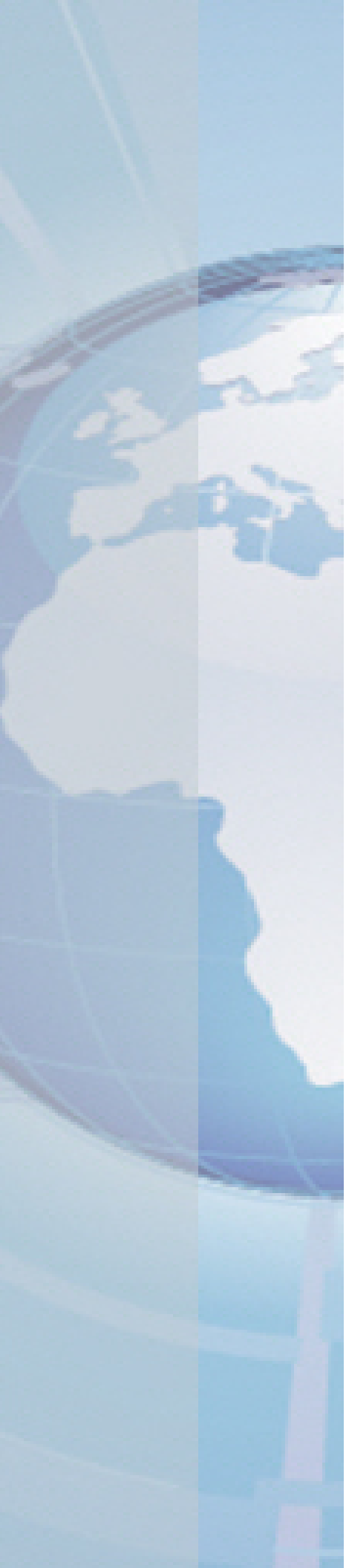


Whitepaper

Connecting LISTSERV® to an Existing Database Management System (DBMS)

September 14, 2010

Information in this document is subject to change without notice. Companies, names, and data used for example herein are fictitious unless otherwise noted. Some screen captures have been cropped and/or edited for emphasis or descriptive purposes.

L-Soft invites comments on its documentation. Please feel free to send your comments by email to: manuals@lsoft.com

Introduction

If you have an existing database management system (DBMS), then using LISTSERV and connecting it to your existing data is the fastest and simplest way to get your customers' data working with all of the features and benefits of LISTSERV.

Your existing DBMS holds a plethora of important customer data that LISTSERV can use to create highly customized email message, newsletters, and promotions that emphasize your customer's preferences. To access this data, simply follow the instructions in this document and you'll be off and running. No need to duplicate efforts by re-entering customer data, with LISTSERV you can easily access and use your existing information.

Before You Begin

This document is intended for use by LISTSERV operators who are not database administrators (DBAs). You will learn how to perform a basic configuration of LISTSERV in conjunction with a DBMS, allowing LISTSERV to use and connect with your existing DBMS for data storage and retrieval.

The procedures in this document assume that:

A. LISTSERV have been successfully installed and is operating normally.

B. The installation and configuration of the DBMS server software and the DBMS drivers/connectors (such as SQL*Net or unixODBC) are already complete, presumably by your DBA. If the DBMS software and drivers are not properly and securely installed, then the procedures in this document will not succeed.

Additionally, you will need the following information available for use:

1. The network name of the server on which the DBMS is running.
2. One of the following:

   A *dedicated* LISTSERV table has been created in the DBMS, and you have the login name and password needed to connect to this table.

   – OR –

   You have the login name and password needed to connect to the *non-dedicated* table being used by LISTSERV to store data.

Creating an ODBC Connection in Windows

An ODBC (Open Database Connectivity) connection is used to help LISTSERV communicate with your existing database management system.

For LISTSERV running in a Windows environment, virtually any standards-compliant SQL DBMS product is supported via ODBC. This includes Microsoft SQL*Server 2000 and later, Oracle 8i and later, and MySQL 4.x and later. Earlier versions of these DBMS products are not supported. For a complete list of supported products, see Appendix A: Supported DBMS Products.

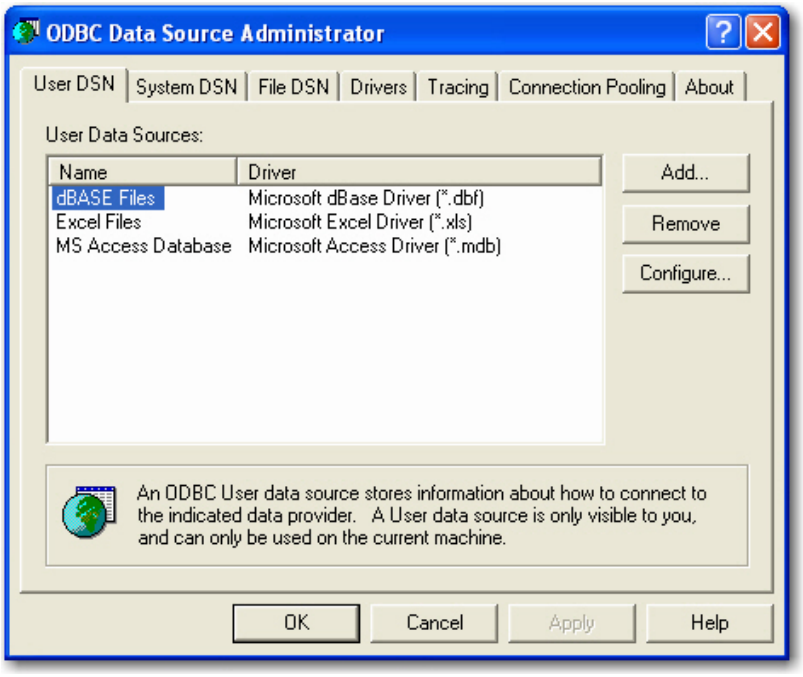
In order for LISTSERV to connect to SQL*Server or MySQL, a valid data source name (DSN) is required. For details, see Creating a DSN for SQL*Server or Creating a DSN for MySQL.

