Managing Databases with Sybase Central

About this chapter

This chapter introduces Sybase Central, the Sybase database management tool. It provides a brief introduction to using Sybase Central for managing database properties.

Detailed instructions on using Sybase Central are available in the Sybase Central online help. The online help is arranged as a set of how to windows leading you step by step through database management tasks. In addition, context sensitive Help is available to explain the different interface elements.

Contents

Before you begin

Java behavior may differ
This chapter describes the Windows version of Sybase Central, which requires Windows 95 or Windows NT. The Java Edition of Sybase Central has similar but not identical features.

Sybase Central and database management

Sybase Central is a database management tool that exposes Adaptive Server Anywhere database settings, properties, and utilities in a graphical user interface. Sybase Central is also used for managing other Sybase products, including Adaptive Server Enterprise and PowerDynamo. This chapter describes only how to use Sybase Central with Adaptive Server Anywhere databases.

Database administration tasks typically fall into two categories:

♦   Tasks carried out by sending SQL statements to the database server.

♦   Tasks carried out by Adaptive Server Anywhere utilities.

Sybase Central provides an easy-to-use interface for both kinds of tasks.

Using Windows 95 or NT

For users with access to Windows 95 or NT, Sybase Central will make your database administration tasks easier and more efficient.

Other systems

For Adaptive Server Anywhere users not running Windows 95 or Windows NT 3.5.1 or later, all the tasks you can carry out with Sybase Central can be carried out using Interactive SQL to send SQL statements to the database server, and using the command-line versions of the Adaptive Server Anywhere utilities.

☞ For more information about Adaptive Server Anywhere utilities, see "Database Administration Utilities" on page 63 of the book *Adaptive Server Anywhere Reference Manual*.
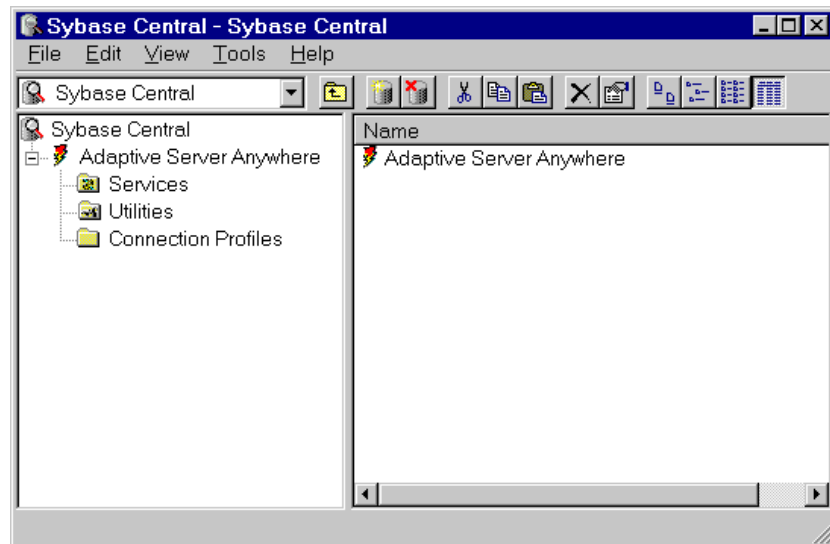
Navigating the main Sybase Central window

This tutorial introduces the Sybase Central user interface. It also describes how to start Sybase Central, how to connect to a database, and how to view a database schema in Sybase Central.

After completing the tutorial you should feel comfortable exploring Sybase Central by yourself.

Start Sybase Central

♦ To start Sybase Central in Windows 95 or Windows NT 4.0, select Start➤Programs➤Sybase➤Sybase Central.

♦ To start Sybase Central from Windows NT prior to Version 4.0, double-click Sybase Central in the Adaptive Server Anywhere Program Manager group.

The main Sybase Central window appears.

The Sybase Central window is modeled after the Explorer in Windows 95 and Windows NT 4.0. The main window is split into two vertically-aligned panels. The left panel displays a hierarchical view of database objects or **containers** in a tree-like structure. A container is a database object that can hold other database objects, including other containers. Sybase Central is at the root of the tree. Plug-ins for Sybase Central, such as the Sybase Adaptive Server Anywhere database management system, occupy the first level after the root level.

The right panel displays the contents of the container that has been selected in the left panel. The contents of a container can be viewed in the right panel in several ways: as large icons, small icons, as a list, and alongside their associated details. You can switch between these views by clicking the buttons on the Tool Bar immediately below the Window menu.

Connecting to a database from Sybase Central

This section describes how to connect to the sample database using the user ID **DBA** and the password **SQL**.

> **Logging on**
> The sample database contains the user ID **DBA**, a user with full administration and resource creation rights. The password for this user is **SQL**.
>
> By default, all newly-created Adaptive Server Anywhere databases contain this user ID and password. It is the responsibility of the database administrator to provide the desired level of security by changing passwords and creating other user IDs.

