# SQLBase Starter Guide

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# Contents

# Chapter 1

# Introducing SQLBase

This chapter offers a general discussion of some of the features of SQLBase. Additionally, it describes the two SQLBase packages, SQLBase Server and SQLBase Desktop, and their respective components.

# What's new in SQLBase

SQLBase standard offers a number of features, including:

- Log optimization for non-updating transactions.
- Support for single file database of 512 gigabytes for 32 bit Window operating systems.
- Enhanced server security that controls which user can perform server administrative operations.
- Advanced password validation techniques that protect against unauthorized data connections made by password "guessing" programs, and defend against denial of service attacks.
- Dependent NLMs that load automatically when the server is started and unload automatically when the server is stopped.

In addition, the medium- and high-encryption editions of SQLBase include the following features:

- Database page encryption prevents unauthorized reading of data by viewing data files directly.
- Data page alteration protection prevents unauthorized changes to data by editing data files directly.
- Transmission security prevents unauthorized viewing of data directly as it is transmitted across a communication medium.

**Note:** Features vary depending upon the SQLBase edition.

# SQLBase platforms

SQLBase is available on these platforms:

- Windows 98, ME, NT, 2000, and XP, and Netware 5 and 6

SQLBase supports multiple users with remote communication through a network as well as local communication.

# SQLBase packages

SQLBase comes with a single installation package that installs the version of SQLBase that you have licensed. Gupta offers two SQLBase versions: SQLBase Desktop (single-user) and SQLBase Server (multi-user). They are available in three editions offering various levels of security:

- Standard with no encryption

- 56-bit encryption

- 128-bit encryption (available only as an Embedded Deployment Kit with the multi-user version)

This section describes each of these versions and their components.

## SQLBase Server

SQLBase Server is a multi-user database server that runs on Windows 98, ME, NT, 2000, and XP, and Netware 5 and 6. SQLBase is licensed based on concurrent user connections and comes in the following user bands: 5-, 10-, 25-, 50- and unlimited users. The following table describes the options in the SQLBase Server package:

| Component option | Description |
| --- | --- |
| Windows 32-bit Server | SQLBase Server is a 32 bit, multi-user database server program that can communicate both with local and remote client applications. <br><br> This option also includes the Connectivity Administrator and SQLBase Server Monitor (SSM). |
| Client Software | The Client Software contains the following components: <br><br> • Communication libraries <br><br> Front-end programs communicate with the server through support programs called communication libraries. <br><br> • Connectivity Administrator (32 bit clients and servers only) <br><br> A tool for editing your SQL.INI file. <br><br> • DBError <br><br> A utility for looking up SQLBase error messages. Provides the error text, reason for the error, and suggested solutions. This is typically used during the application development process. <br><br> • SQL/API <br><br> The application programming interface. Included with the SQL/API is sample source code you can use to learn how to utilize the SQL/API. |

| Component option | Description |
|---|---|
| Client Software *(continued)* | • SQLTalk<br><br>A front-end interface for SQL. You can run SQLTalk from Windows 98, ME, NT, 2000, and XP.<br><br>• Release notes and certification description |
| SQLConsole DBA utility | SQLConsole is a database administration and monitoring tool for SQLBase Servers and databases. From a single Windows desktop, SQLConsole lets you perform administrative tasks for a local SQLBase server and all the SQLBase servers on a network. |
| Gupta Books Online | The Gupta Books Online collection is created using Adobe Acrobat and lets you perform full-text indexed searches across the entire document suite, navigate the table of contents using the expandable/collapsible browser, or print any chapter.<br><br>Open the collection by selecting the Gupta Books Online icon from the **Start** menu or by double-clicking on the launcher icon in the program group. |
| SQLBase ODBC Driver | An industry-standard ODBC 3.5 Driver, fully supporting multi-threaded applications. |
| C Programmer's interface | SQLBase C example programs and interface. |
| C++ Programmer's Interface | SQLBase C++ example programs and interface. |

## About SQLBase Server for NetWare

SQLBase Server for NetWare is a NetWare Loadable Module (NLM). An NLM is a program that you can load into NetWare server memory while the NetWare server is running. When loaded, an NLM is part of the NetWare operating system. When unloaded, an NLM releases the memory and resources that were allocated to it.