*Creating a DSN for SQL*Server*

Creating a new ODBC Data Source Name (DSN) is a very simple process that is required when you are connecting LISTSERV to your existing SQL Server database.

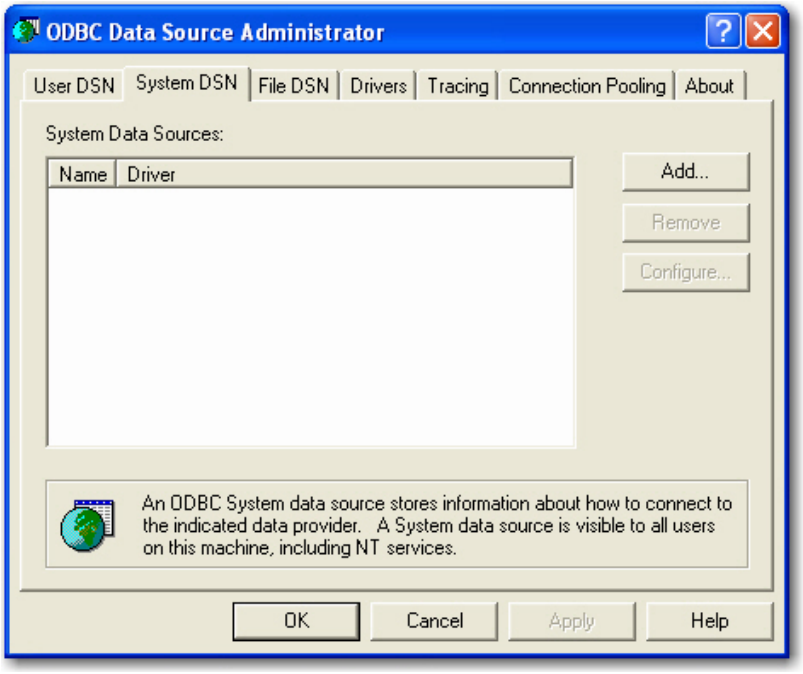
There are three different types of DSNs – User, System, and File. For our purposes, you will need to create a System DSN, which is a DSN that is seen by the entire system. This means that any user can see it, as well as any process or service. This type of DSN is perfect for those with multiple user accounts, which is a main function in LISTSERV.

1. To start creating your DSN, open the Data Source Administrator applet. Accessing this will vary depending on the type of Microsoft operating system you are using. Most can access the Data Source Administrator by opening your **Control Panel**, selecting **Administrative Tools**, and then finally selecting **Data Sources (ODBC)**. The ODBC Data Source Administrator screen opens with the **User DSN** tab open.

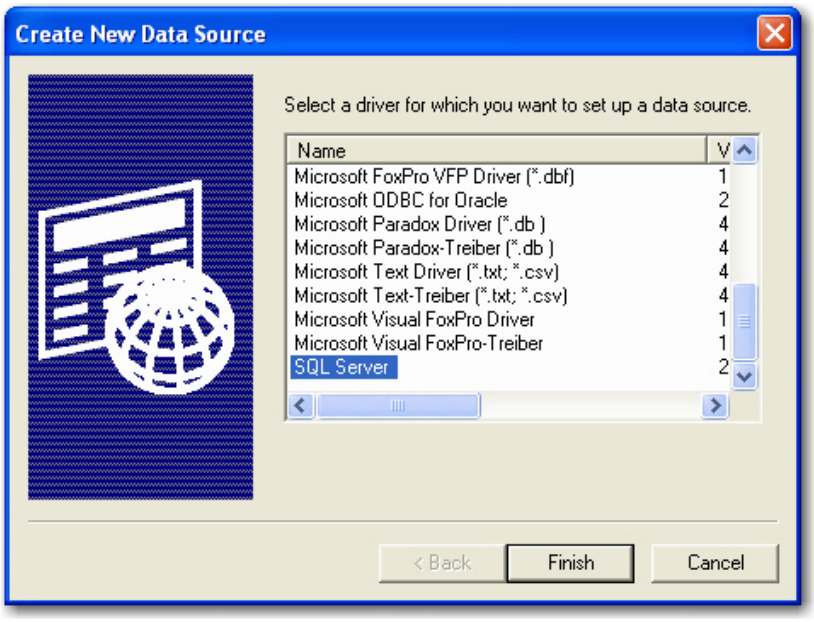


Notes: If you are running the 32-bit version of LISTSERV under 64-bit Windows, you need to ensure that you are using the 32-bit version of the ODBC connection applet.