❖ **To connect to the sample database:**

1   Start the sample database (*asademo.db*) by selecting the Personal Server Sample menu item from the Sybase Adaptive Server Anywhere 6.0 menu. Select Start➤Programs➤Adaptive Server Anywhere 6.0➤Personal Server Sample.

    The Adaptive Server Anywhere server and sample database must be running for any of the following steps to work properly.

2   From the same Sybase Adaptive Server Anywhere 6.0 menu, start Sybase Central by clicking the Manage Adaptive Server Anywhere menu item.

3   On the Sybase Central toolbar, select Connect➤Adaptive Server Anywhere from the Tools menu.

4   Enter the user ID **DBA** and the password **SQL**, and click OK.

You can save connection parameters as **connection profiles** to avoid retyping often-used connection parameters. For information about connection profiles, search the Sybase Central online help index for Connection Profiles.

Viewing a database schema

A database **schema** is the collection of all objects in the database. Sybase Central displays a database schema as a hierarchy of containers and their contents. This section describes how to view the schema of a database.

Expanding a
database container

There are a variety of methods for viewing the objects in a database, including the following.

♦   Click a container in the left panel to select that container. The right panel then shows the contents of the selected container. Among the contents of the server container are all the databases you've attached to, including ones you have not yet connected to by entering a user ID and password.

♦ Click once on the plus or minus sign next to containers in the left panel to expand or collapse the hierarchical tree of objects. This allows you to view database objects at levels below the level of the currently selected container. If no plus or minus sign appears next to a container it contains no objects extending beyond the level of that container.

♦ Press the plus or minus keys on the numeric keypad when the selected container has a plus or minus sign beside it. This expands or contracts the container.

♦ Using the right mouse button, click on an object in the right panel and a pop-up menu is displayed. Choose the Open menu item. If the object is a container object—one that can contain other objects such as folders— this causes the object to be selected in the left panel, and displays the contents of that container in the right panel.

♦ Double-clicking a container in either panel expands the tree in the left panel and displays the contents of the newly-selected container in the right panel.

♦ Double-clicking on the container in the left panel expands or contracts the object's hierarchy in addition to selecting it and displaying its contents in the right panel.
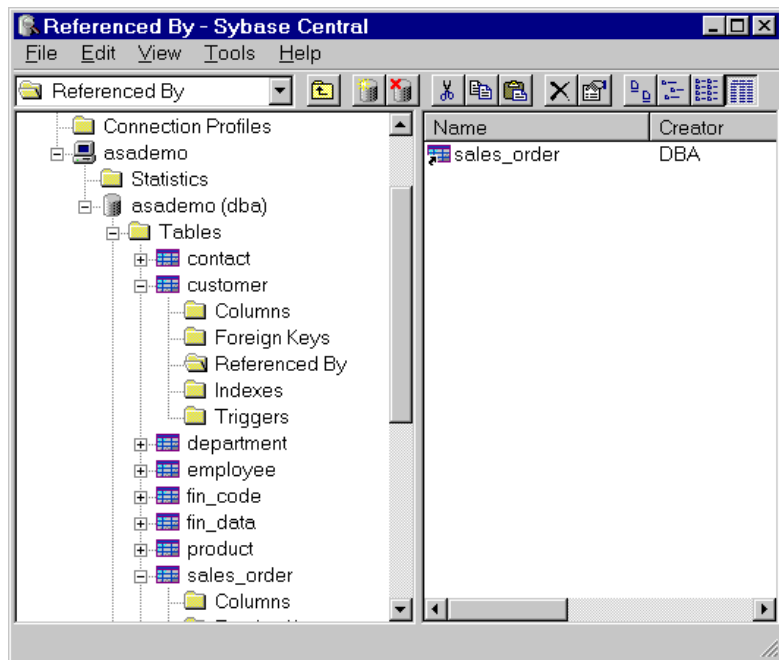
The left panel displays container objects only. The right panel displays the contents of the container object selected in the left panel.
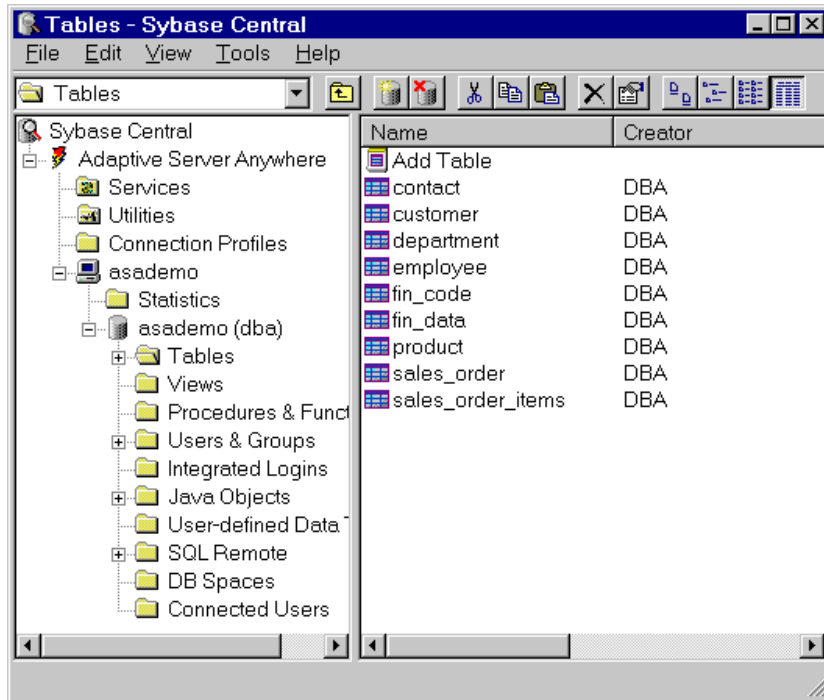
Viewing the tables
in a database

