CHAPTER 1

Introducing SQL Anywhere Studio

About this chapter

This chapter introduces the pieces that make up SQL Anywhere Studio, how to install it, and how to use the documentation.

Contents

Topic	Page
Welcome to SQL Anywhere Studio	4
Installing SQL Anywhere Studio	9
Adaptive Server Anywhere	10
The sample database	16

Welcome to SQL Anywhere Studio

SQL Anywhere Studio is a complete database management system for mobile, desktop, and workgroup use. It includes the Adaptive Server Anywhere relational database management system, together with a set of tools for designing and managing databases, creating database reports and forms, using databases on the Web, and replicating databases to mobile users.

A database, and the tools to use it

SQL Anywhere Studio includes the following:

- **Adaptive Server Anywhere** The relational database at the core of the product is a transaction-based SQL database designed for single-user and multi-user use. Adaptive Server Anywhere is a cross-platform database; it runs on many flavors of Windows and UNIX, as well as on Novell NetWare and IBM OS/2.

  For a more complete introduction to Adaptive Server Anywhere, see "Adaptive Server Anywhere" on page 10.

- **InfoMaker** For querying databases and creating sophisticated and effective custom reports of data. InfoMaker is also a personal data assistant that lets you work with data in many ways.
- **jConnect** For connecting to databases using JDBC.
- **PowerDynamo** For building and managing Web applications linked to your database. It allows you to store, manage, and access both static HTML and dynamic database data locally or over a corporate Intranet or the Internet.
- **Replication Agent** For replicating data from Adaptive Server Anywhere databases to other databases via Sybase Replication Server.
- **SQL Modeler** For designing, generating, documenting, and maintaining databases.
- **SQL Remote** For two-way message-based replication of data between a central database and many remote databases. With SQL Remote you can replicate data between laptop computers and a central database, using e-mail or dial-up access.
- **Sybase Central** The utility for managing Adaptive Server Anywhere databases and PowerDynamo Web sites.

Sybase Central, InfoMaker, SQL Modeler, and the PowerDynamo development tools are available only on the Windows 95 and Windows NT operating system. However, they can be used as clients of a database server running on any supported operating system.

Bringing data and logic together with Java

In traditional client/server database systems, the database holds the data and the client application holds the logic. Stored procedures do allow logic to be built into databases, but use their own SQL stored procedure language.

With Adaptive Server Anywhere you can store, run, and debug Java classes in the database. In addition, you can store data as Java objects. This brings your data and your logic together, so they can work together as parts of a single information system.

SQL Anywhere Studio documentation

The documentation for SQL Anywhere Studio includes the following:

- First Guide to SQL Anywhere Studio (this book).
- Documentation for each of the components of the product.
- Supporting documentation for Java

Finding the documentation

Documentation is provided in several formats, so that you can choose the format that suits you best.

- **Online books** You can see a complete set of documentation for SQL Anywhere Studio and all its associated tools by installing the online books.

  The online books use the DynaText® online viewer from Inso® Corporation.

- **Printed books** Depending on the product you purchase, you may have printed versions of some or all of the books.

- **Windows Help** The complete documentation for PowerDynamo and Adaptive Server Anywhere (including this book, and documentation for SQL Remote and the Replication Agent) is provided on Windows operating systems as Windows Help files.

  SQL Modeler, InfoMaker, and Sybase Central come with extensive online Help, accessible from their user interfaces.

Adaptive Server Anywhere documentation

The documentation for Adaptive Server Anywhere describes the Adaptive Server Anywhere database management system. It consists of the following books:

- **New Features and Upgrading** Intended for all users of Adaptive Server Anywhere, this book describes the following:
  - New features in Adaptive Server Anywhere 6.0
  - Behavior changes from previous releases
  - Upgrade procedures..
- **User's Guide** Intended for all users of Adaptive Server Anywhere, including database administrators and application developers, this book describes in depth all aspects of how to use Adaptive Server Anywhere.
- **Programming Interfaces** Intended for application developers writing programs that directly access the ODBC, Embedded SQL, or Open Client interfaces, this book describes how to develop applications for Adaptive Server Anywhere.