2. Click on the **System DSN** tab, and then click on the **[Add]** button.

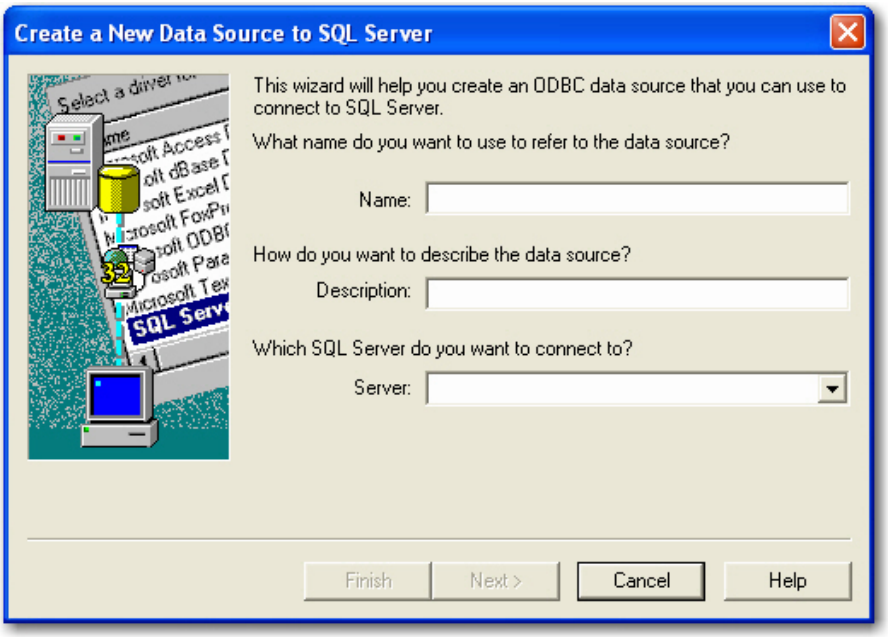


3. On the Create New Data Source window, select the **SQL Server** driver, and then click the **[Finish]** button.



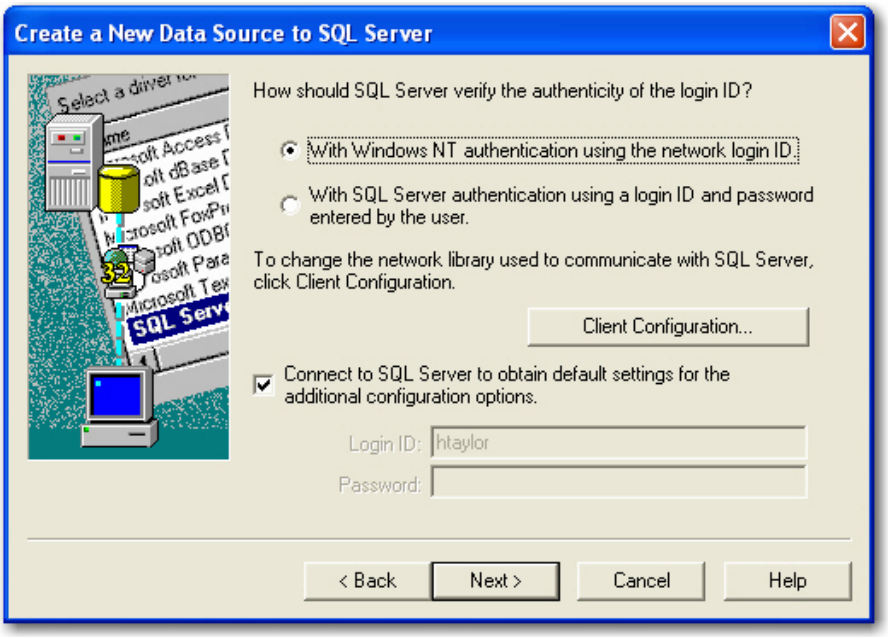
4. On the first page of the Create a New Data Source to SQL Server wizard, enter the following information:
    a. the **Name of the DSN** (e.g., LISTSERV)
    b. a short **Description for the DSN** (e.g., "LISTSERV connection")
    c. the **Name of the Server** to which you are connecting

Tip: The name of the server may already be available to you using the drop-down arrow. If so, simply click on the drop-down arrow and select it. Otherwise, you can manually type the name of the server into the text box.

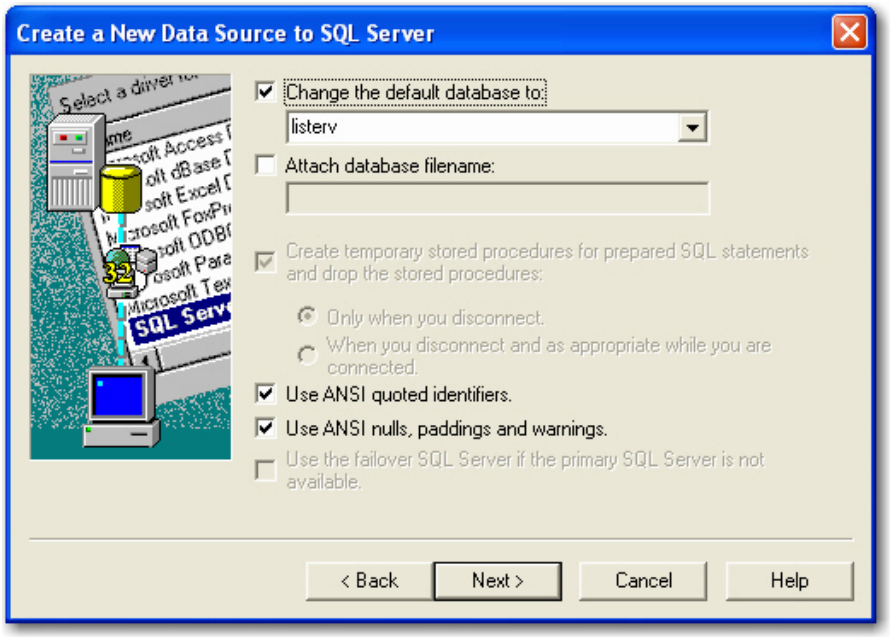


When you are finished entering the above information, click the **[Next]** button.

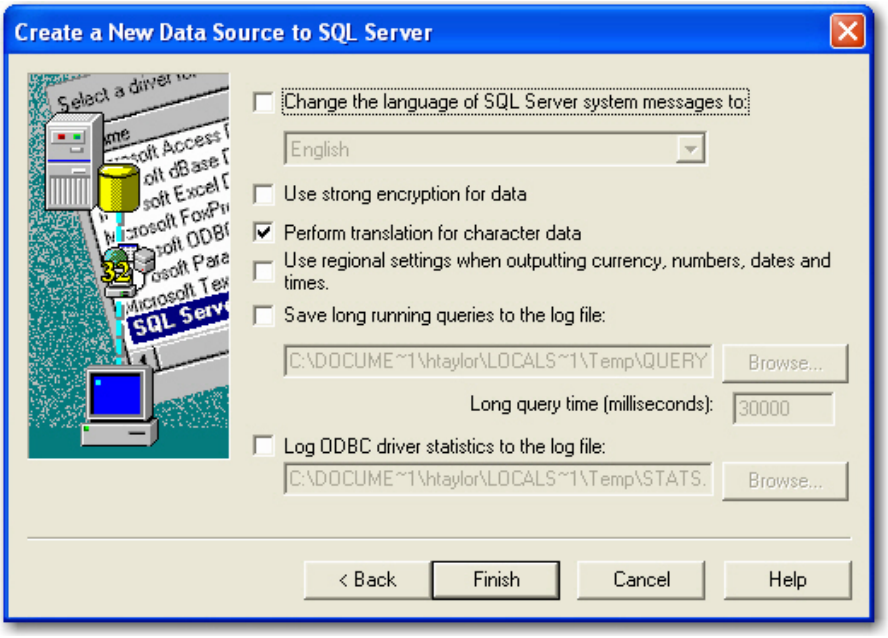
5. On the second page of the Create a New Data Source to SQL Server wizard, review the default settings. In most cases you will not change anything on this page. Make sure that the **Connect to SQL Server to obtain default settings for the additional configuration options** option is checked. Click the **[Next]** button to continue.