The following illustrates the steps taken to examine the contents of a table folder in a database container.

❖ **To examine the tables in a database:**

1   Select the Tables folder. You may have to expand the server and database objects in the hierarchical tree in the left panel in order to view the Tables folder.

2   Each table in the Tables folder is itself a container. Select a table in the left panel to reveal the contents of that table in the right panel. Each table object contains folders for columns, foreign keys, relations, indexes, and triggers.

3   Expand the table object in the left panel to reveal its contents in the hierarchical tree. Select each object in the table container by clicking on it once in the left panel. The right panel will display the contents of the table object selected in the left panel.

Viewing database object properties

The properties of database objects such as a database or stored procedures, can be viewed using any of the following methods. In all cases, a tabbed dialog box called a property sheet will be displayed, revealing all editable and non-editable properties.

♦ Using the right mouse button, click on a database object. From the pop-up menu choose Properties.

♦ While holding the Alt key, double-click a database object in the right panel.

♦ With a database object selected in the right panel, press the Alt and Enter keys simultaneously.

♦ With a database object selected in either the left or right panel, choose Properties from the File menu.

You can navigate a database by clicking or double-clicking in either panel. Explore the contents of the other folders in the database. Every Adaptive Server Anywhere database contains individual folders for the following:

♦ **Tables**   Base tables stored in the database.

♦ **Views**   Computed tables, stored in the database as a query and evaluated when accessed.

♦ **Procedures & Functions**   for using a module-based language consisting of SQL procedures.

♦ **User & Groups**   for administering who is permitted to use the database.

♦ **Integrated Logins**   for enabling users to connect to a database using their Windows or Windows NT user name and password.

♦ **Java Objects**   for building logic and rich data types into your database.

♦ **User-defined Data Types**   for creating non-standard data types.

♦ **SQL Remote**   for administering replication of data in the database.

♦ **DB Spaces**   for creating more than one *.db* file for the database.

♦ **Connected Users**   for monitoring current connections to a database.

You should explore the sample database until you are comfortable locating database objects in the Sybase Central main window.

Adding a table to a database

This tutorial takes you through the steps adding a table to the sample database. This task includes adding columns to an existing table. The tutorial covers the following interface skills:

♦ Using the table editor to add tables and columns

♦ Using property sheets to add new object properties

♦ Using drag-and-drop techniques to add new objects

To add a table to your database you define the name and properties of your table its columns using a tool called the table editor. The table editor displays the table columns and their properties in a spreadsheet-like grid. When these definitions are saved, the table is created.

Creating tables and adding columns in Sybase Central

Tables are added or edited using the table editor, which displays column properties in a grid: column properties are displayed along the top of the grid while the columns are identified by rows, one for every column in the table.

In this tutorial we create a table in the sample database. The new table will describe different offices for the sample database.

❖ **To create a table and columns:**

1 Select the Tables folder in the left panel. This can be done by first expanding the server and database containers, then clicking on the Tables folder.

2 Double-click the Add Table object in the right panel, causing the Table Editor to appear.
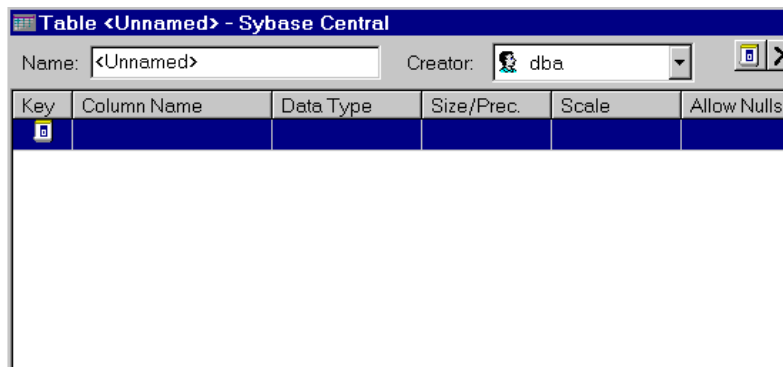
3   Type the name for the table in the Name text box in the upper left corner of the table editor. In this case, use the name **office**.

