commonly used license types. If you are using a legacy license or a new license type, your license may not be listed by the installation program. If you do not find the license type you must, select "Unknown" or "Other" from the drop-down list and complete the installation. After the installation is complete, use sp_lmconfig to change the license type. See the *Reference Manual:Procedures* for sp_lmconfig usage information. **Note** If you set the license type value to "Unknown" or "Other," Adaptive Server uses the first available license. If you have licenses for more than one type, Adaptive Server may pick the incorrect license. Set the correct license type when you have multiple license types on the license server.

Description	What to do
The installation program produces a warning about not finding a suitable license	If you select a served license model, the install program checks for a license with the selected edition and license type. A warning message is displayed if no suitable license is available. If you are performing a new Adaptive Server installation or upgrading an existing Adaptive Server version 12.5.x or earlier, proceed with the installation. Adaptive Server provides a 30 day grace period to resolve licensing issues. Once the installlion is complete, debug the license check-out failure. For more information, see "Adaptive Server cannot check out a license and starts with graced license instead" in this table. If you are upgrading an existing Adaptive Server version 15.0 or later, Adaptive Server may not start after the upgrade if you do not have a suitable license. Exit the installation program and see if the existing Adaptive Server can check-out licenses. If it is not, troubleshoot this issue and then proceed with the upgrade. If the existing Adaptive Server can check-out licenses, verify the license you are using authorizes use of the update you are applying. This can be determined using the date based version of your license file and the date this update was released. You must have a license with a date based version that is greater than or equal to the date the update was released. Adaptive Server provides a grace period for updating the licenses after support is renewed. The date based version of the license can be determined from the Version column of the output from sp_lmconfig, by looking at the license checkout message in the Adaptive Server error log, or by examining the license itself. For more information, see Appendix A, "Anatomy of a License," of the *Sybase Software Asset Management Users Guide*. The release date of the Adaptive Server can be determined by the date displayed in the version string, cover letter, or SPDC download link. This data is also shown in the error message posted. You can download an updated license from SPDC, if your support was paid for the date the update was released. If you support was not paid, you are not authorized to install an update. See Appendix B of *Sybase Software Asset Management Users Guide* for explanation of how SySAM uses date-based versioning. See "Updating your Sybase licenses" in Chapter 3, "Getting and Using your Licenses," in the *Sybase Software Asset Management Users Guide* for how to update your license.
The license server executables and scripts are not installed	The *sysam* wrapper script and the executables for the license server (lmgrd and *SYBASE*) are not installed or found in the SYSAM-2_0 *bin* directory. The license server component is not selected for installation by default. To install the license server, choose the Custom install option and select license server component. Alternatively, you can download a standalone SySAM license server install program from SPDC.

Description	What to do
The license server does not start	The most common cause for the license server failing to start is that there are no served licenses in the server. In order for license server to start, there needs to be at least one served license in the *licenses* directory. When you install a new license server, there are no served licenses in the licenses directory and the license server does not start until you activate a license from SPDC and copy it into the licenses directory. Other causes for license server not to start include: • The license activated from SPDC was an unserved license. Examine the license files. Served licenses always start with a `SERVER` header. If you do not see a line starting with `SERVER` at the top of the license, you are using an unserved license which does not work with the license server. • If you are using a specific port number for the license, that port number may already be in use. Use `"netstat -a"` to verify that the port number is free. If not, free the port or use a different port number for the license server. • The host name recorded in the `SERVER` header does not match the actual host name. The host name is recorded next to the `SERVER` keyword. If it does not match, correct the host name in the license file or set it to `"this_host"`, which is a keyword that works with any host name. • The licenses copied may be activated for a different machine. Examine the Host ID recorded in the line. It is recorded next to the host name in the `SERVER` header. It must match the Host ID for the machine where license server are running.
The license server does not recognize the license files	If the license server refuses to serve the licenses, this may be because: • The license was activated for a different machine or activated using incorrect host ID. Examine the host ID recorded in the license with the host ID for the machine. If they are mismatched, check-in and regenerate the license with the correct host ID. • The license has been altered. Nothing in the license except some designated information can be altered. The license is rejected if you change other information. If the license is being created by typing from a paper copy, verify if there are any errors entering the license. You can also download a new copy of the activated license from SPDC. If the Host ID for your platform is based on the Network adapter identification, verify that you have used an ID associated with a valid NIC. IDs associated with loopback adapters are not valid. If the ID associated with a removable network adapter was used, ensure that the adapter is attached to the computer.
Adaptive Server does not start, and generates a license check-out failure error	If Adaptive Server cannot check out the required license, it determines whether the license can be issued in grace mode. If a grace period cannot be given, the license is not granted. If the base license for Adaptive Server (ASE_CORE) was in grace and the issue is not fixed by the end of the grace period, Adaptive Server fails to start. For more information, see “Adaptive Server cannot check out a license and starts with graced license instead” in this table. The troubleshooting tips for resolving licenses issued under grace apply to solve this issue as well.

Description	What to do

Adaptive Server cannot check out a license and starts with graced license instead	Execute the sysam diag *feature_name* command from the SYSAM-2_0 *bin* directory, where *feature_name* is the SySAM feature name for Adaptive Server or the optional feature that is in grace mode. The feature name is printed in the Adaptive Server error log and in the optional e-mail notifications.
	If the diag command shows no licenses available for check-out, this may be due to one of the following reasons:
	• If you are using a **served** model:
	  • Verify that the license server is running and reachable from the machine you are using. Use `"sysam status"` to verify that you can access the license server. If you cannot access the license server, see if the license server is running.
	  • If the license server is running, use `"sysam status -f` ***`feature_name`***`"` to determine whether the license server is serving a license for the given feature. If not, obtain the correct licenses from SPDC.
	  • All licenses on the license server may be in use. If `"sysam status -f` ***`feature_name`***`"` indicates that no licenses are available, obtain additional licenses or shutdown existing instances of Adaptive Server.
	• If you are using an **unserved** model:
	  • The license for the given feature may not be copied in the local *licenses* directory. Obtain the correct licenses from SPDC and copy them to the local *licenses* directory.
	  • The license may have been activated for a different machine or activated with incorrect host ID. Check-in and reactivate the license with the correct host ID.
	• The available licenses are for a different operating system or architecture. Obtain license for the correct platform from SPDC.
	• If you are running in a terminal server environment, unserved licenses cannot be used. Set up served licenses for a terminal server environment.
	• The available license may not authorize use of this version of Adaptive Server. For information about date based versioning, see Appendix B, “Installing Product Updates, EBFs, and Support Renewal” in the *Sybase Software Asset Management Users Guide*. For information about how to update your license, see the “Updating your Sybase licenses” section in Chapter 3, “Getting and Using your License,” in the *Sybase Software Asset Management Users Guide*.

Description	What to do
Adaptive Server cannot checkout a license and starts with graced license instead (continued)	If the diag command shows the license for the given feature is available for check-out, the reason that Adaptive Server cannot check-out the license could be: • The product edition or license type does not match the requirement. If the edition and license type configuration parameters are set, Adaptive Server uses only the license that matches these settings. 1 Run sp_lmconfig to see the configured values. 2 Check the `VENDOR_STRING` attribute of the licenses to make sure a matching license exists. If a matching license does not exist, obtain a suitable license from SPDC or adjust the Adaptive Server configuration. If Adaptive Server cannot start because the grace period expired, examine the *servername.properties* file located in the *ASE-15_0/sysam* directory under your *SYBASE* directory for values. These values are stored in two lines that start with `PE=` and `LT=`. These lines are present only if the configuration is set. • Also see "Adaptive Server cannot find license for optional feature, even though the license exists" in this table for more information.
Adaptive Server shows graced licenses even after the issue has been fixed	Adaptive Server performs license checks periodically, and the license status is not immediately updated. It is updated only after the next heartbeat cycle is completed. This may take a few hours.
Adaptive Server cannot find license for an optional feature, even though the license exists	Execute "`sysam diag` *`feature_name`*" to ensure that license for the optional feature exists and can be checked out from the machine where Adaptive Server is running. If the feature exists, but cannot be checked out from Adaptive Server, this could be because: • The optional feature is for a different edition. • The Active or Standby flags do not match for base Adaptive Server and the optional feature. Execute sp_lmconfig to determine the edition and active and standby configuration value. The edition and active and standby values are displayed in the Property Name / Property Value table. The edition value is displayed in the PE row and active and standby value is displayed in the AS row. Compare the values of PE and AS for the Adaptive Server with the same values recorded in the VENDOR_STRING and ISSUER fields of the optional feature license. They must match. Some features like ASE_HA are not offered with standby pricing, so there is no `"AS=A|S"` flag in the license for this feature. This field is not considered when searching for a license without active and standby captability.