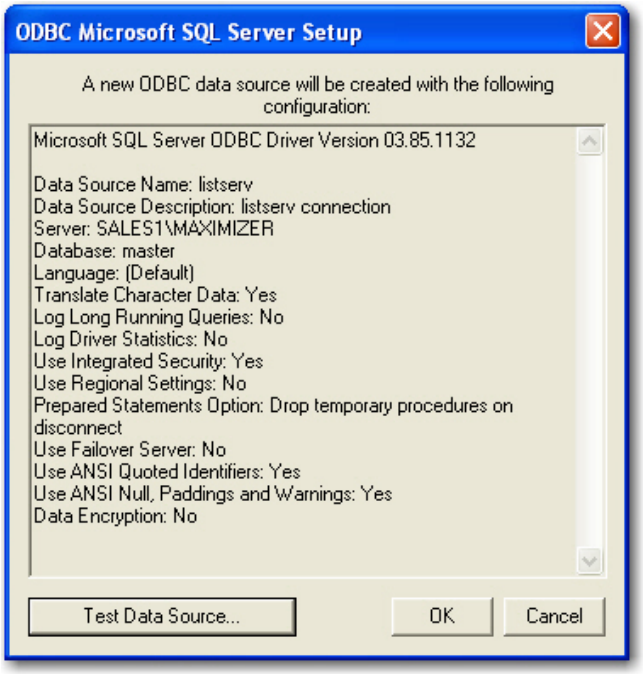
6. If your connection to the SQL Server machine was successful, then the third page of the Create a New Data Source Server wizard opens. Check the **Change the default database to** option, and then click on the drop-down arrow and select the name of the database that contains the tables LISTSERV will be accessing (in the example below, this database is named “listserv”). Review the rest of the default settings, and then click the **[Next]** button.



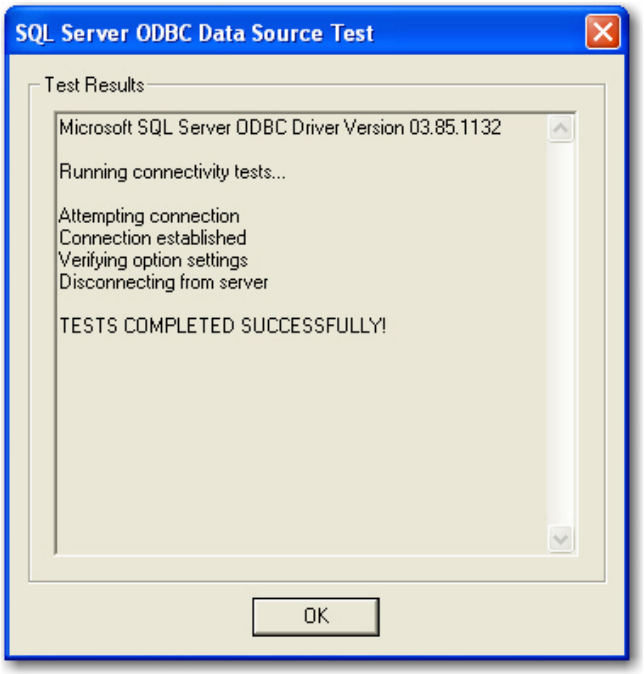
7. On the fourth page of the Create a New Data Source to SQL Server wizard, review the default settings and then click the **[Finish]** button.



8. The ODBC Microsoft SQL Server Setup window opens with information about the DSN you are about to create. Review this information, and then we STRONGLY RECOMMEND that you click the **[Test Data Source]** button.



The results will tell you whether or not you can actually connect to the database with the parameters you have entered in the wizard.



If the test is successful, click the **[OK]** button to return to the **System DSN** tab on the ODBC Data Source Administration window.

Congratulations! Your new LISTSERV DSN has been successfully added and is ready for use. You will now need to configure LISTSERV to use this DSN.

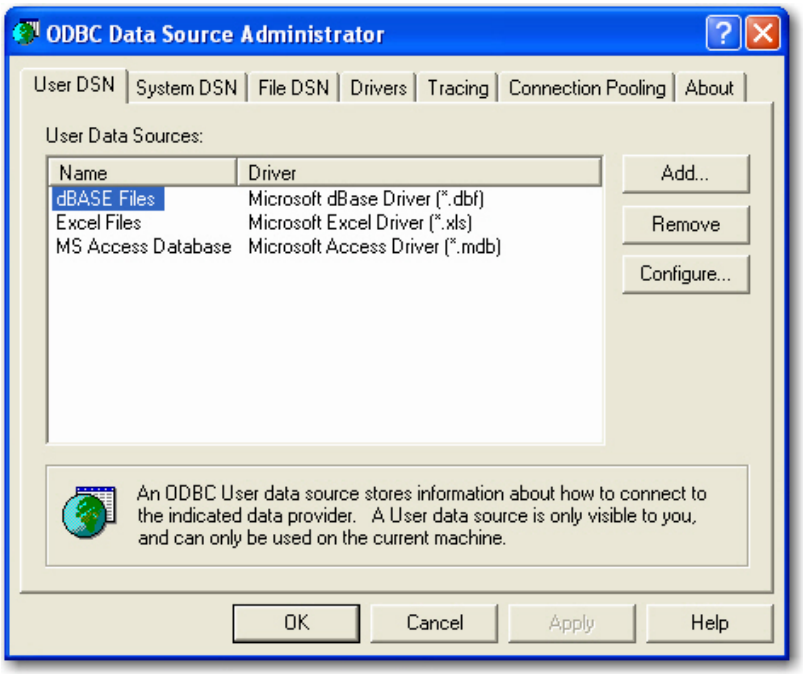
Creating a DSN for MySQL

Creating a new ODBC Data Source Name (DSN) is a very simple process that is required when you are connecting LISTSERV to your existing MySQL database.