4   Click in the Column Name column of the first row to enter the name of the first column in the table. Use the name **office_id**.

5   Under the Data Type column choose **smallint** from the drop down list of standard data types.

6   Do not make any entries under the Size/Precision, Scale and Comments columns. Ensure the entry under the Allow Nulls column is left unchecked so this column can later be used as a primary key.
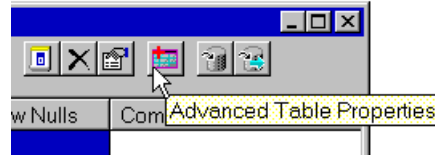
7   Click the Advanced Table Properties button on the toolbar and enter the comment **Company offices** in the Comment text box. Comments are an optional property.

8   Finish creating the table by clicking the Save and Close toolbar button. The table editor disappears and the **office** table is added as another table in the Tables folder. It can be viewed in the right panel by selecting the Tables folder in the left panel.

The following section describes how to edit an existing column and add a primary key to the table using the table editor.

Editing existing tables using the table editor

This section describes how to edit an existing table. The following steps will add a primary key to a table created in the previous section named office. This will be accomplished by turning a column named office_id into a primary key. This column holds a numerical ID for each office.

❖ **To edit an existing table using the table editor:**

1   In the left panel, select the **office** table. You may have to expand the server, database and the Tables containers to view the office table.
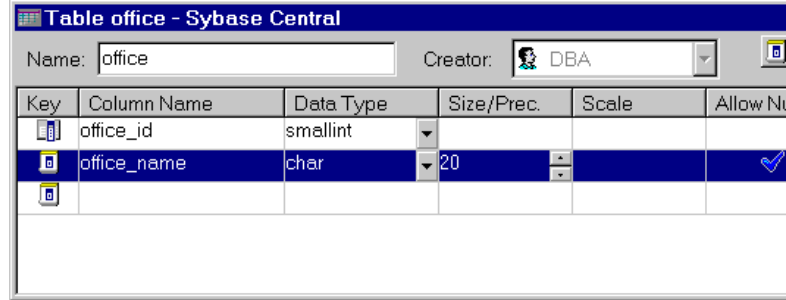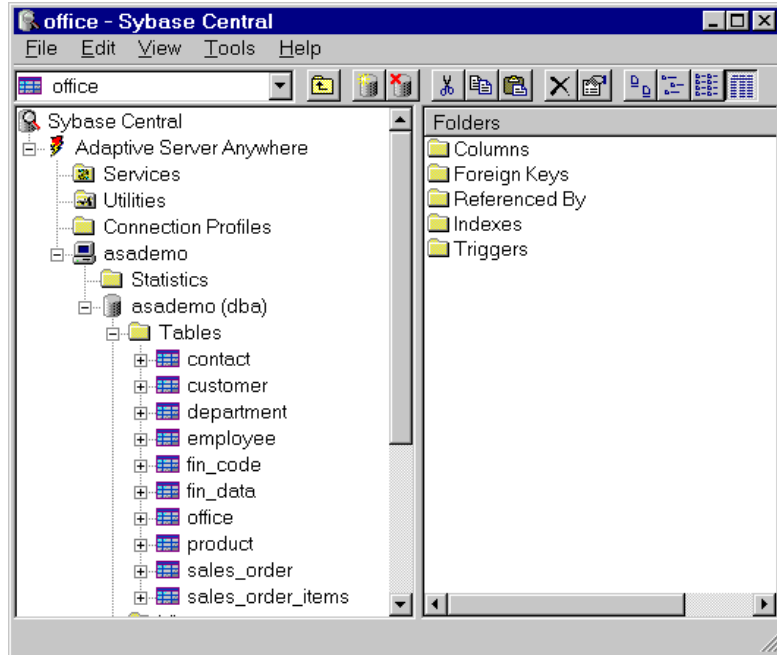
2 Using the right mouse button, click on the selected office table to display the pop-up menu for the table object and select the Edit Columns menu item (the same menu item is also available under File menu on the menu bar). This causes the table editor to appear, displaying one row for every column in the table.

3 Click once on the **office_id** row, under the Key column. The icon changes to show the column named **office_id** is now also the primary key for the table named office.

Primary key conditions
If a check box appears under Allow Nulls column, or if duplicate values are stored in the **office_id** column, the column cannot be changed to a primary key.

---

4 Click the Save toolbar button to commit the changes to the office table.

5 Click the Add Column toolbar button to create another row in the table editor grid. This adds another column in the office table.

6 Edit the properties of the new column so that it's name is **office_name**, its type is char, its size is 20 and its value can be equal to null.