Gupta provides two versions of the SQLBase Server for NetWare, SQLBase Server for Netware 4.x or 5.x, supporting both NetWare Bindery database and NetWare Directory Services (NDS).

# SQLBase Desktop

SQLBase Desktop is a single-user database server that runs on Windows 98, ME, NT 4, 2000 and XP. It is licensed by machine, and comes in the following machine packs: 1-, 5-, and 25-machine packs. The following table describes the installation options in the SQLBase Desktop package:

| Component option | Description |
|---|---|
| Desktop Server (32 bit) | SQLBase Server is a 32 bit database server program that runs under Windows 98, ME, NT 4, 2000 and XP. It can communicate both with local and remote client applications. <br><br> Client software includes: <br><br> • Communication libraries <br> Front-end programs communicate with the server through support programs called communication libraries. <br><br> • Connectivity Administrator <br> A tool for editing your SQL.INI file. <br><br> • SQL/API <br> The application programming interface. Included with the SQL/API is sample source code you can run to learn how the SQL/API handles certain SQLBase features. <br><br> • SQLTalk <br> A front-end interface for SQL. You can run SQLTalk from Windows 98, ME, NT, 2000, and XP. <br><br> • Release notes and certification description |
| SQLConsole DBA Utility | SQLConsole is a database administration and monitoring tool for SQLBase servers and databases. From a single Windows desktop, SQLConsole lets you perform administrative tasks for a local SQLBase server and all the SQLBase servers on a network. |

| Component option | Description |
|---|---|
| SQLBase Programmers Interface | Contains the SQL/API software and SQLBase ++. The SQL/API is a language interface that lets you develop a client application that uses SQL. You embed SQL/API functions within your C program, which allows you to use SQL without giving up the power and flexibility of either programming language.<br><br>You can create and run SQL/API applications on any of the server platforms.<br><br>SQLBase ++ is a C++ based source library for application development. |
| SQLBase ODBC Driver | A standard ODBC 3.5 driver that fully supports multi-threaded applications. |
| Gupta Books Online | The Gupta Books Online collection is created using Adobe Acrobat and lets you perform full-text indexed searches across the entire document suite, navigate the table of contents using the expandable/collapsible browser, or print any chapter.<br><br>Open the collection by selecting the Gupta Books Online icon from the **Start** menu or by double-clicking on the launcher icon in the program group. |

# Helpful resources

*Gupta Books Online.* The Gupta document suite is available online. This document collection lets you perform full-text indexed searches across the entire document suite, navigate the table of contents using the expandable/collapsible browser, or print any chapter. Open the collection by selecting the Gupta Books Online icon from the **Start** menu or by double-clicking on the launcher icon in the program group.

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Our Web site also includes information on training, including course descriptions, class schedules, and certified training partners.

*SQLBase Documentation Set.*

- *SQLBase Database Administrator's Guide*

    This book contains information for DBAs creating and maintaining SQLBase databases.

- *SQLBase SQL Language Reference*

This book describes the SQL commands that you can execute in applications such as SQLTalk.

- *SQLBase SQLTalk Command Reference*

  This book describes the SQLTalk interface and commands.

- *SQLBase SQL Application Programming Interface Reference*

  This book is for application developers using Gupta's SQL/API to write programs that access SQLBase databases.

- *SQLBase Advanced Topics Guide*

  This book includes sections on database design, SQLBase internals, and performance.

- *SQLConsole Guide*

  This book describes how to use SQLConsole, an online database monitoring and maintenance tool. SQLConsole also has an extensive on-line help facility.

- SQLTalk Help System

  This online documentation provides SQLBase users with a context-sensitive help system.