  This book is not required for users of Application Development tools with built-in ODBC support, such as Powersoft PowerBuilder or Power++.
- **Reference Manual** A full reference to Adaptive Server Anywhere. This book describes the database server, the administration utilities, the SQL language, and error messages.
- **Quick Reference** A handy printed booklet with complete SQL syntax and other key reference material in a concise format.

InfoMaker documentation

InfoMaker is the database reporting tool. Documentation is provided as a set of online books:

- **Installation Guide** Provides instructions for installing InfoMaker
- **Getting Started** Introduces you to InfoMaker and provides a tutorial you can step through to learn the basics.
- **User's Guide** Tells how to use InfoMaker to create reports, work with databases, transfer data between databases, create forms to update data, create queries to automatically retrieve data, and create applications to package reports and forms
- **Connecting to Your Database** Tells how to connect to a database from InfoMaker; describes how to set up, define, and manage database connections accessed through the Powersoft ODBC interface or one of the native Powersoft database interfaces

jConnect documentation

Sybase jConnect is a JDBC driver. The jConnect *Installation Guide* and *Programmer's Guide* are provided as online books.

PowerDynamo documentation

PowerDynamo is a suite of tools for building and managing database-hosted Web sites with dynamic content. The *PowerDynamo User's Guide* is included in the SQL Anywhere Studio documentation set.

Replication Agent documentation

The Replication Agent (Log Transfer Manager) enables replication with Sybase Replication Server. Documentation is incorporated into the Adaptive Server Anywhere *User's Guide* and *Reference Manual*.

SQL Remote documentation

SQL Remote is a message-based replication system for two-way server-to-laptop, server-to-desktop, and server-to-server data replication. The book *Data Replication with SQL Remote* is included in the SQL Anywhere Studio documentation set. In the Dynatext online books, this is part of the Adaptive Server Anywhere collection.

SQL Modeler documentation

SQL Modeler is a database design tool. The *SQL Modeler User's Guide* is provided as an online book.

Sybase Central

Sybase Central is the database and Web site management utility. Documentation is incorporated into the Adaptive Server Anywhere *User's Guide*.

Supporting documentation for Java

To assist you in taking advantage of the Java capabilities in Adaptive Server Anywhere, we are providing the following supporting documentation for Java. This supporting documentation describes the Java language, and is not specific to Adaptive Server Anywhere.

- **Thinking in Java** The full text of the book *Thinking in Java*, by Bruce Eckel, is provided in portable document format (PDF) form.

  To view PDF files you need the Adobe Acrobat Reader. The free Adobe® Acrobat® Reader allows you to view, navigate, and print PDF files across all major computing platforms. You can obtain a copy of the Adobe Acrobat reader from the Adobe Web site at the following address:

  ```
  http://www.adobe.com/
  ```

- **Java Reference material** A Windows Help file is provided which provides a full reference for the Java programming language.

Installing SQL Anywhere Studio

How you install SQL Anywhere Studio depends on the operating system you are using. You must ensure that you are properly licensed before installing the software.

❖ **To install SQL Anywhere Studio for Windows NT Windows 3.x or Windows 95:**

- Start the installation by running the *setup.exe* program in the root directory of the SQL Anywhere Studio CD-ROM. Follow the instructions in the setup wizard.

  The setup program allows you to choose which of the components you wish to install.

❖ **To install Adaptive Server Anywhere for Novell NetWare:**

- You must install Adaptive Server Anywhere for NetWare from a machine running Windows 95 or Windows NT.

❖ **To install SQL Anywhere Studio for UNIX:**

- The installation instructions depend on which UNIX operating system you are using. Consult the separate Read Me First booklet for more information.

Adaptive Server Anywhere

The Adaptive Server Anywhere relational database management system is at the heart of SQL Anywhere Studio. This section describes the kinds of task for which Adaptive Server Anywhere is designed, describes how Adaptive Server Anywhere fits with other members of the Adaptive Server family of products, and describes the technical hallmarks of the product.

Intended uses for Adaptive Server Anywhere

Adaptive Server Anywhere is designed for tasks that require a full-featured SQL database. Adaptive Server Anywhere is designed to operate in varied environments. It takes advantage of available memory and CPU resources, providing good performance in environments with ample resources. It also operates well in environments with more limited physical and database administration resources. Restricted resource environments include mobile computing environments, embedded database use, and workgroup servers.