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7   Click the Save and Close toolbar button to commit the changes and close the table editor.

The column is now present in the database, although it has no data. Sybase Central does not include facilities for data entry.

Dragging a column to a new table using Sybase Central

This section describes how to add a column to the office table created in a previous section to hold the address of each office. The customer table in the same sample database already has an address column, which can be copied and added to the office table. These steps will copy the attributes, including the name, of a column in one table to another table, but will not copy data from one table to another.

❖ **To drag a column to a table:**

1   In the left panel, click and expand the customer table to expose the Columns folder. You may have to expand the database container and the Tables folder to do this.

2   Select the Columns folder. The right panel will adjust to display the columns in the customer table.

3   Click the address column in the right panel, and drag it to the office table in the left panel. The Copy Column Definition window is displayed.

4   Click OK to add the column to the office table. It will have the same attributes as the address column of the customer table but will contain no data.

5   To see the new column, select and expand the office table in the left panel, then select the Columns folder. The right panel will display the columns of the office table. The newly-added address column should be visible in the right panel.

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6   To see the attributes of the address column, double-click the address column in the right panel. The address properties sheet appears.
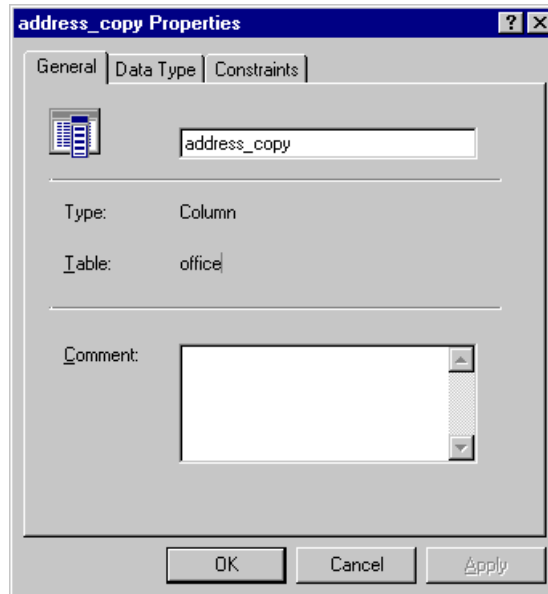
7   Change the name of the column to **office_address** by typing this in the Name text box and click on apply to accept the change. This modification applies to the address column of the office table only. Once a column has been copied there is no longer any connection between the original column and the new column.

Notes   ♦ Drag and drop is available for several kinds of database management tasks. For example, you can add users to user groups by dragging, or drag a table to another table to create a foreign key relationship.

♦ Property sheets are used extensively in Sybase Central. For example, property sheets are used for users, stored procedures and individual columns.

♦ Add Object icons are used to add other objects besides tables to a database. Stored procedures, triggers, indexes, users, user groups, and columns are among the database objects that you can add with an Add Object icon.

♦ Pop-up menus are available throughout the Sybase Central interface by clicking on objects or in windows using the right mouse button. Showing an object's pop-up menu is a convenient way of finding out what actions can be carried out on an object.

Deleting tables using Sybase Central

Tables can be deleted, or dropped, from a database. The office table created in a previous section can be dropped from the sample database, restoring the database to its original state.

❖ **To delete the office table from the sample database:**

1   Using the right mouse button, click the office table.

2   Select Delete from the pop-up menu. A Popup appears allowing you to accept the deletion.

Viewing and editing procedures

Stored procedures are kept in a folder within the database container object. This tutorial shows how to view and alter the contents of a procedure, and how to create new procedures using the Sybase Central code editor.

The Sybase Central code editor is a separate window for displaying and editing the code of triggers, procedures, and views.

Beyond text-editing functions, it provides:

♦   Automatic syntax highlighting.

♦   Automatic formulation of DDL statements.

♦   Unlimited Undo and Redo.

♦   Ability to find and replace text, and to jump to specific line numbers.

♦   Ability to execute the DDL code against the database.

Viewing stored procedure code with Sybase Central

There are several stored procedures included in the sample database. The following steps explain how to view and edit stored procedures.

❖   **To view the contents of a procedure:**

1   Select the Procedures & Functions folder from the sample database in the left panel. You may have to expand the database container to do this.

2   In the right panel, double-click **sp_customer_list** in the right panel. The Sybase Central code editor appears, displaying the text of the procedure.

```
Procedure 'sp_customer_list' (Watcom-SQL) - Sybas...
File  Edit  View  Search  Help

alter procedure
"dba".sp_customer_list()
result("id" integer,company_name char(35))
begin
  select "id",company_name from customer
end

6 Lines          Line: 6  Col: 4
```

3   A call to this procedure returns a set of customer IDs and company names from the Customer table.

Viewing procedures in Watcom-SQL or Transact-SQL

Adaptive Server Anywhere supports two syntaxes for stored procedures. The native Adaptive Server Anywhere syntax (Watcom-SQL) is based on the ISO draft standard. Adaptive Server Anywhere also supports the Sybase Transact-SQL syntax. You can enter procedures in either syntax, and Adaptive Server Anywhere can automatically translate between the two syntaxes.