Description	What to do
Adaptive Server does not start with the expected edition or license type	If the edition and license type configuration parameters are not set, Adaptive Server uses the first available `ASE_CORE` license. If you have multiple `ASE_CORE` licenses with different editions and license types, which license is the first available depends on many factors such as license file directory sort order, available licenses on the license server, and so on. Because what edition and license type is granted cannot be guaranteed, Sybase recommends that you set the edition and license type configuration parameters. When these parameters are set, you are assured that Adaptive Server starts with that configuration. If a matching license were to be unavailable, Adaptive server starts under grace (if available) to allow you to resolve the licensing issue.
Adaptive Server does not pick the correct license	When Adaptive Server looks for a license, it does so in the following locations: • Any saved values in the *registry* on Windows platforms, or the *.flexlmrc* file on UNIX platforms. Use `"lmpath -status"` to view the saved values. • The values set for SYBASE_LICENSE_FILE and LM_LICENSE_FILE environment variables. • All license files (any file with a *.lic* extension) in the licenses directory under the *SYSAM-2_0* directory. All of the above locations are searched in the order specified until a suitable license is found. When a directory is specified, license files in that directory are loaded in the directory sort order. The first license that matches the feature name, version, edition, and license type filter is used. This license may not be what you were expecting to use. Adjust the above locations to control this.

SySAM grace mode

If Adaptive Server cannot find a required license, it continues to operate in grace mode, if a grace period is available. Determine the license status of Adaptive Server using the output from sp_lmconfig. The `Status` column in the output shows `graced` for any license that is operating in grace.

The Adaptive Server error log includes information about licenses awarded under grace. If e-mail notifications are set up for warning severity, e-mail messages are sent for this event. See “Enabling and changing e-mail notifications” on page 119 for more information.

The warnings in the Adaptive Server error log and e-mail message are repeated while the license is under grace.

SySAM grace period

Typically, you get a 30-day grace period to resolve any SySAM-related issues. When a license is awarded under grace, the Adaptive Server error log entry and optional e-mail message includes the date and time when the grace period expires. In addition, you can execute sp_lmconfig to determine the expiration date. The Expiry Date column next to any row that shows `graced` status indicates the date and time the grace period expires. Adaptive Server disables the functionality corresponding to the license if the issue is not fixed within that time. Adaptive Server itself shuts down if the graced license is ASE_CORE.

Enabling and changing e-mail notifications

You can configure the e-mail notification setup using sp_lmconfig. Run sp_lmconfig command without any parameters to view the current status and configuration.

To enable e-mail notifications, set the smtp host, smtp port, email sender, email recipients, and email severity properties.

To change the severity that triggers e-mails, set the email severity property. Values are: `"ERROR"`, `"WARNING"`, `"INFORMATIONAL"` and `"NONE"`.

To change the list of e-mail recipients, set the email recipients property to the comma separated list of e-mail addresses. E-mail addresses can include distribution lists, e-mail address for a pager device, and anything that is capable of receiving SMTP messages.

CHAPTER 8

Troubleshooting

This chapter provides instructions for troubleshooting installation error messages.

If this chapter does not describe the error message you are encountering, see the *Error Messages and Troubleshooting Guide*.

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 122.

Table 8-1 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 srvbuild unexpectedly quits, or if you cannot correct the problem, see the *Error Messages and Troubleshooting Guide*.

Table 8-1: Troubleshooting guidelines for UNIX platforms

Problem	Possible cause and solution
The installation program cannot start Adaptive Server.	Failure to start 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, remove, then reinstall 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. Shut down Monitor Server before restarting Adaptive Server. **Note** Adaptive Server may not start if it cannot find a SySAM license and if the grace period has expired. Check the Adaptive Server error log for the cause of the license checkout failure and fix the issues.
After upgrading Adaptive Server, you cannot use srvbuild.	After you begin upgrading a server, you may be unable to use the same srvbuild session for other tasks. Exit and restart srvbuild.
The installation program cannot connect to the upgraded Adaptive Server.	After you begin upgrading a server, you may be unable to use the same srvbuild session for other tasks. Exit and restart srvbuild.
The installation program detects reserved word conflicts.	See “Stopping Adaptive Server after a failure” on page 126.
The upgrade fails.	See “Recovering from a failed upgrade” on page 128.

Error log locations

The information in the error logs helps you determine the reason and possible solution for an error message.

Logs for installation utilities

Table 8-2 lists the default error log locations for the installation, upgrade, and setup utilities.

Table 8-2: Error log locations for installation utilities

Utility	Error log location
installer	*$SYBASE/log.txt*

Utility	Error log location
srvbuild srvbuildres	*$SYBASE/$SYBASE_ASE/init/logs/srvbuildMMDD.NNN* where: • *MM* is the month • *DD* is the date • *NNN* is a three-digit number identifying the srvbuild session
sqlloc sqllocres	*$SYBASE/$SYBASE_ASE/init/logs/sqllocMMDD.NNN*
sqlupgrade sqlupgraderes	• *$SYBASE/$SYBASE_ASE/init/logs/sqlupgradeMMDD.NNN* • *$SYBASE/$SYBASE_ASE/upgrade/upgrade.NNN* (a temporary file created by the upgrade process)

Logs for Sybase servers

Table 8-3 lists the default error log locations for each Sybase server.

Table 8-3: Error log locations for Sybase servers for UNIX

Server	Default error log path and file name
Adaptive Server	*$SYBASE/$SYBASE_ASE/install/servername.log*
Backup Server	*$SYBASE/$SYBASE_ASE/install/servername_back.log*
Monitor Server	Default XP and Monitor server logs are *$SYBASE/$SYBASE_ASE/install/<servername>.log*
XP Server	*$SYBASE/$SYBASE_ASE/install/<servername>.log*

Solutions to common installation problems

If this section does not describe the problem you are experiencing, see the *Error Messages and Troubleshooting Guide*.

Cannot use X-Windows

If the setup and configuration utilities do not display correctly, you may have to adjust the resolution on your monitor.

To change to a smaller font size, issue the following UNIX commands:

```
% cd $SYBASE/ASE-15_0
% chmod +w xappdefaults
% cd xappdefaults
% chmod +w *
```

```
% foreach i(*)
? cat $i | sed -e "s/140/100/g" | sed -e "s/^#D/D/g" | sed -e "s/^#S/S/g" > p
? mv p $i
? end
%
```

The installation utilities now use approximately 25 percent less window space.

Cannot eject the CD or DVD from the drive

If you cannot eject the CD or DVD from the drive:

- Confirm whether the drive path is the current directory (pwd) in a UNIX terminal window. If it is, change (cd) to another directory.

DISPLAY environment variable not set correctly

This error message means that the DISPLAY environment variable on the *remote* machine is not set correctly to display the installer to your *local* machine:

```
The DISPLAY environment variable is not set correctly.
```

To correct the problem, enter the following command at the UNIX prompt of the *remote* machine, where *host_name* is the name of the machine on which you want the installer to appear (that is, on your *local* machine):

For C shell:

```
setenv DISPLAY host_name:0.0
```

For Bourne shell:

```
DISPLAY=host_name:0.0; export DISPLAY
```

Client not authorized to connect to server

If you run the installer and you get this error message, it means the remote machine does not have permission to display the user interface on the local machine where you start working:

```
Xlib: connection to "host_name" refused by server
Xlib: Client is not authorized to connect to Server
xhost: unable to open display "host_name"
```

To correct the problem:

1 Enter the following command at the UNIX prompt of your *local* machine, where *remote_machine* is the machine on which you are running the installer:

```
xhost +remote_machine
```

2 Restart the installer.

Address already in use

The following message from srvbuild means you entered a port number that is already in use:

```
kernel: ninit: bind, Address already in use
```

To correct the problem, enter a different port number on the srvbuild window. The command netstat -a produces a list of port numbers in use.