## Send comments to...

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# Chapter 2

# Configuring SQLBase

This chapter provides step-by-step instructions for configuring SQLBase. Topics include:

- Connectivity Administrator
- SQL.INI file
- NetWare NDS configurations
- Starting and stopping the server
- Uninstalling SQLBase
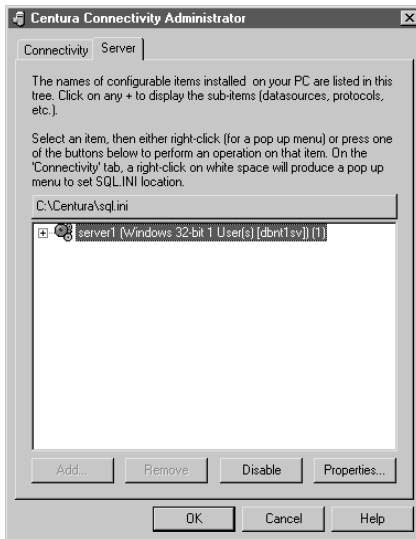
# Connectivity Administrator

The Connectivity Administrator lets you edit your SQL.INI file, adding databases and routers. Using this tool, you can set the configuration for SQLBase Server, including:

- Setting the options for a SQLBase server
- Enabling and disabling communication protocols
- Adding or removing a database name
- Viewing a list of database names

The Connectivity Administrator detects all relevant software installed on your computer, including network protocols and configurations. The automated configuration also sets simple and advanced parameters of the database server. You can configure connectivity for both your client and server during the same Connectivity Administrator session. To configure your server, click the **Server** tab.

## Using the Connectivity Administrator

1. Select **Programs**, **Gupta, SQLBase 8.0, Connectivity Administrator** from the **Start** menu.

2. Click the **Server** tab to show the installed server.

3. Click the + symbol next to the server name to display listening protocols and databases.

The following actions are available when using the Connectivity Administrator.

- Left-click to select an item

- Double-click to change properties

- Right-click to display a menu of connectivity functions

For detailed information about the Connectivity Administrator, read the online help that is provided with this tool.

# SQL.INI file configuration settings

Gupta products read the SQL.INI file at program start-up. The SQL.INI file is the common file containing software configuration settings. Each client and server machine must have a SQL.INI file.

## How SQLBase finds SQL.INI

### SQLBase Server for NetWare

SQLBase retrieves operational parameters from the sql.ini file stored in the same directory as the SQLBase executable.

SQLBase clients and pre-7.0 versions of SQLBase server look for the configuration file only in the directory you specify in the SQLBASE environment variable. Otherwise, the search order for this file is:

1. Current directory.

2. *\sqlbase* directory on the current drive.