Not all procedure statements may translate. Untranslated statements appear as comments in the translated procedure.

❖ **To view the alternative syntaxes of a procedure:**

1   With the right mouse button, click on the **sp_customer_list** procedure. A pop-up menu appears.

2   Click Open to view the procedure in the syntax in which it was entered. This is the syntax in which the procedure is stored in the database.

3   Click Open as Watcom-SQL to view the procedure in Watcom-SQL syntax.

4   Click Open as Transact-SQL to view the procedure in Transact-SQL syntax.

Notes

♦   The Sybase Central code editor is used to display and create views and triggers as well as stored procedures.

Setting
permissions on
procedures

Stored procedures have permissions associated with them. In order to
execute a procedure you either need to be granted permission to execute a
procedure, or you need to be a member of a user group that has permission to
execute the procedure.

❖ **To view and alter the permissions on a procedure:**

1   Using the right mouse button, click on the sp_customer_list procedure.
    A pop-up menu appears.

2   Select Properties from this menu. The properties sheet for
    sp_customer_list appears.

3   Click the Permissions tab to see which user IDs have been granted
    permissions on this procedure. Currently none do, as the only user for
    the sample database is DBA, who automatically has execute permissions
    as owner of the procedure.
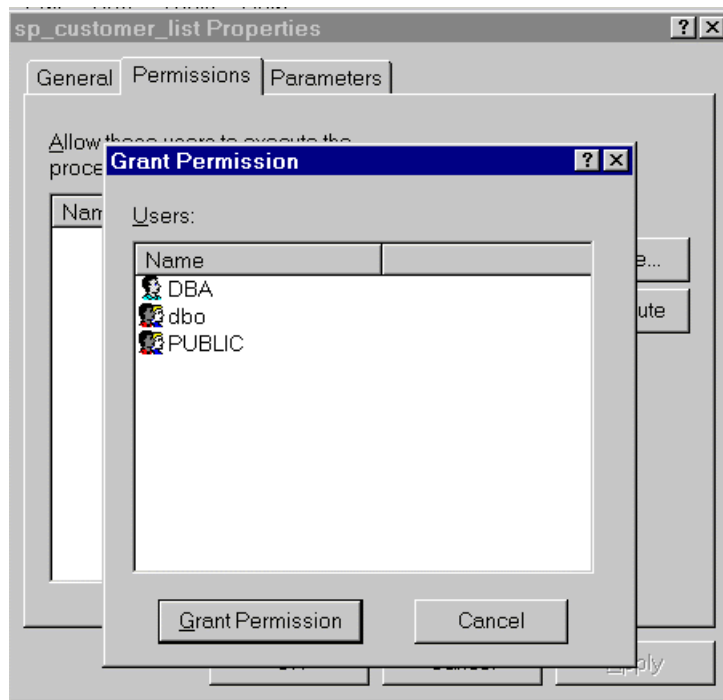
4   Click the Grant Execute button to grant users or groups permission to
    execute this procedure. Grant permission to execute this procedure to the
    Public user group by selecting the Public user group icon and clicking
    the Grant Execute button.

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5   Click the OK button to accept the changes to the **sp_customer_list** permissions or Cancel to undo the changes.

Managing users and groups

In Adaptive Server Anywhere, both users and groups are objects within the database. However, groups are also containers, capable of containing users (making users a member of that group) and other groups.

In this structure, permissions granted to a group are inherited by those users and groups which have membership in the group. Adaptive Server Anywhere allows you to create users and groups permitted to use a database and grant membership to groups. Also, users and groups can be members of multiple groups.

This tutorial demonstrates how to create a group for the database, create an individual user, and make the user a member of the group.

Adding a group to the database

In this section we add a sales group to the sample database.

❖ **To add a group to a database:**

1   Select the Users & Groups folder in the left panel. You may need to expand the sample database container in the left panel to do this.

2   Double-click Add Group in the right panel. The Create a New Group wizard appears.

3   Type the name Sales in the top text box. This is the name of the user group.

4   Enter a password (for example, Sales), confirm it by entering it again, and click Next to show the following page of the wizard.

5   Check the Resource authorities option, and uncheck the DBA and Remote DBA option, for this group. Then click Next to show the following page of the wizard.

6   Click Finish to create the new group.

The sales group appears in both panels. Groups are container objects, and so appear in the left panel.

Adding a user to the database

This section describes how to add a user to a database.

❖ **To add a new user to the sample database:**

1   Select the Users & Groups folder in the left panel. You may need to expand the sample database container in the left panel to do this.