There are three different types of DSNs – User, System, and File. For our purposes, you will need to create a System DSN, which is a DSN that is seen by the entire system. This means that any user can see it, as well as any process or service. This type of DSN is perfect for those with multiple user accounts, which is a main function in LISTSERV.

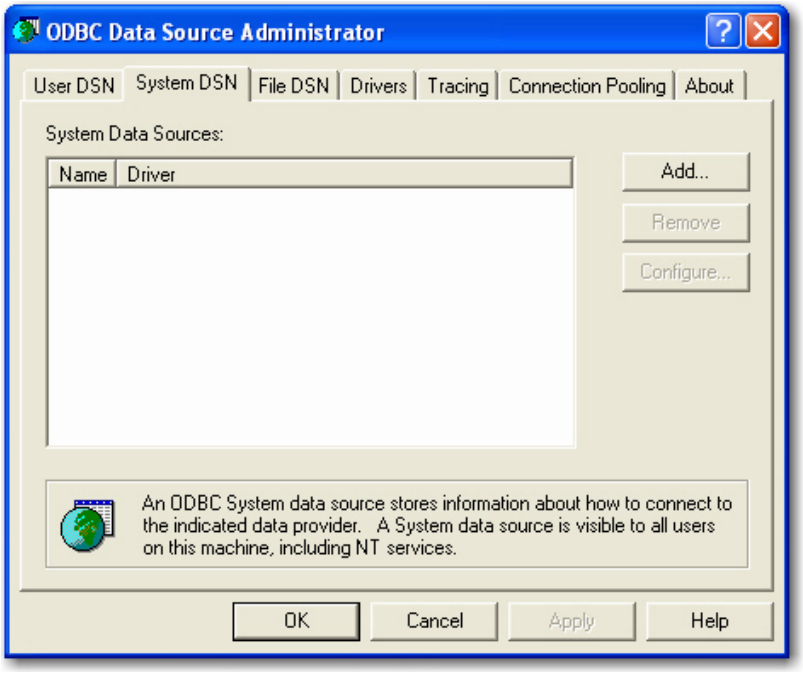
Important: The MySQL database driver/connector does not ship with Windows. It must be installed separately. Please contact your DBA for information on installing MySQL.

1. To start creating your DSN, open the Data Source Administrator applet. Accessing this will vary depending on the type of Microsoft operating system you are using. Most can access the Data Source Administrator by opening your **Control Panel**, selecting **Administrative Tools**, and then finally selecting **Data Sources (ODBC)**. The ODBC Data Source Administrator screen opens with the **User DSN** tab open.

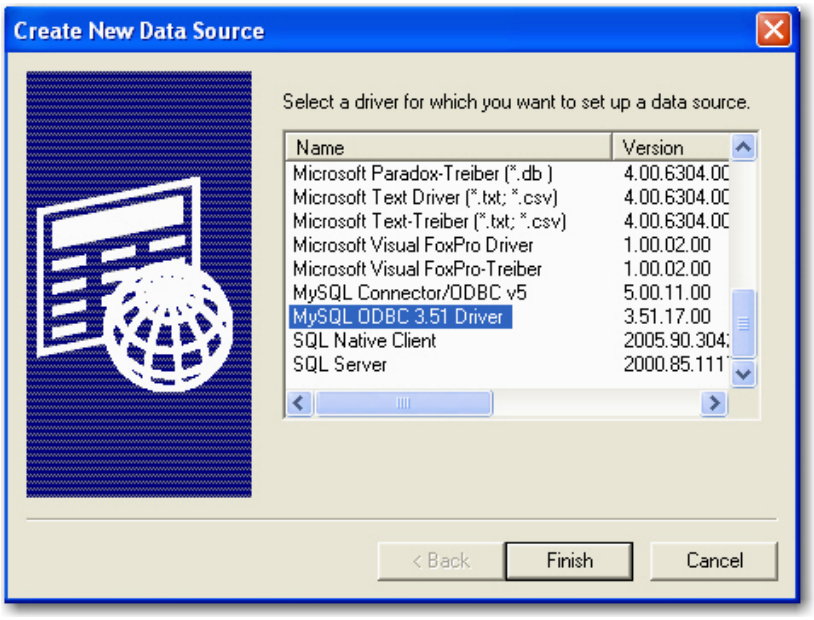


Notes: If you are running the 32-bit version of LISTSERV under 64-bit Windows, you need to ensure that you are using the 32-bit version of the ODBC connection applet.