3. Root directory on the current drive.

4. Directories specified by the PATH environment variable.

### SQBase Server (32 bit)

When SQLBase starts, it checks the SQLBase registry key to obtain the location of the SQL.INI file. The registry locations used by SQLBase are:

```
HKEY_LOCAL_MACHINE\SOFTWARE\Gupta\SQLBase\1

HKEY_LOCAL_MACHINE\SOFTWARE\Gupta\SQLBase\2
```
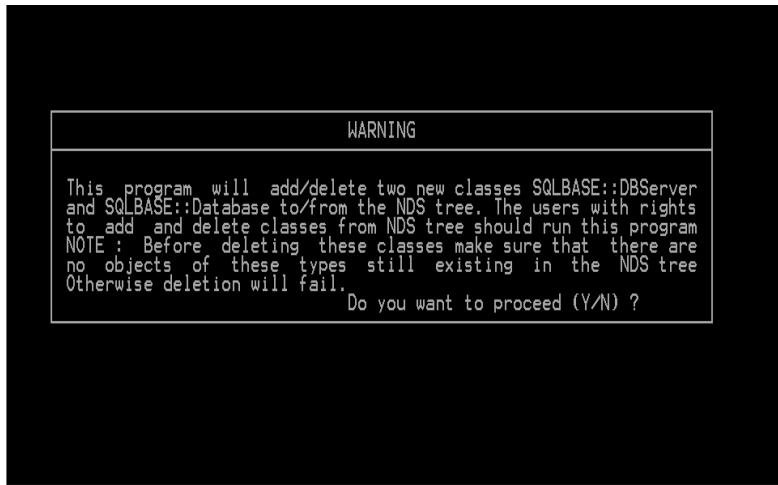
Although there can be two registry entries for SQLBase, only one of these entries is active at any given time. You can change the status of your servers using the SQLBase Server Monitor (SSM) tool. For information, read *Chapter 13, Running SQLBase as an NT Service* in the *Database Administrator's Guide*.
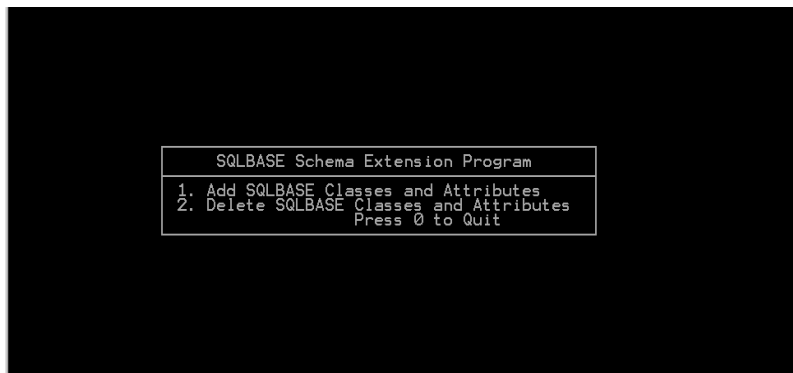
# NetWare NDS configurations

After you install SQLBase, and before you load the SQLBase Server for NetWare, you must add the classes to the NDS tree that SQLBase requires. To do this, load the Gupta NDSSCHMA.NLM at the server console. This NLM allows you to add or delete classes to the NDS tree. You must have a NetWare account and ADMIN privileges on the NDS tree you are modifying. Note that you only need to add these objects once.

You can also use the NDSSCHMA.NLM to delete the classes from the NDS tree before uninstalling SQLBase.

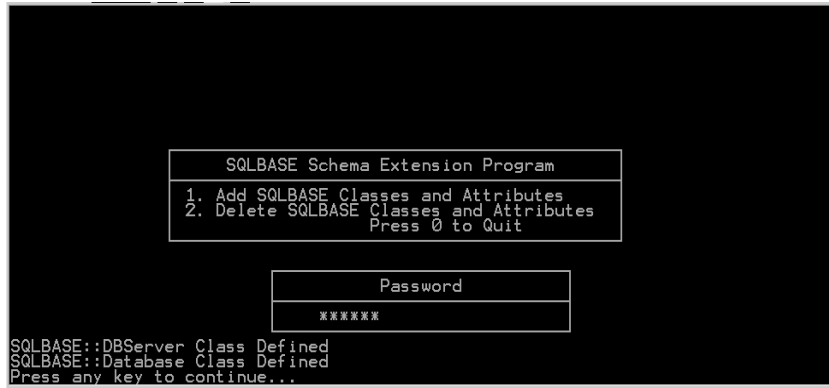1.  Load NDSSCHMA.NLM. The **Warning** dialog appears:



2.  Type Y. The **SQLBase Schema Extension Program** screen appears. Type 1 to add the SQLBase classes.

The NDS Login ID appears. You must have sufficient privileges on the NDS tree you are modifying. Type in your login ID and press **Enter**. The NLM prompts you for a password. Press **Enter**.

A message appears confirming that the SQLBase classes have been defined.

**Note:** If you select option 2 (Delete), a message appears stating that the SQLBase classes have been removed.

```
                      SQLBASE Schema Extension Program
                  1. Add SQLBASE Classes and Attributes
                  2. Delete SQLBASE Classes and Attributes
                            Press 0 to Quit


                                 Password
                                 ******

SQLBASE::DBServer Class Defined
SQLBASE::Database Class Defined
Press any key to continue...
```

# Running SQLBase Server as a Windows service

**Note:** In order to install SQLBase Server for Windows as a service, you must have Administrator privileges.

Running SQLBase Server for Windows as a service is supported on Windows NT 4, 2000 and XP.