Roles for which Adaptive Server Anywhere is ideally suited include the following:

- **An embedded database** Many applications require a database "behind the scenes". Personal Information Managers, document management systems —just about any application that stores information. Adaptive Server Anywhere is intended to be the database for these applications.
- **Mobile computing** Laptop and notebook computers are now common in many workplaces. Adaptive Server Anywhere is intended to be the SQL database for these computers. With SQL Remote replication, Adaptive Server Anywhere extends transaction-based computing throughout the enterprise.
- **A workgroup server** Workgroups ranging in size from a few people to a few hundred people in an organization may require a database server that they can share. Adaptive Server Anywhere is a multi-user server that can provide a high-performance database for workgroups, well-suited for (but not limited to) environments where administration and hardware resources are limited.

The Adaptive Server family

The members of the Adaptive Server family share many common features. As the Adaptive Server effort evolves, the Adaptive Servers will share more features, while maintaining their individual design and optimization characteristics.

- **Adaptive Server Anywhere** For mobile computing and workgroup use.
- **Adaptive Server Enterprise** For high-performance OLTP (Online Transaction Processing) and mixed workload enterprise computing.
- **Adaptive Server IQ** For data warehousing and decision support.

Sybase Central provides a common management tool for all Adaptive Servers.

Technological hallmarks of Adaptive Server Anywhere

Adaptive Server Anywhere 6.0 builds on the technological hallmarks of the previous version of this product:

- **Full SQL relational database management system** Adaptive Server Anywhere is a transaction-processing relational database management system (RDBMS), with full recovery capabilities, online backup, referential integrity actions, stored procedures, triggers, row-level concurrency control, a rich SQL language, and all the features you expect in a full SQL DBMS.
- **Economical hardware requirements** Adaptive Server Anywhere requires fewer memory and disk resources than other database management systems.
- **Easy to use** You can use Adaptive Server Anywhere without the extensive database administration efforts usually associated with relational database management systems.
- **Standalone and network use** Adaptive Server Anywhere can be used in a standalone manner, for example as an embedded database in a data-centric application, or as a network server in a multi-user client/server or three-tier environment. As an embedded database system, it can be started automatically by an application when required.
- **High performance** While Adaptive Server Anywhere is designed with simple administration and modest resource requirements in mind, it is a scalable, high-performance DBMS. Adaptive Server Anywhere can run on multiple processors, has an advanced query optimizer, and provides performance monitoring and tuning tools.

- **Industry standard interfaces** Adaptive Server Anywhere provides a native ODBC 3.0 driver for high performance from ODBC applications. It comes with Sybase jConnect for JDBC, and in addition supports Embedded SQL and Sybase Open Client interfaces.
- **A cross-platform solution** Adaptive Server Anywhere can be run on many operating systems, including Windows NT, Windows 95, Windows 3.x, Novell NetWare, Sun Solaris/Sparc, Hewlett Packard HP-UX, IBM AIX, and IBM OS/2.

  The components available on each platform may differ. For information, see "Availability of components" on page 14.

System requirements

SQL Anywhere Studio requires the following:

- **Operating system and CPU** You must have one of the following in order to run the Adaptive Server Anywhere database server:
  - Windows NT (3.51 or later), Windows (3.1 or later), Windows 95, Unix, or OS/2. For these operating systems, an Intel 486 or higher CPU, or compatible CPU, is required.
- **Memory** Adaptive Server Anywhere can run in as little as 3 Mb of memory. If you use Java in the database, Adaptive Server Anywhere requires 8 Mb of memory. Your computer must have this much memory in addition to the requirements for the operating system.

Network software requirements

If you are running an Adaptive Server Anywhere network server, you must have appropriate networking software installed and running.

The Adaptive Server Anywhere network server is available for Windows NT, Windows 95, Novell NetWare, OS/2, and UNIX operating systems. It is not available for Windows 3.x.

Adaptive Server Anywhere supports the following network protocols:

- TCP/IP
- IPX (not UNIX operating systems)
- NetBIOS (not UNIX operating systems)

The Adaptive Server Anywhere database server

There are two versions of the Adaptive Server Anywhere database server included in the product:

- **The personal database server** This server is provided for single-user, same-machine use: for example, as an embedded database server. It is also useful for development work.