2   Double-click Add User in the right panel. The new user wizard appears.
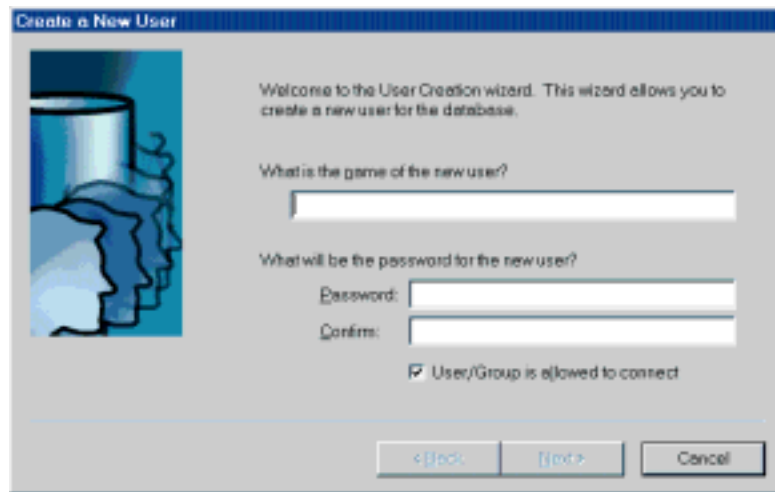
3   Type the name Sandy in the top text box. This is the user ID for the new user.

4   Type a password, and confirm it by retyping it. For example, you could use the password Sandy. Then click Next to show the following page of the wizard.

5   Follow the instructions to complete the wizard choosing the default options.

6   An icon appears in the right panel, showing the new user. There is no icon in the left panel, as individual user ID's are not containers.

Adding a user to a group

Sybase Central provides two ways to add a user to a group. You can use the individual user's Properties sheet, which has a Membership tab. Or you can use a drag and drop method.

In this section we add two users to a group using drag and drop.

❖ **To add users to a group:**

1   Ensure that the Sales group is shown in the left panel and that the users DBA and Sandy are shown in the right panel. You may need to select the Users & Groups folder to do this.

2   Click Sandy to select this user.

3   While holding down the Ctrl key, click DBA to select this user as well.

4   Click and drag the users to the Sales group in the left or right panel.

5   Select the Sales group in the left panel to show its members.

Restoring the sample database to its original state

To restore the database to its original state, you can delete the Sales group and the user Sandy. For each of the two icons:

1   Using the right mouse button, click the icon.

2   Select Delete from the pop-up menu and acknowledge the deletion.

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Backing up a database using Sybase Central

Sybase Central includes a set of database utilities for carrying out common database administration tasks. Wizards are provided to help carry out the task step-by-step.

To see all the database utilities provided with Sybase Central, click the Database Utilities folder at the top of the left panel. A list of the utilities appears in the right panel.
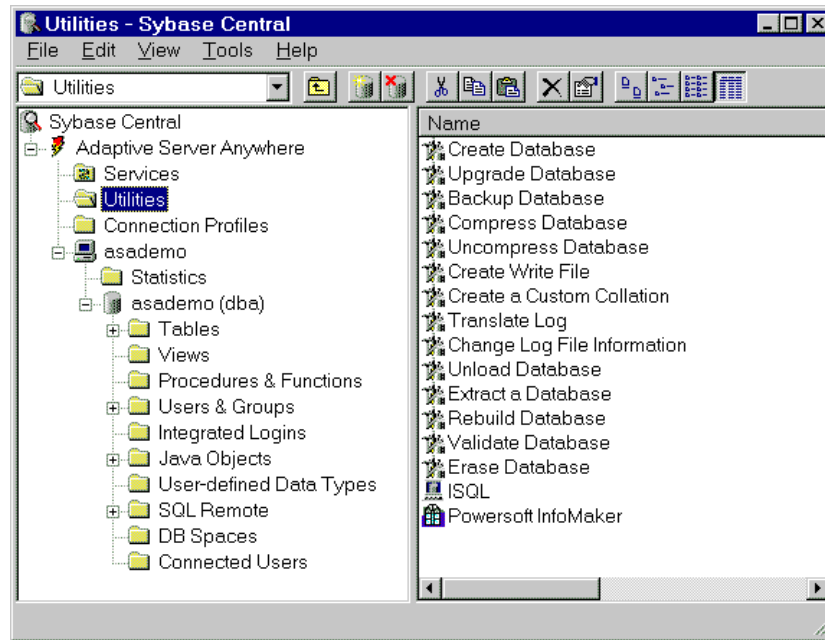
Some of the utilities are used on database files, while others can be used with running databases. Those utilities that can be used on a running database are shown on a pop-up menu by right-clicking on the database icon. In this lesson, we back up the sample database.

❖ **To back up a running database**

1   Using the right mouse button, click the sample database and select Backup from the pop-up menu. The Backup Wizard appears.