SQLBase Server for Windows always installs as a Windows service. During installation, SQLBase is set to run as a system account and to interact with the desktop.

Only one instance of SQLBase Server can be run on a Windows machine at any given time, regardless of whether it is being run as a service or an application program. You can use the SQLBase Management Console (SMC) to start and stop SQLBase as an NT service. For information, read *Chapter 13, Running SQLBase as an NT Service* in the *Database Administrator's Guide*.

For more information on running SQLBase Server for Windows as a service, read *Chapter 13, Running SQLBase Server as an NT Service* in the *Database Administrator's Guide*.

**Note:** SQLBase cannot run as a service automatically if you are using the user account in the Services setup.

# Chapter 3

# Running SQLBase

This chapter provides step-by-step starting and stopping the SQLBase Server. It also includes information on uninstalling SQLBase.

# Starting and stopping the server

## Windows 98 and ME

This section describes how to start and stop the SQLBase Server for Windows 98 and ME. You must start the database server before clients can access a database, with the exception of the Anonymous Pipes protocol. When this protocol is used, SQLBase will be started automatically when an application attempts to connect to a database on the same machine.

### Starting

To start the server, select **Programs**, **Gupta**, and **SQLBase 5-User Server** from the **Start** menu. This item name varies depending upon your installation directory and the server version installed.

### Stopping

It is recommended that you disconnect all applications prior to stopping SQLBase. If however, applications are still connected when you stop the server, SQLBase automatically performs recovery on these databases during the next connection. If RECOVERY is set to off, SQLBase will be unable to recover the affected database.

To stop SQLBase Server, do one of the following:

**For Windows 95. Windows 98, and Windows ME**

- Select **File**, **Exit** from the SQLBase menu bar.
- Click the **Close** box on the SQLBase Server window.
- Use the SQLBase Management Console to stop the SQLBase application.
- Programmatically shut down the server using either SQLTalk or using the SQLBase API. For information on the SQLBase API, read the *SQLBase SQL Application Programming Interface Reference*.

## Windows NT, Windows 2000, and Windows XP

This section describes how to start and stop the SQLBase Server for Windows NT, 2000, and XP. You must start the database server before clients can access a database, unless you are using the Anonymous Pipes protocol. When this protocol is used, SQLBase will be started automatically when an application attempts to connect to a database on the same machine.

### Starting

By default, the setup installs SQLBase as a service. If you choose to run SQLBase Server as a Windows application, you should use SQLBase Management Console or

the Windows Service Manager to make sure that the SQLBase service is disabled first.

You can manually start SQLBase as a service using either SQLBase Management Console or the Windows Service Manager.

For more information on running SQLBase Server as a service program, read Chapter 13 of the *Database Administrator's Guide*.

To start SQLBase as an application, select **Programs**, **Gupta**, and **SQLBase 5-User Server** from the **Start** menu. This item name varies depending upon your installation directory and the server version installed.

## Stopping

It is recommended that you disconnect all users prior to stopping SQLBase. If you use SQLBase Management Console to stop SQLBase, that tool allows you to automatically disconnect any current users if you wish. If however, users are still connected when you stop the server, SQLBase automatically performs recovery on these databases during the next connection. If RECOVERY is set to off, SQLBase will be unable to recover the affected databases.

### SQLBase as a Windows service

SQLBase can be stopped by using either SQLBase Management Console or the Windows Service Manager. Gupta recommends you use SQLBase Management Console since this tool enables you to verify that there are no users connected before you stop the server. For more information about SQLBase Management Console, see the Database Administrator's Guide.