2. Click on the **System DSN** tab, and then click on the **[Add]** button.

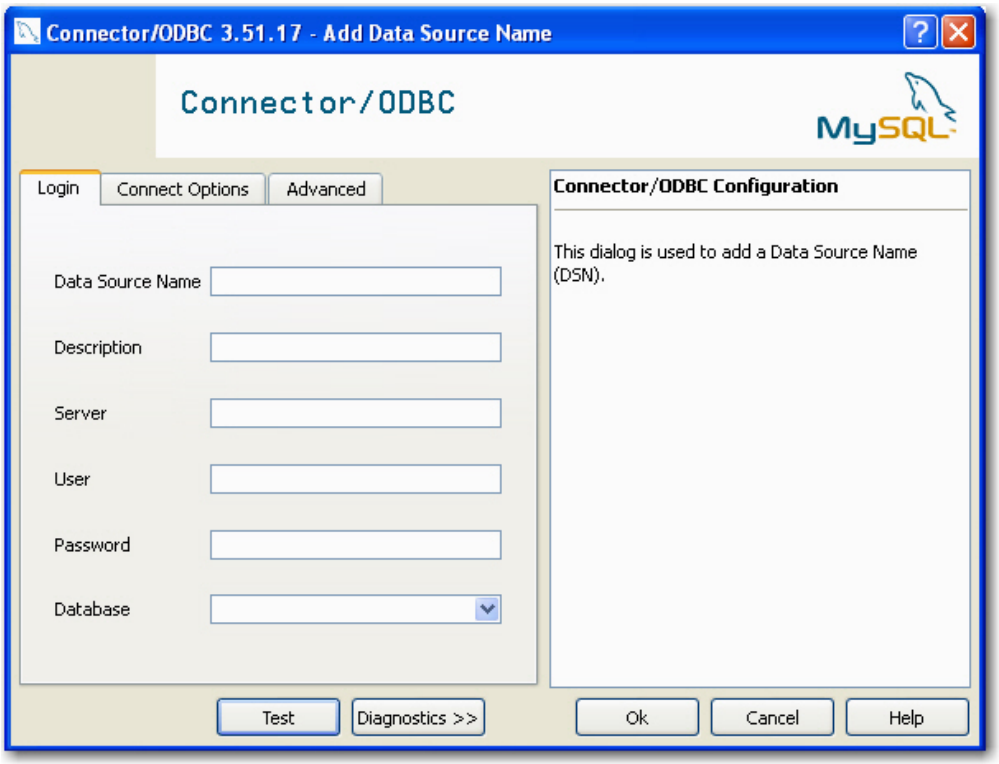


3. On the Create New Data Source window, select **MySQL ODBC [version] Driver**, and then click the **[Finish]** button.



4. On the **Login** tab of the Connector/ODBC screen, enter the following information:
    i. the **Name of the DSN** (e.g., LISTSERV)
    ii. a short **Description for the DSN** (e.g., "LISTSERV connection")
    iii. the **Name of the Server** to which you are connecting
    iv. the login information (**User Name** and **Password**) and name of the **Database** that contains the LISTSERV tables.

Tip: The name of the server may already be available to you using the drop-down arrow. If so, simply click on the drop-down arrow and select it. Otherwise, you can manually type the name of the server into the text box.



When you are finished entering the above information, click the **[Test]** button.

5. If the connection is configured correctly, a Success dialog will be displayed. Click the **[OK]** button to return to the **System DSN** tab on the ODBC Data Source Administration window.

   Congratulations! Your new LISTSERV DSN has been successfully added and is ready for use. You will now need to configure LISTSERV to use this DSN.

Configuring LISTSERV to Use the DSN

After you have successfully added your LISTSERV DSN, you will need to configure LISTSERV to use and connect to this DSN.

For the purposes of this example, we will assume that the DSN you just created is called LISTSERV. You would then add the following lines to SITE.CFG:

```
ODBC_DSN=LISTSERV
ODBC_UID=...
ODBC_AUTH=...
```

Replace the ellipses with the appropriate (DBMS-specific) authentication information:

- `ODBC_UID` – the userid that will be used to log into the database via the DSN.,
- `ODBC_AUTH` – the password associated with that userid.[1]

[1] While officially called the "authentication string" in the ODBC specifications, `ODBC_AUTH` is often called "password" in vendor documentation.

If the database was created with access for user "listserv" with the password "password", the settings would then be:

```
ODBC_DSN=LISTSERV
ODBC_UID=listserv
ODBC_AUTH=password
```

At this point you are ready to create and populate DBMS-aware mailing lists.

Creating a unixODBC Connection in Unix

A unixODBC (Open Database Connectivity) connection is used to help LISTSERV communicate with your existing Unix database management system (DBMS).

For LISTSERV running in a Unix environment, LISTSERV's DBMS support varies depending on the platform. For a complete list of supported products, see Appendix A: Supported DBMS Products.

This section will outline how to make a simple unixODBC connection to an existing MySQL database running on the same machine as LISTSERV. The following is required:

- The database should contain a table called "listserv" (this is where LISTSERV will store its data).
- The "listserv" table needs to be read/write/modify accessible by a user called "listserv".
- You will need root access.

Creating a unixODBC System DSN for MySQL

Creating a new unixODBC Data Source Name (DSN) is a very simple process that is required when you are connecting LISTSERV to your existing MySQL database.

There are three different types of DSNs – User, System, and File. For our purposes, you will need to create a System DSN, which is a DSN that is seen by the entire system. This means that any user can see it, as well as any process or service. This type of DSN is perfect for those with multiple user accounts, which is a main function in LISTSERV.

Open `/etc/odbc.ini` in a text editor and add the following lines:

```
[ODBC Data Sources]
listserv    = MySQL ODBC 3.51 Driver DSN

[listserv]
Driver       = /usr/lib/libmyodbc3.so
Description  = MySQL ODBC 3.51 Driver DSN
Server       = localhost
Database     = listserv
Trace        = off
```

We have discovered that in some cases, in particular where the MyODBC driver is installed from an RPM Package Manager (RPM), it is also necessary to add:

```
SOCKET = /var/lib/mysql/mysql.sock
```

where `Server` is set to `localhost`.

If you can't find `odbc.ini` under `/etc`, try issuing the `odbcinst -j` command.

In a default installation, the output appears like this:

```
[home]root:~# odbcinst –j
unixODBC 2.2.11
DRIVERS............: /etc/odbcinst.ini
SYSTEM DATA SOURCES: /etc/odbc.ini
USER DATA SOURCES..: /root/.odbc.ini
```

The file you need is the one referenced by SYSTEM DATA SOURCES.

Once this data source has been typed in, save `odbc.ini`.

Congratulations! Your new LISTSERV DSN has been successfully added and is ready for use. You will now need to configure LISTSERV to use this DSN.