2   You do not need to alter anything on the first page of the wizard. Click Next to move to the second page.

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3   Type a directory in the text box indicating where you wish to back up the database to. As this is a tutorial only, you may wish to choose a temporary file directory such as *c:\temp*.

4   Check the Main Database File and Transaction Log File options, and uncheck the Database Write File option. Then click Next to take you to the next page of the Wizard.

5   Select the option Continue To Use The Original Transaction Log from the three options presented, and click Next to take you to the next page of the Wizard.

6   Review the choices you have made, and click Finish to back up the database. A window displays the progress of the backup.

Wizards are available for several other database administration tasks. You may wish to try creating a database by selecting the Database Utilities folder in the left panel and then double-clicking the Create Database tool in the right panel.

Using the Sybase Central online help

The main documentation for Sybase Central is available as online help separate from the main Adaptive Server Anywhere online documentation. This tutorial introduces you to the Sybase Central online help.

The online help is presented as a set of **topics**. You can find topics about a subject of interest using the Contents, the Index, or by searching the text of the online help.

Using the online help Contents

❖ **To see the Sybase Central online help contents:**

1   Select Help➤ Adaptive Server Anywhere Plug-in Help from the Sybase Central Help menu. The Sybase Central Help Topics window appears.

2   The Help Topics window has three tabs: Contents, Index, and Find. Click the Contents tab.
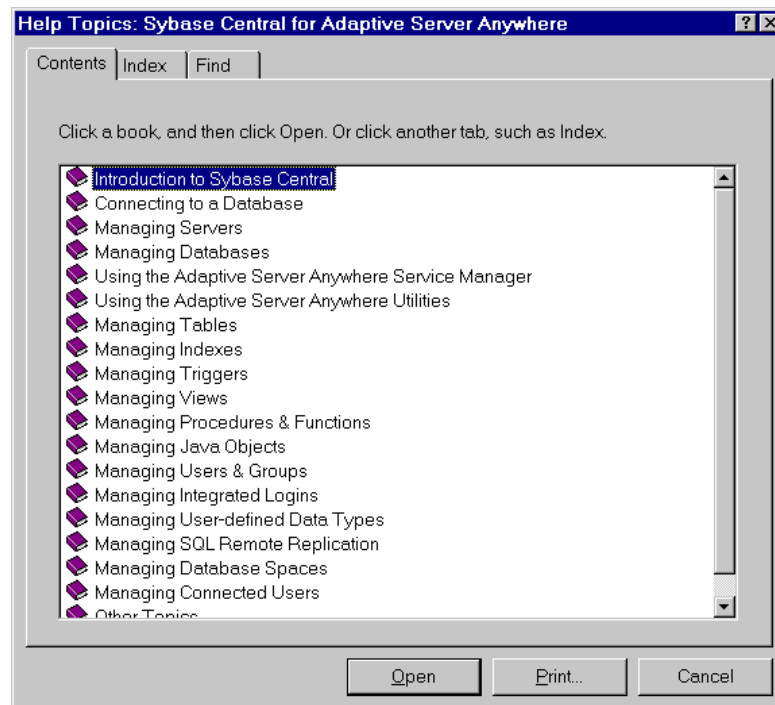
The online help Contents are displayed as a set of books. To open a book, click the book and click Open or double click a book. The following example illustrates the organization of the help topics.

❖ **To find out how to add a group:**

1   With the Contents tab showing on the Help Topics window, click Managing Users & Groups to open the book.

2   Click Creating A New User Or Group to display the topic.

Notes

♦   Many topics have a Related Topics link at the end of the topic, which can take you to related topics in the Sybase Central online help and in the online version of this book.

♦   You can use the Browse buttons (with arrows) to take you back and forward through related topics.

♦   You can configure some aspects of the appearance of the online help by clicking Options.

♦   Clicking Help Topics opens the Help Topics window again.

♦   Click on Adaptive Server Anywhere Master Help in the Help menu and select the Adaptive Server Anywhere User's Guide.

You should spend some time browsing through the Contents window to familiarize yourself with the online help organization.

Using the online help Index

The Index provides an alternative way to search for information in the online Help.

This section shows how to find information about creating users using the index.

❖ **To find a topic using the Index:**

1   Open the Help Topics window, and click the Index tab.

2   Type "users" in the box numbered 1. In box 2, the first user entry is highlighted.

3   The index is a two-level index. Click Creating under Users, and click Display to show the topic.

Notes

If there is more than one topic indexed under the entry you display, a list of topics is displayed.

Searching the text of the online help

If you cannot find the information you are looking for using the Contents or the Index, you may want to try searching the text of the online Help.

❖ **To find a topic by searching text:**

1   Open the Help Topics window, and click the Find tab.

2   When you have built your word list, type "user" in the box numbered 1. As you type, a list of matching words is shown in the box numbered 2.

3   Click user in box 2.

4   Click Creating a new user Or Group in the topic list in box number 3, and click Display to show the topic.