### SQLBase as an application

To stop SQLBase Server, do one of the following:

- Select **File**, **Exit** from the SQLBase menu bar.
- Close the SQLBase Server window.
- Select **File**, **Exit** from the SQLBase menu bar.
- Close the SQLBase Server window.
- Use the SQLBase Management Console to stop the SQLBase application.
- Programmatically shut down the server using either SQLTalk or using the SQLBase API. For information on the SQLBase API, read the *SQLBase SQL Application Programming Interface Reference*.

# NetWare

This section describes how to start and stop the SQLBase Server for NetWare, both the 4.x and 5.x versions. You must start the database server before clients can access a database.

## Starting

SQLBase Server for NetWare is a NetWare Loadable Module (NLM) that runs on Novell's NetWare server operating system. An NLM is a program that you can load into or unload from server memory while the server is running. When loaded, an NLM is part of the NetWare operating system. When unloaded, an NLM releases the memory and resources that were allocated for it.

### Loading SQLBase Server for NetWare

To load SQLBase Server for Netware, use the LOAD command. The following examples illustrate how to load a multi-user server for 4.x and 5.x. Note that you must substitute your server name. The following examples assume that `nlm:\gupta` is the NetWare volume you installed into.

To load the multi-user server for 4.x and 5.x:

```
load nlm:\Gupta\dbnwsrv
```

The default file system driver is dfd. This driver loads automatically, unless you specify otherwise. To use dfs instead of dfd, you would add dfs to the end of the load statement. For example:

```
load nlm:\Gupta\dbnwsrv dfs
```

The database server is removed from memory when the computer is switched off or rebooted. You must start the database server after each startup or reboot.

## Stopping

You should stop the SQLBase server before turning the database server computer off. To stop the SQLBase server:

1.  Press the **Esc** key.

2.  If there are users connected to the server, a dialog box appears asking you to confirm that you want to stop the server. Press **Y** to bring the server down gracefully.

After stopping SQLBase, the server unloads itself and associated SQLBase support NLMs.

> **Note:** You cannot unload the SQLBase NLM from the console prompt of the NetWare server; you must always use the ESC key to bring down the server. Once loaded, the SQLBase NLM becomes a NetWare resource and must be closed before it can be unloaded.

# Uninstalling SQLBase

To remove the SQLBase software from your computer, use the **Add/Remove Programs** applet in the systems Control Panel.

> **Note:** If you are uninstalling SQLBase Server for NetWare, the above procedure only works correctly if the same drive is mapped during the uninstall as was mapped during the install. Otherwise, the files on the NetWare volume should be deleted manually.

# Chapter 4

# What now?

This chapter contains information on testing your configuration using SQLTalk, National Language Support, and loading database files to the SQLBase Server.

# Testing your installation

You can test the connection between your server and client using SQLTalk or SQLConsole.

## SQLTalk

### Starting the SQLTalk program

**Note:**  You cannot run SQLTalk from the NetWare platform.

To connect to a remote SQLBase client, you must first enable the appropriate communication libraries by setting the correct comdll value in the *sql.ini* file. The easiest way to do this is by setting the communications interfaces through the Gupta Connectivity Administrator if you are on Windows 95, 98, ME, NT, 2000 and XP, or your preferred text editor. Read the online help for the Gupta Connectivity Administrator for more information.

To start SQLTalk, invoke the SQLTalk item from the Gupta program group.

### Using SQLTalk

This section describes how to run SQLTalk.

1.  Start the server program on the server machine.

    For example, if you are running the SQLBase Server for Windows, start the *dbntsrv.exe* program on the server machine by clicking on its icon. Or use the Windows Services Manager to start the SQLBase service.
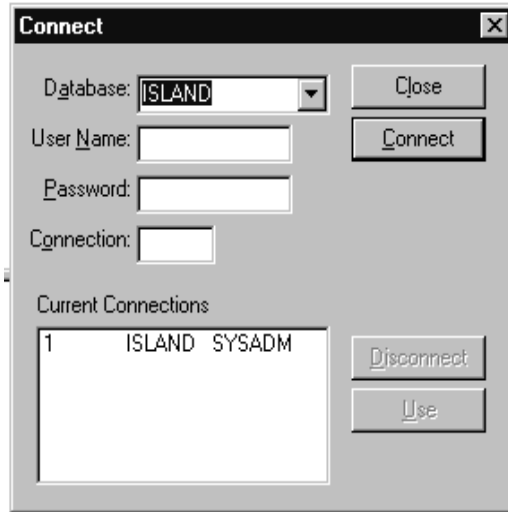
2.  Start SQLTalk.