Adaptive Server fails to start

The shared memory of the operating system may not be set high enough.

To correct the problem, see Chapter 2, “Installing Adaptive Server” for instructions on adjusting the shared memory value. Restart the installation or upgrade process.

The installer fails to start

If the installer does not start, restart it, using:

```
"-is:javaconsole"
```

This displays any error messages to the console which user can then correct.

Cannot start XP Server

You may receive the following message from XP Server, when it is invoked by xp_cmdshell or some other extended stored procedure:

```
Msg 11018, Level 16, State 1:
```

```
Procedure "xp_cmdshell", Line 2:
XP Server must be up for ESP to execute.
(return status = -6)
```

Verify that there is an XP Server entry in the Adaptive Server sysservers table. If you created XP Server in a different srvbuild session than Adaptive Server and you did not specify a related Adaptive Server, srvbuild cannot update the sysservers table. You also need to check verify that the XP server exists in the interfaces file or LDAP server.

Use sp_addserver to add an entry to the sysservers table.

Stopping Adaptive Server after a failure

If the installation or upgrade session fails after you start Adaptive Server, use the shutdown command:

1 Log on as "sa".

2 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
```

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 8-3 on page 123.

If installation fails after files are created

If the installation program quits while you are configuring Adaptive Server:

1 View the contents of the log file generated by Adaptive Server. For default error log locations, see Table 8-3 on page 123.

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 starts the Adaptive Server that you are attempting to install, shut down that server.

Troubleshooting resource file installations

If you encounter problems during the build, configuration, or upgrade process of Adaptive Server using the srvbuild[res], sqlloc[res], or sqlupgrade[res], it may be that these utilities did not allow enough time for Adaptive Server to shut down properly.

You can set the SYBSHUTWAIT environment variable to force the utilities to wait for Adaptive Server to shut down. For example, this command forces the utility to wait for two minutes to allow Adaptive Server to shut down before proceeding with the next task:

```
% setenv SYBSHUTWAIT 120
```

If Adaptive Server fails the pre-upgrade eligibility test

If Adaptive Server fails the pre-upgrade test, sqlupgrade displays:

```
Server SERVER_NAME failed preupgrade eligibility test.
See log for more information.
```

1 From the Upgrade window, select Exit.

2 Examine the log file created in the *$SYBASE/$SYBASE_ASE/init/logs* directory to find out why Adaptive Server failed the pre-upgrade eligibility test.

After you resolve any problems, shut down Adaptive Server and use sqlupgrade to complete the upgrade session.

Recovering from a failed upgrade

If the upgrade process fails, 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 8-2 on page 122.

Note Once you start Adaptive Server on the new version you cannot start Adaptive Server on the earlier version. Attempts to do so result in having to restore from backups.

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 sqlupgrade, but do not attempt to restart the upgrade session until you have restored the databases from backup. After restoration is complete, retry the upgrade.

Re-running the upgrade

Failures while upgrading a server installation fall into one of two categories: failure to upgrade an individual database, or failure to complete configuration changes after all databases have been upgraded.

1 If an individual database fails to upgrade, you can retry that upgrade manually. Begin by correcting the problem that caused the failure. Output from the upgrade utility should identify the problem. The most common cause of failure is running out of some resource: space (either data or log), locks, auxiliary scan descriptors. You can add space to the database using the alter database command. Other resource failures may be correctable by changing the server's configuration via the sp_configure stored procedure.

   If an upgrade failure leaves a database offline, and the failure can only be corrected by making data changes in the database, you can gain access to the failed database by using isql or a similar program to connect to the affected server as user "sa" and issuing this command:

```
dbcc traceon(990)
```

Note This trace flag grants access only to user "sa". It is not sufficient to use an account having "sa_role". If you have disabled the "sa" login, you must re-enable it to get access using this method.

Having set this trace flag, user "sa" can now use the offline database and make the necessary changes to correct the upgrade failure.

To restart a failed upgrade, use the online database command:

```
online database <failed_db_name>
```

The server restarts that database's upgrade from the point of failure.

2 If the failure occurs after all databases have been upgraded, or if a failure somehow causes the upgrade utility to crash, you can re-run the utility manually. First diagnose and correct the failure, then run the upgrade utility:

```
$SYBASE/$SYBASE_ASE/upgrade/upgrade
```

When restarted in this way, the upgrade process says it is "verifying" the upgrade rather than "starting" it, but it makes all the same checks as for the original upgrade.

To verify that a database has upgraded successfully, you can check any database's upgrade status using the online database command. If any upgrade is required for a database, this command performs it. You may also use a procedure such as this to check all databases at a given installation:

```
declare @dbname varchar(255)
select @dbname = min(name)
from master..sysdatabases
while @dbname is not null
begin
online database @dbname
select @dbname = min(name)
from master..sysdatabases
where name > @dbname
```

```
end
```

Note There are certain upgrade failures from which the server cannot recover. For example, attempts to upgrade system tables to version 15.0 format are quite sensitive to failures at certain points during the required changes. If you encounter such a failure, restore the failed database from backup. To prevent the upgrade from failing again, correct the problem that caused the original failure **before** issuing the online database command for that database. These catastrophic failures are nearly always caused by running out of resources, as described above, which then causes a failure to undo the aborted transaction.

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 re-run the upgrade immediately.

1 Exit the sqlupgrade 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 You may need to shut down Adaptive Server.

Shutting down the server enables the installation program to start the server and re-run the upgrade session.

4 Start sqlupgrade again.

5 Select Upgrade Adaptive Server, and proceed with the upgrade.

If the cause of the failure is unknown

If the upgrade process 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/<servername>.log*.

Upgrading compiled objects with *dbcc upgrade_object*

Adaptive Server version 11.9.3 introduced the process of upgrading compiled objects based on their source text. Compiled objects are:

- Check constraints
- Defaults
- Rules
- Stored procedures (including extended stored procedures)
- Triggers
- Views

The source text of each compiled object is stored in the syscomments table, unless it has been manually deleted. When you upgrade the server, the existence of the source text in syscomments is verified during that process. However, the compiled objects are not actually upgraded until they are invoked.

For example, if you have a user-defined stored procedure named list_proc, the presence of source text for list_proc is verified when you upgrade to Adaptive Server 15.0. The first time list_proc is invoked after the upgrade, Adaptive Server detects that the list_proc compiled object has not been upgraded. Adaptive Server recompiles list_proc, based on the source text in syscomments. The newly compiled object is then executed.

Upgraded objects retain the same object ID and permissions that they used before being upgraded.

Compiled objects for which the source text was hidden using sp_hidetext are upgraded in the same manner as objects for which the source text is not hidden. For information on sp_hidetext, see the *Reference Manual:Procedures*.

Note If you are upgrading from 32-bit installations to use a 64-bit Adaptive Server, the size of each 64-bit compiled object in the sysprocedures table in each database increases by approximately 55 percent when the object is upgraded. The pre-upgrade process calculates the exact size. Increase your upgraded database size accordingly.

To ensure that compiled objects have been upgraded successfully **before** they are invoked, you can upgrade them manually using the dbcc upgrade_object command. For details, see “Finding compiled object errors before production” on page 132.

Finding compiled object errors before production

Changes made in earlier versions of Adaptive Server may cause compiled objects to work differently in version 12.5.x and later. You can use dbcc upgrade_object to find the following errors and potential problem areas that may require manual changes to achieve the correct behavior:

- Reserved word errors
- Missing, truncated, or corrupted source text
- Quoted identifier errors
- Temporary table references
- select * potential problem areas

After reviewing the errors and potential problem areas, and fixing those that need to be changed, you can use dbcc upgrade_object to upgrade compiled objects manually instead of waiting for the server to upgrade the objects automatically. For details, see "Using dbcc upgrade_object" on page 135.

Reserved word errors

If dbcc upgrade_object finds a reserved word used as an object name in a compiled object, it returns an error, and that object is not upgraded. To fix the error, either manually change the object name or use quotes around the object name, and issue the command set quoted identifiers on. Then drop and re-create the compiled object.

For example, suppose you load a database dump from Adaptive Server 11.5 into Adaptive Server 15.0 and the dump contains a stored procedure that uses the word "lock." When you run dbcc upgrade_object on that stored procedure, the command returns an error because, although "lock" was not reserved in version 11.5, it became a reserved word in version 11.9.2. With this advance notice, you can change the stored procedure and any related tables before they are used in a production environment.

Missing, truncated, or corrupted source text

If the source text in syscomments was deleted, truncated, or otherwise corrupted, dbcc upgrade_object may report syntax errors. If the source text was not hidden, you can use sp_helptext to verify the completeness of the source text. If truncation or other corruption has occurred, drop and re-create the compiled object.

Quoted identifier errors

dbcc upgrade_object returns a quoted identifier error if:

- The compiled object was created in a pre-11.9.2 version with quoted identifiers active (set quoted identifiers on).
- Quoted identifiers are not active (set quoted identifiers off) in the current session.

To avoid this error, activate quoted identifiers before running dbcc upgrade_object. When quoted identifiers are active, you must use single quotes instead of double quotes around quoted dbcc upgrade_object keywords.

If quoted identifier errors occur, use the set command to activate quoted identifiers, and then run dbcc upgrade_object to upgrade the object.

For compiled objects created in version 11.9.2 or later, the upgrade process automatically activates or deactivates quoted identifiers as appropriate.

Note Quoted identifiers are not the same as literals enclosed in double quotes. The latter do not require you to perform any special action before the upgrade.

Temporary table references

If a compiled object such as a stored procedure or trigger refers to a temporary table (#temp *table_name*) that was created outside the body of the object, the upgrade fails, and dbcc upgrade_object returns an error. To correct this error, create the temporary table exactly as expected by the compiled object, then execute dbcc upgrade_object again. You must not do this if the compiled object is upgraded automatically when it is invoked.

select * potential problem areas

In Adaptive Server version 11.9.3 and later, the results of a select * clause in a stored procedure, trigger, or view that was created in an earlier version of Adaptive Server may be different from what you expect.

For more information about the changes, see the *Reference Manual*.

If dbcc upgrade_object finds a select * clause in the outermost query block of a stored procedure, it returns an error, and does not upgrade the object.

For example, consider the following stored procedures:

```
create procedure myproc as
```

```
  select * from employees
go
create procedure yourproc as
  if exists (select * from employees)
    print "Found one!"
go
```

dbcc upgrade_object returns an error on myproc because myproc includes a statement with a select * clause in the outermost query block. This procedure is not upgraded.

dbcc upgrade_object does not return an error on yourproc because the select * clause occurs in a subquery. This procedure is upgraded.

Determining whether *select* * should be changed in views

If dbcc upgrade_object reports the existence of select * in a view, compare the output of syscolumns for the original view to the output of the table, to determine whether columns have been added to or deleted from the table since the view was created.

For example, suppose you have the following statement:

```
create view all_emps as select * from employees
```

Before upgrading the all_emps view, use the following queries to determine the number of columns in the original view and the number of columns in the updated table:

```
select name from syscolumns
  where id = object_id("all_emps")
select name from syscolumns
  where id = object_id("employees")
```

Compare the output of the two queries. If the table contains more columns than the view, and retaining the pre-upgrade results of the select * statement is important, change the select * statement to a select statement with specific column names. If the view was created from multiple tables, check the columns in all tables that comprise the view and rewrite the select statement if necessary.

Warning! Do not execute a select * statement from the view. Doing so upgrades the view and overwrites the information about the original column information in syscolumns.

Another way to determine the difference between the columns in the view and in the new tables is to run sp_help on both the view and the tables that comprise the view.

This comparison works only for views, not for other compiled objects. To determine whether select * statements in other compiled objects need to be revised, review the source text of each compiled object.

Using *dbcc upgrade_object*

Syntax

```
dbcc upgrade_object [ ( dbid | dbname
[, ['database.[owner].]compiled_object_name' |
'check' | 'default' | 'procedure' | 'rule' |
'trigger' | 'view'
[, 'force' ] ] ) ]
```

where:

- *dbid* – specifies the database ID. If you do not specify *dbid*, all compiled objects in the current database are upgraded.
- *dbname* – specifies the database name. If you do not specify *dbname*, all compiled objects in the current database are upgraded.
- *compiled_object_name* – is the name of a specific compiled object you want to upgrade. If you use the fully qualified name, *dbname* and *database* must match, and you must enclose the fully qualified name in quotes. If the database contains more than one compiled object of the same name, use the fully qualified name. Otherwise, all objects with the same name are parsed, and if no errors are found, upgraded.
- check – upgrades all check constraints and rules. Referential constraints are not compiled objects and do not require upgrading.
- default – upgrades all declarative defaults and the defaults created with the create default command.
- procedure – upgrades all stored procedures.
- rule – upgrades all rules and check constraints.
- trigger – upgrades all triggers.
- view – upgrades all views.

  The keywords check, default, procedure, rule, trigger, and view specify the classes of compiled objects to be upgraded. When you specify a class, all objects in that class, in the specified database, are upgraded, provided that dbcc upgrade_object finds no errors or potential problem areas.

- force specifies that you want to upgrade the specified object even if it contains a select * clause. Do not use force unless you have confirmed that the select * statement does not return unexpected results. The force option does not upgrade objects that contain reserved words, contain truncated or missing source text, refer to nonexistent temporary tables, or do not match the quoted identifier setting. You must fix these objects before they can be upgraded.

Note If set quoted identifiers is on, use single quotes around the keywords. If set quoted identifiers is off, you can use either double quotes or single quotes.

Examples

Example 1 Upgrades all compiled objects in the active database:

```
dbcc upgrade_object
```

Example 2 Upgrades all stored procedures in the listdb database. Single quotes are used around procedure because set quoted identifiers is on:

```
dbcc upgrade_object(listdb, 'procedure')
```

Example 3 Upgrades all rules and check constraints in the listdb database. Double quotes are used around rule because set quoted identifiers is off.

```
dbcc upgrade_object(listdb, "rule")
```

Example 4 Upgrades all stored procedures named list_proc in the listdb database.

```
dbcc upgrade_object(listdb, list_proc)
```

Example 5 Upgrades the stored procedure list_proc, which is owned by the login “jkarrik”.

```
dbcc upgrade_object(listdb,
  "listdb.jkarrik.list_proc")
```

Example 6 Returns an error because the value of *dbname* is master and the value of *database* is listdb. These values must match.

```
dbcc upgrade_object(master,
  "listdb.jkarrik.list_proc")
```

Permissions

Only the Database Owner or a System Administrator can execute dbcc upgrade_object. The Database Owner can upgrade his or her own objects in the database.

Upgraded objects retain the same owner that they had prior to being upgraded.

Increasing the log segment size

You can specify that all compiled objects of a particular class should be upgraded in one execution of dbcc upgrade_object; for example, you can upgrade all triggers by using the trigger keyword. However, even though you use only one dbcc command, the upgrade of each object is recorded in a separate transaction; the old row is deleted from sysprocedures and a new row is written. Therefore, if you run dbcc upgrade_object on a large number of compiled objects, your system may run out of log space. Increase the size of the log segment in the databases in which you plan to run this command, to allow sufficient room to log all the upgrades.

Error reporting

To send all the output from dbcc upgrade_object to the window, a System Administrator can execute dbcc traceon(3604). Sybase recommends that you use this command if you think the output of error messages might overflow the error log.

Using database dumps in upgrades

Upgrading using dump and load

You can load pre-12.5 database dumps and transaction logs and upgrade the databases.

Some issues of which you should be aware:

- Upgrading requires space for copying data and logging changes to the system tables during the upgrade process. If the source database in the dump was nearly full, the upgrade process might fail due to insufficient space. While this is expected to be uncommon, you can use alter database to extend the free space in the event of insufficient-space errors.
- After reloading an older dump, run sp_checkreswords from the new installation on the loaded database to check for reserved words.

Upgrading compiled objects in database dumps

When you load a database dump that was created in an earlier version than the current Adaptive Server, you are not required to perform the pre-upgrade tasks before loading the dump. Therefore, you do not receive any notification if the compiled objects in your database dump are missing their source text. After loading a database dump, run sp_checksource to verify the existence of the source text for all compiled objects in the database. Then, you can allow the compiled objects to be upgraded as they are executed, or you can run dbcc upgrade_object to find potential problems and upgrade objects manually.

For information on using sp_checksource, see the *Reference Manual: Procedures*.

Determining whether a compiled object has been upgraded

To determine whether a compiled object has been upgraded, do one of the following:

- Look at the sysprocedures.version column. If the object was upgraded, this column contains the number 12500.
- If you are upgrading to a 64-bit pointer size in the same version, look at the sysprocedures.status column. It contains a hexadecimal bit setting of 0x2 to indicate that the object uses 64-bit pointers. If the bit is not set, the object is a 32-bit object, which means the object has not been upgraded.

CHAPTER 9

Removing Adaptive Server

Only actions performed by the installer are removed during an uninstallation process. This means that files or registry entries created after installation are not removed by the uninstaller and must be removed by the customer after the uninstall is completed. Where possible these actions are identified in this chapter.

Uninstalling Adaptive Server 15.0.3

Note If there are other Sybase products installed in the same *$SYBASE* directory as Adaptive Server that make use of Sybase Central when you uninstall Adaptive Server some *.jar* files used by Sybase Central is removed and "files not found" error messages display when attempting to start Sybase Central after the uninstal. After Adaptive Server is uninstalled you must, re-install other Sybase products to *$SYBASE* and overwrite the old products.

1 Verify that the server to be removed is not running. If it is running, shut it down. To check if it is running use:

```
"ps"
```

Then if it is running use isql commands: kill or shutdownto shutdown the server.

2 Shut down all servers prior to running the uninstall program.See "Starting and Stopping Servers" in the *Configuration Guide*.

3 The uninstall program is located in the following product specific directories:

- *uninstall/ASESuite*

- *uninstall/PCClient*

Launch the uninstall program by executing the following steps:

a Change to the *SYBASE* directory.

b Execute the uninstall program by entering:

```
$SYBASE/uninstall/ASESuite/uninstall
```

4 Once the Uninstall Welcome window displays, click Next to continue.

5 The component selection window displays with everything selected. Deselect components by clicking the check box and erasing the check mark. Click Next to continue.

Note If there is SySAM Network License Server installed on this machine, it may be used by other Sybase products. Uncheck this component unless you know no one is using this License Server.

6 A summary window displays what is about to be uninstalled. Click Next to continue.

7 A window displays indicating that the uninstallation process is being performed. There is no progress bar.

Note One or more pop-up displays may occur indicating that a file was modified after it was installed and requesting confirmation that it should be deleted.

8 If there are any user created files left over from the uninstall, the uninstaller prompts user if it can remove them.

9 When the uninstall process has completed a final window displays. Click Finish to exit the uninstall program.

Removing an existing Adaptive Server

1 To remove an existing Adaptive Server, from *$SYBASE*, enter:

```
rm servername.*
```

2 Change to the directory *$SYBASE/$SYBASE_ASE/install* and run the following commands:

```
rm RUN_servername.*
rm servername.*
```

3 Edit *$SYBASE/interfaces*, to remove all references to the Adaptive Server.

4 If you used operating system files for database devices, remove those.

APPENDIX A

Alternative Installation Methods

Installation on consoles (non-GUI mode)

To run the installer without the graphical user interface (GUI), launch the installer in console or non-GUI mode. To do this add the –console command to the command line argument. If the installer launches automatically in GUI mode, select Cancel to cancel the GUI install and then launch the setup program from a terminal or console. Then:

1 Change the default directory to the CD.

2 Run the setup program with the -console command line argument:

```
setup -is:javaconsole -console
```

The flow of the consoles installation is identical to that of a GUI installation, except that the display outputs to a terminal window and responses are entered using the keyboard.

Silent installation

To perform a silent installation, run the installer while answering the prompts with a response file. There are two ways to generate a response file for the installer, either.

- Run the installer in GUI mode and record the reponses to the response file. You can edit the response file to customize the responses.
- Run the installer and have it write out a template file. The template file contains all of the questions, but no responses. You can use an editor to edit the template file so that it provides responses to the prompts.

The response file invokes the installer, which takes actions based on your recorded or customized responses to the prompts.

Follow these steps to perform the silent installation using the response file you created using the first method.

1 Change default directory to the CD or DVD.

2 Run the setup program with the -options -record *filename*:

```
./setup -is:javaconsole -options-record <full_path_response_file>
```

3 Run through the installation saving all of the responses.

4 Edit the response file to customize it for your needs.

5 Run the setup program with the -options filename and -silent command line arguments. Additionally you must include the -W argument that indicates that you accept the license agreement.

```
./setup -is:javaconsole -silent -options <full path response file>
-W SybaseLicense.agreeToLicense=true
```

To generate a template response file, skip step 3 and alter step 2 above to do the following:

```
./setup -is:javaconsole -options-template <full path response file>
```

In either case it is possible to custom configure the servers, to select a typical install and use the default configuration values.

Except for the absence of the GUI screens all actions of the installer are the same and the result of an installation in silent mode is exactly the same as one done in GUI mode with the same responses.

Note The value for -options, -options-template, and -options-record must specify an absolute path.

Installation in silent mode can fail when a response is required and is not available in the response file. Such a response is required when files already exist on disk and appear to be later than the files the installer is attempting to install, or when files have been modified by the user.

Set the following options at the command line level to specify actions to take when installing in silent mode:

- replaceExistingResponse – stores your response to whether you want to replace a file that currently exists on your system with the one being installed.
- replaceNewerResponse – stores your response to whether you want to replace a file that currently exists on your system with the one being installed if the existing file is later than the file being installed.
- removeExistingResponse – stores your response to whether you want to remove a file that currently exists on your system.
- removeModifiedResponse – stores your response to whether you want to remove a file that has been modified since installation.

Any of these options can be specified on the command line or within the options file as follows:

```
-G <option>="<value>"
```

Valid values are:

- yesToAll
- yes
- noToAll
- no

For example:

```
-G replaceNewerResponse=”yesToAll”
```

```
./setup -is:javaconsole
-silent
```

```
-options <full path response file>
-W SybaseLicense.agreeToLicense=true
-G replaceNewerResponse="yesToAll"
```

Configuring servers using resource files

You can create an Adaptive Server, Backup Server, Monitor Server, XP Server, and Job Scheduler, using values specified in a resource file that defines the attributes for the server.

Resource files are ASCII format files that contain configuration variables. To use the resource files, edit the sample resource file, replace variables with desired values, and execute the srvbuildres utility. The srvbuildres 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 2, "Installing Adaptive Server."

To install an Adaptive Server, Backup Server, Monitor Server, XP Server, and Job Scheduler using resource files:

1 Edit a resource file as described in "Configuring from a resource file" on page 146.

2 Execute the srvbuildres utility, using the edited resource file as described in "Using srvbuildres" on page 150.

Configuring from a resource file

To configure Adaptive Server using a resource file use the sample resource file provided with the software.

Editing the sample resource file

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

$SYBASE/$SYBASE_ASE/init/sample_resource_files.

Edit these files to specify the attributes for the servers you want to create.

Note that:

- 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.
- To create a server with a different name, change the Adaptive Server name and use the new name with the "_BK" extensions for Backup Server. For example, the Backup Server for PIANO should be PIANO_BK.
- The minimum master device size must be:
  - 2K page size – 13MB
  - 4K page size – 26MB
  - 8K page size – 52MB
  - 16K page size – 104MB
- The system procedure device and sybsystemprocs database sizes must be at least 124MB.
- The auditing entries in the resource file are not supported. To enable auditing, see the configuration guide for your platform.

Editing a resource file created by *srvbuild*

You can create a resource file by running the srvbuild utility. A new file containing the values you specified for the Adaptive Server, Backup Server, Monitor Server, XP Server, and Job Scheduler is written to:

$SYBASE/$SYBASE_ASE/init/logs/srvbuildMMDD.VVV-servername.rs.

Edit these files to specify the attributes for the servers you want to create.

Warning! Make sure to edit the resource file generated by srvbuild to change attributes, such as device names, that may differ on another system.

Resource file attributes for Adaptive Server

Table A-1 shows the Adaptive Server resource file attributes, their default values, and other options.

The attributes in bold type are *required*, and all alpha values are case-sensitive.

The prefix of the attribute name varies, depending on whether the resource file was created by srvbuild or by sybinit (from a pre-11.5 SQL Server). The prefix is ignored by srvbuildres when processing the resource file.

The attribute names in Table A-1 are the attribute names provided in the sample resource file included in your Adaptive Server distribution.

Table A-1: Resource file attributes for Adaptive Server

Attribute	Default value [other options]
sybinit.release_directory	The value of *$SYBASE* at your site
sybinit.product	sqlsrv
sqlsrv.server_name	*server_name*
sqlsrv.new_config	yes (required value)
sqlsrv.do_add_server (to *interfaces* file)	yes [no]
sqlsrv.network_protocol_list	tcp
sqlsrv.network_hostname_list	*hostname*
sqlsrv.addl_cmdline_parameterst	*null*
sqlsrv.network_port_list	*port_number*
sqlsrv.master_device_physical_name	*path_and_name_of_master_device*
sqlsrv.master_device_size	60 (MB)
sqlsrv.master_database_size	26 (MB)
sqlsrv.errorlog	*$SYBASE/$SYBASE_ASE/install/server_name.log*
sqlsrv.do_upgrade	no (required value)
sqlsrv.sybsystemprocs_device_physical_name	*path_and_name_of_sybsystemprocs_device*
sqlsrv.sybsystemprocs_device_size	140 (MB)
sqlsrv.force_buildmaster	No
sqlsrv.server_page_size	4K (required)
sqlsrv.sybsystemprocs_database_size	140 (MB)
sqlsrv.sybsytemdb_device_physical_name	*path_and_name_of_ sybsystemdb_device*
sqlsrv.sybsystemdb_device_size	6 (MB)
sqlsrv.sybsystemdb_database_size	6 (MB)
sqlsrv.default_backup_server	*backup_server_name*
sqlsrv.do_configure_pci	no[yes]
sqlsrv.sybpcidb_device_physical_name	path_and_name_of_pci_device
sqlsrv.sybpcidb_device_size	pci_device_size
sqlsrv.sybpcidb_database_size	pci_database_size
sqlsrv.tempdb_device_physical_name	path of the sybsystemdb device
sqlsrv.tempdb_device_size	100 (MB)

Attribute	Default value [other options]
sqlsrv.tempdb_database_size	100 (MB)
sqlsrv.do_optimize_config	no [yes]
sqlsrv.avail_physical_memory	available_RAM_for_ASE
sqlsrv.avail_cpu_num	available_number_of_CPU_for_ASE

Resource file attributes for Backup Server

Table A-2 shows the Backup Server resource file attributes, their default values, and other options.

The attributes in bold type are *required*, and all values are case-sensitive.

The prefix of the attribute name varies, depending on whether the resource file was created by srvbuild or by sybinit (from a pre-11.5 Adaptive Server). The prefix is ignored by srvbuildres when processing the resource file.

The attribute names in Table A-2 are the attribute names provided in the sample resource file included in your Adaptive Server distribution.

Table A-2: Resource file attributes for Backup Server

Attribute	Default value [other options]
sybinit.release_directory	$SYBASE
sybinit.product	bsrv
bsrv.server_name	*backupserver_name*
bsrv.do_add_backup_server (to *interfaces* file)	yes [no]
bsrv.network_protocol_list	tcp
bserv.network_hostname_list	*hostname*
bsrv.network_port_list	*port_number*
bsrv.language	us_english [chinese, french, german, japanese, spanish]
bsrv.character_set	iso_1[iso_1, cp850, cp437, deckanji, ascii_8, eucgb, eucjis, mac, roman8, sjis, utf8]
bsrv.tape_config_file	*$SYBASE/$SYBASE_ASE/backup_tape.cfg*
bsrv.errorlog	*$SYBASE/$SYBASE_ASE/server_name_back.log*
sqlsrv.related_sqlsrvr	*<ASE_NAME>*
sqlsrv.sa_login	*<sa login>*
sqlsrv.sa_password	*<sa password>*
bsrv.addl_cmdline_parameterst	*null*

Using *srvbuildres*

Note When building a new sever with srvbuild or srvbuildres, configuration parameters can be set in the configuration file in $SYBASE.This configuration file is used to start the new server.

Source *SYBASE.csh* before running srvbuildres.

To execute srvbuildres at the UNIX prompt enter the following, where *resource_file* specifies the resource file containing the attributes that describe the server to build:

```
$SYBASE/$SYBASE_ASE/bin/srvbuildres -r resource_file
```

Note Unlike srvbuild, the srvbuildres utility does not require any X libraries.

When you have completed resource file installation, go to Chapter 3, “Postinstallation Tasks.”

Installer Changes from Adaptive Server 12.5.4 to Adaptive Server 15.0.3

Installer response file change

To see the changes in the installer response file, generate and compare the template response files from the old and new installers. See “Silent installation” on page 144 for instruction on how to generate the template file.

Directory changes

From Adaptive Server 12.5.4 to 15.0.3 a number of changes to the directory structures occurred. Table A-3shows the directory changes.

Table A-3: Directory Changes for Unix Platforms

Component	12.5.4 location	15.0.2 location	15.0.3 location
Adaptive Server	*$SYBASE/ASE-12_5*	*$SYBASE/ASE-15_0*	*$SYBASE/ASE-15_0*

Component	12.5.4 location	15.0.2 location	15.0.3 location
Shared directory	*$SYBASE/shared*	*$SYBASE/shared*	*$SYBASE/shared*
Sybase Central	*$SYBASE/shared/sybcentral43*	*$SYBASE/shared/sybcentral43*	*$SYBASE/shared/sybcentral600*
JRE	*$SYBASE/shared/jre142*	*$SYBASE/shared/jre142_**	*$SYBASE/shared/JRE-6_0**
Shared JAR file	*$SYBASE/shared/lib*		
locales	*$SYBASE/locales*	*$SYBASE/locales*	*$SYBASE/locales and $SYBASE/ASE-15_0/locales*
Connectivity	*$SYBASE/OCS-12_5*	*$SYBASE/OCS-15_0*	*$SYBASE/OCS-15_0*
Web Service	*$SYBASE/WS-12_5*	*$SYBASE/WS-15_0*	*$SYBASE/WS-15_0*
Replicator	*$SYBASE/RPL-12_*5	*$SYBASE/RPL-15_0*	*$SYBASE/RPL-15_0*
SySAM	*$SYBASE/SYSAM-1_0*	*$SYBASE/SYSAM-2_0*	*$SYBASE/SYSAM-2_0*
Job Scheduler	*$SYBASE/JS-12_5*	*$SYBASE/ASE-15_0/jobscheduler*	*$SYBASE/ASE-15_0/jobscheduler*
Unified Agent	*$SYBASE/JS-12_5*	*$SYBASE/ASE-15_0/jobscheduler*	*$SYBASE/ASE-15_0/jobscheduler*

Note All Adaptive Server components have been modified to use the new directory structure.

Impacted directories

Adaptive Server contains the following Java applications that are affected by this change:

- Sybase Central
- ASE Plug-in
- DDLGen
- ASE Replicator
- Web Services Producer and Consumer
- SQL Debugger
- Migration Tool
- Job Scheduler

- Interactive SQL
- Unified Agent
- SySAM Plugin
- Agent Management Console
- Adaptive Server Agent Plugin
- Adaptive Server SNMP Agent Plugin

APPENDIX B

Creating Raw Partitions

Overview

Adaptive Server 12.5 and later allows you to create and mount its database devices on raw bound devices for raw disk I/O. Raw disk I/O has performance advantages since it enables direct memory access from user address space to the physical sectors on the disk, omitting needless memory copy operations from the user address space to the kernel buffers.

Raw disk I/O also assumes that logical and physical I/O are simultaneous, and writes are guaranteed to flush to the disk when the system write() call returns.

When preparing a raw partition device, follow these guidelines:

- Do not initialize a database device on the partition that contains your Sybase installation software. Doing so destroys all existing files on that partition.
- A raw partition designated for use by Sybase cannot be mounted for use by the operating system for any other purpose, such as for file systems or swap space.
- After a Sybase configuration utility or the disk init command has initialized a portion of a partition as a database device, the entire partition cannot be used for any other purpose. Any space left on the partition beyond the size specified for the device can be reused with the disk resize command.

- For best performance, place the Sybase software and all disk devices, including the master device, on the same machine.
- To avoid any possibility of using a partition that contains the partition map, do not use cylinder 0.
- Place the database device on a character device, because the Adaptive Server recovery system needs unbuffered system I/O.

To determine whether a device is a block device or a character device, run this command:

```
ls -l <device path>
```

❖ **Choosing 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.

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.

Creating the partitions

Specific system administration is required before raw devices can be enabled and used. The available tools to configure devices depend on the distribution.

Physical disk space needs to be allocated in partitions on the disks where you want to set up raw devices. The physical I/O subsystem can be on either SCSI or EIDE devices.

Note Creating the partitions can be done with the Linux default fdisk(8) utility. You must have "root" privileges to use the command fdisk. Refer to the fdisk(8) man pages for a complete description of the command.

This example shows how to set up partitions as raw devices, on four SCSI disks in the system—sda, sdb, sdc, and sdd.

- Start fdisk on */dev/sdd:*

```
# fdisk /dev/sdd
```

The system returns:

```
The number of cylinders for this disk is set to 8683
....
Command (m for help):
```

- Enter "p" to print the current partition lay-out. The output is:

```
Disk /dev/sdd: 64 heads, 32 sectors, 8683 cylinders
Units = cylinders of 2048 * 512 bytes
Device Boot Start   End   Blocks  Id  System
/dev/sdd1       1  7499  7678960  83  Linux
/dev/sdd2    7500  8012   525312  82  Linux swap
/dev/sdd4    8013  8683   687104   5  Extended
```

This sample shows the extended partition (sdd4) has 687104 free blocks, starting from 8013 and ending at 8683. The remaining partitions can be assigned later.

The next example assigns an additional partition for raw bound disk I/O:

1 Use the n command to create a new partition, and enter "l" at this prompt for logical.

```
Command (m for help):n
Command action
l  logical (5 or over)
p  primary partition (1-4)
```

2 Accept the default by pressing Enter on the keyboard when you are prompted:

```
First cylinder (8013-8683, default 8013):
```

3 Accept the default by pressing Enter on the keyboard when you are prompted:

```
Last cylinder or +size or +sizeM or +sizeK
(8013-8683, default 8683): 8269
```

4 Use the t command, enter “5” at this prompt:

```
Partition number (1-8):5
```

5 Enter “60” at this prompt:

```
Hex code (type L to list codes): 60
```

6 The output is:

```
Changed system type of partition 5 to 60 (Unknown)
```

7 Repeat the above steps to create four partitions for raw device I/O.

Verify the setup using p to print the full partition table before writing it out. Make sure that there are no overlapping partitions and the type for the unassigned partitions is Unknown type 60.

The partition table can now be written to disk and you can quit the fdisk(8) utility.

Red Hat Raw device administration

Red Hat Enterprise Linux is fully equipped with the administration tools to set up raw devices and administrate them during system start. To set up a Red Hat Enterprise Linux system the partitions are administrated in the file */etc/sysconfig/rawdevices.*

This is a plain text file contains comments and examples for possible configurations, as follows:

```
# raw device bindings
# format: rawdev major minor
#         rawdev blockdev
# example: /dev/raw/raw1 /dev/sda1
#          /dev/raw/raw2 8 5
/dev/raw/raw1 /dev/sdd1
/dev/raw/raw2 /dev/sdd2
/dev/raw/raw3 /dev/sdd3
/dev/raw/raw4 /dev/sdd4
```

1 Once created, you must bind the raw devices. This can be done by starting them from */etc/rc.d/init.d/rawdevices*.

```
[root@legolas init.d]# cd /etc/rc.d/init.d
[root@legolas init.d]# sh rawdevices start
Assigning devices:
/dev/raw/raw1  -->   /dev/sdd5
     /dev/raw/raw1:     bound to major 3, minor 5
/dev/raw/raw2  -->   /dev/sdd6
     /dev/raw/raw2:     bound to major 3, minor 6
/dev/raw/raw3  -->   /dev/sdd7
     /dev/raw/raw3:     bound to major 3, minor 7
/dev/raw/raw4  -->   /dev/sdd8
     /dev/raw/raw4:     bound to major 3, minor 8
done
```

2 To guarantee that the raw device binding occurs during any restart, use the chkconfig(8) utility.

```
# /sbin/chkconfig rawdevices on
```

SuSE raw device administration

The raw disk partitions are administered in the */etc/raw* file. This is a plain text file containing comments and examples for possible configurations:

```
# /etc/raw
#
# sample configuration to bind raw devices
# to block devices
#
# The format of this file is:
# raw<N>:<blockdev>
#
# example:
# ---------
# raw1:hdb1
#
# this means: bind /dev/raw/raw1 to /dev/hdb1
#
# ...
raw1:sda7
raw2:sda8
raw3:sda9
```

Once created, you must bind the raw devices. You do this by starting them with the script */etc/init.d/raw*:

```
# cd /etc/init.d
# sh raw start
bind /dev/raw/raw1 to /dev/sdb1... done
bind /dev/raw/raw2 to /dev/sdb2... done
bind /dev/raw/raw3 to /dev/sdb3... done
...
```

Use the chkconfig(8) utility to guarantee that the raw device binding occurs during any restart:

```
# /sbin/chkconfig raw on
```

Accessing raw devices from Adaptive Sever

If you use srvbuild to create the server and either the master device or sybsystemprocs device is a raw partition, then give user "sybase" the same permissions for the corresponding block device */dev/sd** as you did to the server.

See the chown(1), chgrp(1), and chmod(1) commands to apply correct permissions.

- To verify your settings, query the device binding using the raw command, enter:

  ```
  # raw -qa
  ```

  The output should be:

  ```
  /dev/raw/raw1:  bound to major 3, minor 5
  /dev/raw/raw2:  bound to major 3, minor 6
  /dev/raw/raw3:  bound to major 3, minor 7
  /dev/raw/raw4:  bound to major 3, minor 8
  ```

- You should have root privileges to execute this command. In case you do not have root permission, you may see the following output for the `raw -qa` command:

  ```
  Cannot open master raw device '/dev/rawctl'
  (Permission denied)
  ```

Using the raw devices, Adaptive Server and the installation and configuration utility, srvbuild, detects and presents their size automatically. Just enter the absolute path to the raw device when creating the master, sybsystemprocs, sybtempdb, or any other device.

APPENDIX C

Upgrading Servers with Replicated Databases

Overview

Follow the steps in this appendix beforeup grading your server containing replicated primary databases (this includes replicated RSSDs). This procedure helps to ensure that all replicated data transfers to the replicated or destination databases.

Warning! Be sure to have valid dumps of the database and its transaction log before executing the procedures in the follwing sections.

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:

- 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.

To determine whether your existing server contains replicated databases:

1 Use isql to connect to the Server you are upgrading.

2 If your server uses Replication Agent to replicate data, connect to the server and execute:

```
1> sp_config_rep_agent
2> go
```

The above command displays the list of databases enabled for replication agent. If you are using other applications to replicate data, run the following command in each database, including master databases:

```
1> dbcc gettrunc
2> go
```

3 If the command returns "1" for "secondary 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 the upgrade process while the subscriptions are being created so that Replication Server does not interfere by attempting to access 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 Replication Server System Database (RSSD) being upgraded.

The status of all existing routes should be "Active." If any routes are not active, resolve them 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 dataserver 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

At this stage all of the applications accessing data on primary databases are stopped. For each primary database you are upgrading, ensure that Replication Server completely processes the pre-upgrade log,.

To be sure that the transaction log has been drained off:

1 Wait for all remaining transactions to be replicated.

2 Check that a manual update on a replicate table is forwarded to Replication Server:

a If the database is enabled for Replication Agent:

```
1>use <dbname>
2>go
1>sp_config_rep_agent <dbname>, 'traceon',
'9201'
2>go
```

- If you cannot access to the console where Adaptive Server was started, define additionally a trace log file so you can check the information Replication Agent sends to it:

```
1> sp_config_rep_agent <dbname>, 'trace log
file', 'path for the log file'
2>go
```

b If the database is using a different method to replicate data, you must ensure that data is replicated by consulting Replication Server queues. In such case use the following procedure:

Run the following Replication Server command:

```
1>admin who, sqm
2>go
```

Find the entry that corresponds to the inbound queue for this database:

1 Look for the info field in the queue_number: queue_type entry. For an inbound queue, the queue type is 1. Note the Last Seg.Block entry for the queue.

2 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 dump the queue.

3 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 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.

---

4 In the primary Replication Server, execute the admin who, sqm command until the last segment:block entry for the inbound queue changes.

5 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.

6 Use Notepad or another text editor to examine the dump file to make sure it contains the transaction that corresponds to the update you performed in step 4.

7 Repeat steps 5–7 until the transaction that corresponds to the update is in the dump file.

3 Stop the application or process reading the transaction log from the primary database:

If you are using Rep Agent, log into the Adaptive Server, and stop the Rep Agent:

```
1> sp_stop_rep_agent database
2> go
```

4 If you are using LTM, shut down the LTM.

After draining the transaction logs, do not allow any other activity in the databases. If activity does occur, you must redrain the logs.

5 Instruct Replication Server to reject incoming connections from Replication Agent, LTM or Replicator:

Log in to the Replication Server and suspend the Log Transfer connection from that database:

```
1>suspend log transfer from server.database
2>go
```

Draining the RSSD transaction log

If the Replication Server uses Adaptive Server to host its RSSD, and 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 in to 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 dataserver and database names must be valid, but the replication definition does not have to reference an actual table.

2 Log in to 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.

3 Log in to the replicate Replication Server and suspend the Log Transfer connection from the primary RSSD:

```
1> suspend log transfer from server.database
2> go
```

4 If you are using Rep Agent, log in to the Adaptive Server, and stop the Rep Agent:

```
1> use database
2> go
```

```
1> sp_stop_rep_agent database
2> go
```

5 If you are using LTM, shut down the LTM.

Disabling the secondary truncation point

At this point, all the information contained on the primary logs has been processed, transfered to their destinations and the RepAgent or other applications used for replicateion has been shut down. The Rep Agent or other replication application must be shutdown, and the secondary truncation point should be disabled.

If the RSSD is being upgraded, you must stop the Replication Server at this point. For each primary database, disable the secondary truncation point.

1 If this is a replicated RSSD, log in to the Replication Server of the RSSD, and issue:

```
1> sysadmin hibernate_on, 'Replication Server'
2> go
```

2 Disable the secondary truncation point in the Adaptive Server database that is being upgraded by issuing:

```
1> use database
2> go
```

```
1> dbcc settrunc('ltm', 'ignore')
2> go
```

If the dbcc settrunc command fails, make sure that the Rep Agent or LTM are not running. When the Rep Agent and LTM are disabled, repeat this step.

3 Truncate the primary transaction log running the command:

```
1>dump tran primary_dbname with truncate_only
2>go
```

4 The Replication truncation point must be zeroed out. The Replication Server must be shutdown before performing this operation:

Using the RSSD for the Replication Server, run:

```
1>rs_zeroltm primary_servername, primary dbname
2>go
```

APPENDIX D

Using sybsystemprocs

Introduction

Verify that the sybsystemprocs database is large enough. For an upgrade, the recommended minimum size for sybsystemprocs is the larger of 120MB, or enough free space to accommodate the existing sybsystemprocs database, and the largest catalog that is to be upgraded, plus an additional 10 percent of the largest catalog's size. The additional 10 percent is for logging upgrade changes.

You may need more space if you are adding user-defined stored procedures. 120MBs accommodate additional internal data structures, but does not account for the possibility of a large number of user-defined system procedures.

If your sybsystemprocs database does not meet these requirements and you have enough room on the device to expand the database to the required size, use the alter database command to increase the database size.

Use sp_helpdb to determine the size of the sybsystemprocs database:

```
1> sp_helpdb sybsystemprocs
2> go
```

Use sp_helpdevice to determine the size of the sysprocsdev device:

```
1> sp_helpdevice sysprocdev
2> go
```

If the db_size setting is less than the required minimum, you must increase the size of sysprocdev.

Increasing the size of the *sybsystemprocs* database

If your current sybsystemprocs database does not have the minimum space required, there are 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, 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 or expand the current device.

❖ **Enlarging 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=40
2> go
```

In this example, "sysprocsdev" is the logical name of the existing system procedures device and "40" 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:

```
Could not find enough space on disks to extend
database sybsystemprocs
```

If there is space available on another device, you can expand sybsystemprocs to a second device, or initialize another device that is large enough. For instructions on creating a larger sybsystemprocs device, see "Increasing device and database capacity for system procedures" on page 171.

3 To verify that Adaptive Server has allocated more space to sybsystemprocs, issue:

```
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 *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. See the *Utility Guide* for more information.

❖ **Expanding the device**

Newer versions of Adaptive Server have a "disk resize" command that extends a device if there is room enough. If your current Adaptive Server version does not have that command but you would like to take advantage of it, you can use these instructions to upgrade first, and enlarge your database later:

1 Use "dump database" to make a copy of your existing sybsystemprocs database.

2 Drop the sybsystemprocs database, then recreate it. This removes your existing stored procedures and ensures that sybsystemprocs has enough free space for upgrade.

3 Upgrade your installation.

4 Expand the device containing your sybsystemprocs database. This example adds 50 megabytes to a device whose logical name is "sysprocsdev":

```
1> disk resize name=sysprocsdev, size=[50M]
2>go
```

5 If you dumped sybsystemprocs earlier, use "load database" to restore it, then "online database" to make it ready for use. After doing this, you must recreate all your Sybase-supplied stored procedures by running the install scripts, such as "*installmaster*".

❖ **Creating a larger system procedures device (*sysprocsdev*)**

1 Determine which device or devices to remove.

Warning! Do **not** remove any device that is in use by a database other than sybsystemprocs, because doing so destroys that database.

```
select d.name, d.phyname
from sysdevices d, sysusages u
where u.vstart between d.low and d.high
and u.dbid = db_id("sybsystemprocs")
and d.status & 2 = 2
and not exists (select vstart
    from sysusages u2
    where u2.dbid != u.dbid
    and u2.vstart between d.low and d.high)
```

where:

- *d.name* – is the list of devices to remove from sysdevices
- *d.phyname* – is the list of files to remove from your computer

The “not exists” clause in this query excludes any devices that are used both by sybsystemprocs and other databases.

Note the names of the devices; needed in the steps.

2 Drop sybsystemprocs:

```
use master
go
drop database sybsystemprocs
```

```
go
```

Note In versions of Adaptive Server Enterprise prior to 15.0, you use sysdevices to determine which device has a low through high virtual page range that includes the *vstart* from Step 2. The device fragment whose *vstart* you used is on that device

In the 15.0 version of Adaptive Server Enterprise select the vdevno from *sysusages* matching the dbid retrieved in Step 1.

3 Remove the device or devices using sp_configure:

```
sp_configure "allow updates", 1
go
delete sysdevices
    where name in ("devname1", "devname2", ...)
go
sp_configure "allow updates", 0
go
```

The where clause contains the list of device names returned by the query in step 1.

Note Each device name must have quotes. For example, "*devname1*", "*devname2*", and so on.

If any of the named devices are OS files rather than raw partitions, use the appropriate OS commands to remove those files.

4 Remove all files for the list of *d.phyname* returned in step 1.

Note File names cannot be complete path names. If they are relative paths, they are relative to the directory from which your server was started.

5 Find another existing device that meets the requirements for additional free space, or use a disk init command similar to the following to create an additional device for sybsystemprocs where */sybase/work/* is the full, absolute path to your system procedures device:

```
1> use master
2> go

1> disk init
2> name = "sysprocsdev",
3> physname = "/sybase/work/sysproc.dat",
```

```
4> size = 51200
5> go
```

Note Server versions 12.0.x and later accept but do not require `"vdevno=number"`. In server versions earlier than 12.0.x, 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 112MB (112 x 512 = 57344). For more information on disk init, see the *Reference Manual*.

6 Create a sybsystemprocs database of the appropriate size on that device, for example:

```
1> create database sybsystemprocs on sysprocsdev =
     112
2> go
```

7 Run the installmaster script in the *old* Sybase installation directory, as follows:

```
isql -Usa -Ppassword -Sserver_name -i/old_dir/
     scripts/installmaster -oinstallmaster.out
```

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