  The name of the personal server executable is as follows:

  - On UNIX operating systems, it is *dbeng6*.
  - On Windows 3.x, it is *dbeng6w.exe*. The Win32s subsystem (version 1.30 or later) is required to run this executable.
  - On Windows 95 and Windows NT, and on other PC operating systems, it is *dbeng6.exe*.

- **The network database server** In addition to the features of the personal server, the network server supports client/server communications across a network. It is provided for multi-user use.

  The name of the network server executable is as follows:

  - On UNIX operating systems, it is *dbsrv6*.
  - On Windows 95 and Windows NT, and on other PC operating systems, it is *dbsrv6.exe*.
  - On Novell NetWare, the server is a NetWare Loadable Module (NLM) called *dbsrv6.nlm*.

Same SQL features in each version

The request-processing engine is identical in the two versions of the server. They support exactly the same SQL language, and exactly the same database features. The personal server does not support communications across a network, more than ten concurrent connections, or the use of more than two CPUs. Applications developed against a personal server work unchanged against a network server.

The Adaptive Server Anywhere administration utilities

In addition to the tools listed in "Welcome to SQL Anywhere Studio" on page 4, Adaptive Server Anywhere includes a set of applications to help you manage databases. These applications can run either on the same machine as your Adaptive Server Anywhere database server, or across a network against a network server.

These utilities are:

- **Sybase Central** An application for managing Sybase databases. It helps you manage database objects and perform common administrative tasks such as creating databases, backing up databases, adding users, adding tables, and monitoring database performance.

  Sybase Central requires the Windows NT (3.51 or later) or Windows 95 operating system.

- **Interactive SQL** Interactive SQL is an application that allows you to type a SQL statement and send it to a database. Because all interactions with databases use SQL statements, you can carry out any database operation from Interactive SQL.

- **Command-line utilities** A set of command-line utilities is provided for carrying out administration tasks such as backing up a database. Command-line utilities are useful for including in batch files for repeated use.

Availability of components

What components you have installed depends on which operating system you are using, what choices you made when installing the software, and whether you received the Adaptive Server Anywhere product or installed Adaptive Server Anywhere as part of another product.

For example, if you have received Adaptive Server Anywhere as part of another product, you may not have both versions of the database server.

Not all components are available on all operating systems. Here are some limitations:

- There is no personal server for NetWare, only a network server.
- There is no network server for Windows 3.1 or 3.11 (16-bit Windows operating systems), only a personal server. The personal server for Windows 3.x requires the Win32s subsystem, version 1.30 or later.

The Adaptive Server Anywhere program group

This section does not apply to users of UNIX operating systems. Installing Adaptive Server Anywhere under UNIX does not provide a program group.

For Windows operating systems and OS/2, after the software is installed you will have an Adaptive Server Anywhere **program group** on your desktop.

Under Windows 95 and NT 4.0, you can reach the program group by opening the Start menu and choosing Programs➤Sybase➤Adaptive Server Anywhere 6.0. For Windows 3.x, the program group in the Program Manager. For OS/2, the program group is on your desktop.

Program group items

The program group contains some or all of the following items. The items you see depend on the choices you made when installing the software.