Connecting to an External MySQL Database

If the MySQL database you want to connect to is running on a machine other than the one on which LISTSERV is installed, you will still need to install unixODBC and MyODBC on the LISTSERV machine in order to connect to the database, and then simply configure the system DSN to point to the machine in question.

For instance,

```
[listserv]
Driver       = /usr/lib/libmyodbc3.so
Description  = MySQL ODBC 3.51 Driver DSN
Server       = mysqlbox.mydomain.com
Database     = listserv
Trace        = off
```

Note: The user defined in the `UODBC_UID` variable in `go.user` must (a) have permission to log into the external database from the LISTSERV host machine and (b) have appropriate permissions on the external database.

Configuring LISTSERV to use the DSN

After you have successfully added your LISTSERV DSN, you will need to configure LISTSERV to use and connect to this DSN.

First, make sure that you have linked LISTSERV's executable (lsv) with unixODBC support. Then, you can define the connection information in LISTSERV's `go.user` file, for instance:

```
UODBC_DSN="listserv"
UODBC_UID="listserv"
UODBC_AUTH="my_password"
export UODBC_DSN UODBC_UID UODBC_AUTH
```

Appendix A: Supported DBMS Products

The following DBMS products are supported by LISTSERV.

LISTSERV Running on Windows

For LISTSERV running in a Windows environment, virtually any standards-compliant SQL DBMS product is supported via ODBC. This includes Microsoft SQL*Server 2000 and later, Oracle 8i and later, and MySQL 4.x and later. Earlier versions of these DBMS products are not supported.

Note: One notable exception is Microsoft Access (any version). Microsoft Access is not a complete implementation of SQL and does not contain functionality needed by LISTSERV. Therefore, although it is entirely possible to link LISTSERV to a Microsoft Access database via ODBC, L-Soft does not support the use of Microsoft Access as a database for LISTSERV.

LISTSERV Running on UNIX

For LISTSERV running in a Unix environment, LISTSERV's DBMS support varies depending on the platform. The following Unix platforms are supported:

Unix Variant	OCI (Oracle) Supported	CLI (DB2) Supported	unixODBC Supported
AIX 4.3 (PPC) and later	✔	✔	✔
FreeBSD 5.4 and later			✔
Linux 2.6 and later (x86)	✔	✔	✔
Linux 2.6 and later (x86-64)		✔	✔
Linux 2.4.20 (x86)	✔	✔	✔
Linux-S390 (kernel 2.4.2 and later)			✔
Solaris 10 (SPARC) and later	✔	✔	
Solaris 10 (x86-64) and later	✔	✔	

Notes: This table contains compatibility information for currently-supported unix variants only.

Oracle and DB2 databases can also be accessed via unixODBC on the platforms where there is no native LISTSERV DBMS support for them.

Relinking LISTSERV

As shipped, LISTSERV does not contain support for DBMS. The LISTSERV executable must be relinked in order to provide this support. The simplest way to do this is to choose DBMS support at install time (when using the simplified unix installation script), although it is also possible to relink DBMS support into LISTSERV later.

Warning: Only relink DBMS support with LISTSERV if the DBMS product you intend to use is already installed on the machine. If the DBMS product and its drivers are not installed, then LISTSERV will not be able to start.

Relinking LISTSERV is only available for the following combinations of DBMS support in accordance with the supported operating system:

- OCI only
- CLI only
- unixODBC only
- OCI and CLI
- OCI and unixODBC

LISTSERV cannot be relinked with both CLI and unixODBC at the same time because the two implementations are very similar and share function names inside LISTSERV.

For more information on relinking LISTSERV, see the *Advanced Topics Guide for LISTSERV*.

Appendix B: Creating DBMS-Aware Mailing Lists

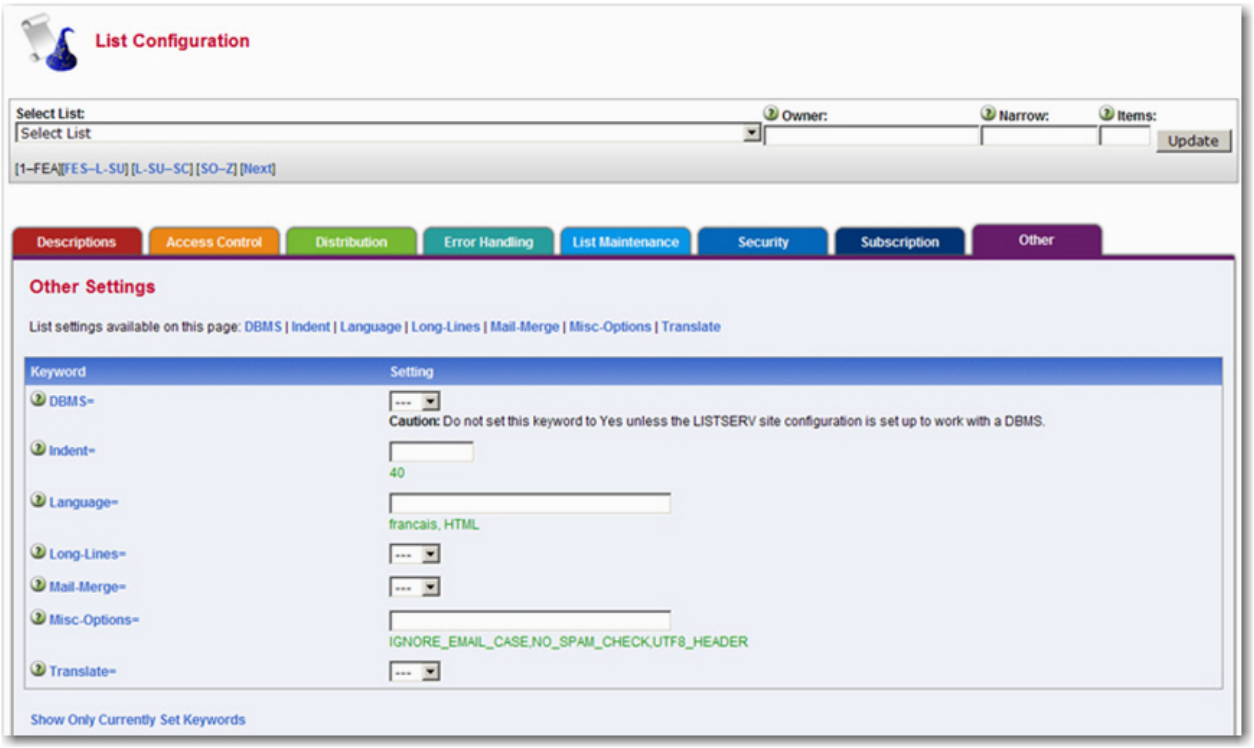
This section assumes that the reader is familiar with the process of creating LISTSERV lists and updating their list headers. For more information, please refer to the *Site Manager's Manual for LISTSERV*.