    Start SQLTalk on the client machine. For example, on an NT client machine, click on the SQLTalk icon.

3.  Select **Connect** from the Session menu.

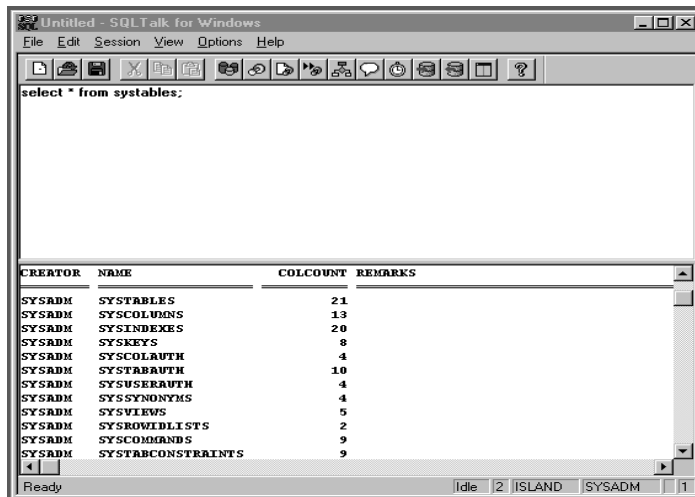4.  In the dialog box, enter a database name (for example **ISLAND**), and click **Connect**.

**Note:**  ISLAND is the standard default database that ships with SQLBase.

If your network and software components are configured correctly, a connection will be added to the list as shown below.



The Current Connections box displays ISLAND as the database name, which confirms your connection to this database. Click **Close**.

5. Enter SQLTalk commands. You can start entering commands at the cursor in the top pane of the SQLTalk window. For example:



To execute the command that the cursor is currently over, press **Ctrl+Enter**.

You can enter SQL and SQLTalk commands as described in the *SQL Language Reference Manual* and the *SQLTalk Reference Manual.*

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**Note:** You can also connect to a database by entering the following command in a SQLTalk window. For example:

CONNECT ISLAND;

```
CURSOR 1 CONNECTED TO ISLAND
```

---

6.   End SQLTalk.

When you are ready to end your SQLTalk session, enter this command at the cursor:

```
exit;
```

# National Language Support

SQLBase supports English as its standard language, but it also supports many international languages including those spoken in Europe and Asia. Please read Chapter 11, *National Language Support* of the *Database Administrator's Guide* for information on creating databases that support languages other than English.

# Loading database files into SQLBase

If you are upgrading from SQLBase 7.x, it is mandatory that you unload your old database files with your old version of SQLBase client then load them to the new SQLBase Server.

You can also load a non-SQLBase database to SQLBase using a common file format, such as .CSV. For information on loading and unloading, read the LOAD and UNLOAD command documentation in the *SQL Language Reference*.

You can improve the performance of the load by performing the following tasks:

1.   Defragment your disk.

2.   Run SET RECOVERY OFF before you run LOAD. Be aware that when you set recovery off, SQLBase does not generate log files and this speeds up the load. When you are finished with the load, run SET RECOVERY ON.

3.   Run the LOCK DATABASE command to place an exclusive lock on the database. When you are finished with the load, run UNLOCK DATABASE.

4.   Use the ON SERVER clause of the LOAD and UNLOAD command. This decreases network traffic by performing the operation on the server machine, if the load file is local to the server.

5.   Set the server screen to show the minimal level of process detail (level 0).