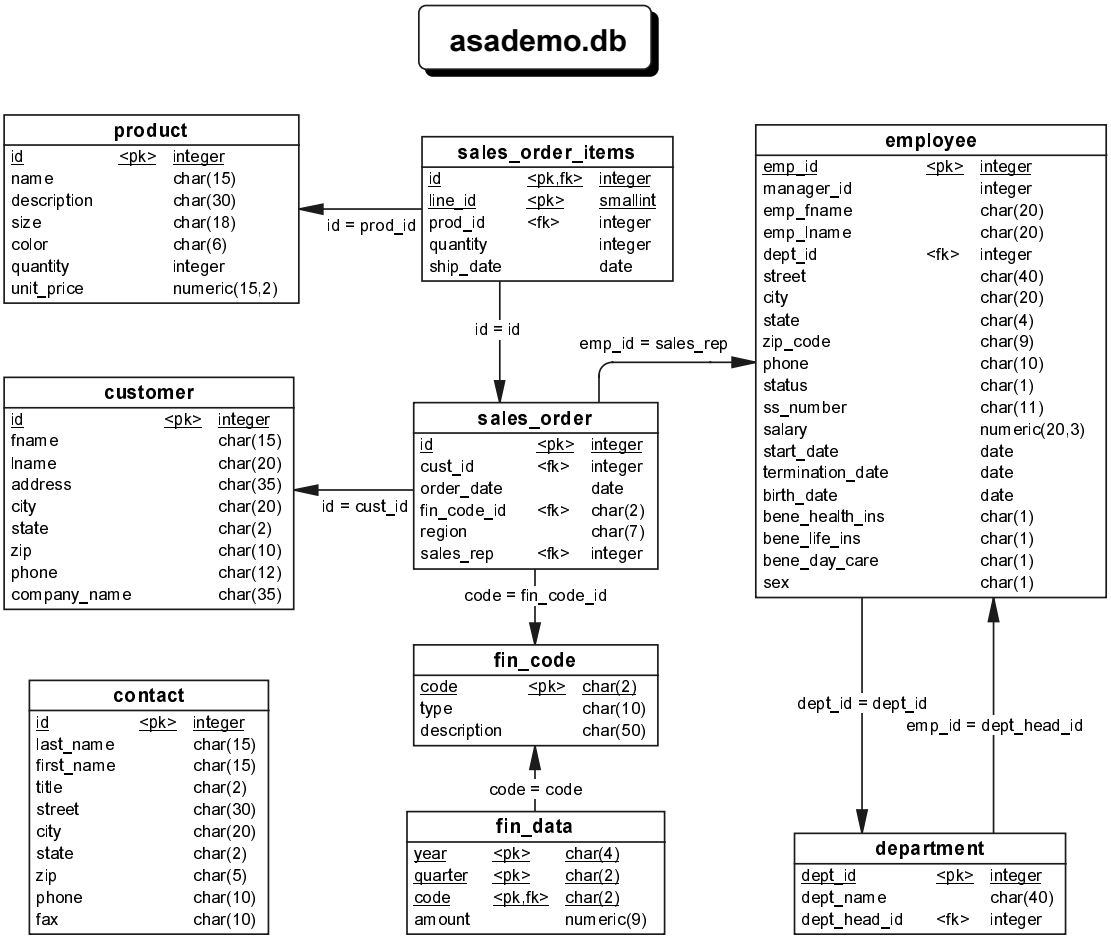
- **Adaptive Server Anywhere Manual** Opens the online documentation for Adaptive Server Anywhere.
- **Interactive SQL** Starts the Interactive SQL utility for sending SQL statements to a database.
- **Server Sample Database** Starts the network database server and loads the sample database.
- **ODBC Administrator** Starts the ODBC Administrator program for setting up and editing ODBC data sources.
- **Standalone Sample Database** Starts the personal server and loads the sample database.
- **Sybase Central** Starts the database administration utility.
- **Sybase Web** A Web page with information about Sybase products.

The sample database

There is a sample database included with SQL Anywhere Studio. Many of the examples throughout the documentation use this sample database.

The sample database is held in a file named *asademo.db*, and is located in your Adaptive Server Anywhere installation directory. The following figure shows the tables in the sample database and how they are related to each other.

The *psdemodb* database installed with InfoMaker has the same tables, plus some additional tables specific to InfoMaker.



The sample database represents a small company. It contains internal information about the company (employees, departments, and financial data) as well as product information (products) and sales information (sales orders, customers, and contacts).

Tables in the database

The tables in the sample database include the following:

- **Employee** Information about employees, such as name, salary, and location.
- **Department** Information about departments, such as manager and name.
- **Sales_order** Information about sales orders, such as date and the sales representative who made the order.
- **Sales_order_items** Each order consists of one or more items. Information about sales order items is held in a separate table.
- **Product** Information about products, such as price and quantity available.
- **Customer** Information about customers includes names and addresses.
- **Contact** Contacts are held separately from customers.
- **Fin_code** Each expense and revenue item has a financial code.
- **Fin_data** Quarter-by-quarter financial information about the company.