Configuring a List to use the DBMS

The use of the DBMS as a data store for list membership information is controlled by the "DBMS=" list header keyword. To create a simple DBMS list that will use the database you have connected to via the DSN you created, specify a "DBMS=" keyword as follows:

```
DBMS= Yes
```

This can also be done in the Web Administration Interface. Browse and log into the LISTSERV Web Administration Interface. Click on the **List Management** menu on the toolbar, select **List Configuration**, and then **List Configuration Wizard**. On the List Configuration screen, click on the drop-down menu and select the list you want to work with, and then click on the **Other** tab.



There are a number of optional parameters for the DBMS= keyword that are described in full in the *Advanced Topics Guide for LISTSERV* or in the Online Help.

In most cases taking the defaults for those parameters will be sufficient. For more information on these parameters, you can click on the actual keyword to see its full description.

Importing Subscribers into a DBMS LIST

Subscribers can be easily imported into a DBMS list either manually or using LISTSERV's Web Interface.

Manually Importing Subscribers

Subscribers can be imported into a DBMS list using the ADD IMPORT command, also known as "bulk add." However, despite the name, this is not an "import" operation in the database sense; it does not disable logging or rollback and it is based on normal transactional operations. You may be able to obtain better performance using specialized import tools provided by your DBMS vendor.

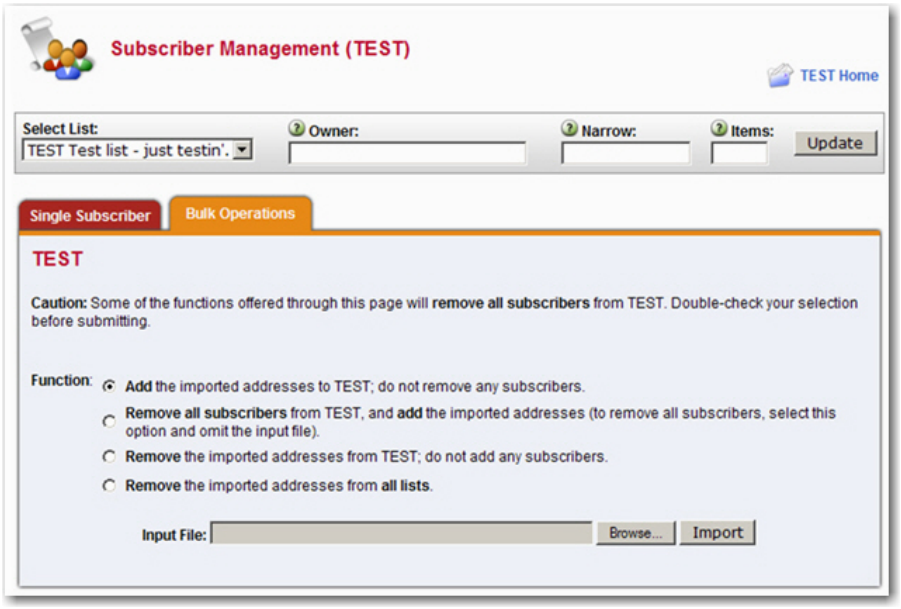
To speed up the process of importing subscribers on very large lists, simply add PRELOAD after the word IMPORT. For instance:

```
ADD XYZ-L DD=NEWSUB IMPORT PRELOAD
//NEWSUB DD *
joe@xyz.com Joe Doe
Helen Doe hdoe@abc.def.com
...more subscribers, one per line, as above...
/*
```

You should use the PRELOAD option whenever importing a new list into the DBMS, or whenever you are adding a very large number of new users.

Using the Web Interface to Import Subscribers

Importing subscribers can also be done in the Web Administration Interface. Browse and log into the LISTSERV Web Administration Interface. Click on the **List Management** menu on the toolbar, and then select **Subscriber Management**. The Subscriber Management screen opens. Click on the drop-down menu and select the list you want to work with, and then click on the **Bulk Operations** tab.



To add users to the list, select the **Add the imported addresses to [list name]; do not remove any subscribers** option. Use the **[Browse]** button to select your input file, and then click **[Import]**.

When importing subscribers, remember that:

- The input file must be a plain text file (not a word processor document or spreadsheet), and it must contain one address per line, optionally followed with a space (or tab) and the subscriber's name.
- The subscribers being added or deleted will not be notified.

Note: Bulk operations are not enabled by default. The site manager must enable this functionality explicitly per the instructions in the *Site Manager's Operations Manual*. If you get an error 2 when you click on the **[Import]** button, this means that the "upload" directory has not been created. If you get an error 13 when you click on the **[Import]** button, this means that the "upload" directory has been created but the CGI program user does not have write permission in that directory. Contact your site administrator if you have either of these problems.

Appendix C: Troubleshooting

The examples and instructions in this whitepaper assume that your installation and configurations have gone smoothly and the creation of the database connection completed successfully. If you experience any problems, you will need to contact your database administrator (DBA) or other local support staff who can help you fix the problem(s) with your database and/or ensure that you have the proper information to pass to the system in order to make the connection. L-Soft support staff cannot assist you with this kind of problem.