CHAPTER 2

Defining Your Data Sources

Introduction

After you install the SAS ODBC driver,* you must provide information about the data source(s) that you want to access. This chapter explains how to use the SAS ODBC driver dialog boxes to provide the necessary information.

From the SAS ODBC dialogs, you can select Help at any time to obtain information about the active dialog.

Accessing the SAS ODBC Driver Dialogs

To access the SAS ODBC dialogs, do the following:

1 Access the Microsoft Windows Control Panel window by selecting

   Start ➤ Settings ➤ Control Panel

   Find the ODBC or ODBC Administrator icon. This icon may be located in the Control Panel group, in an ODBC group, or, if you have installed a package of other ODBC drivers, it may be in a group that is associated with that package.

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* See the installation instructions that are shipped with the driver diskette.
2 Double-click on the icon. Depending upon the version of ODBC Administrator that you have installed (Windows NT version 3.510 is shown below), you may see a slight variation in the following dialog:

**Display 2.1** ODBC Data Source Administrator

3 To add a new data source, select either the User DSN tab or the System DSN tab and select [Add]. The Create New Data Source dialog appears.
4 To select the SAS ODBC Driver, scroll down in the list of Installed ODBC Drivers (if necessary) and click on **SAS**. Select **OK**.

Note: Select **sas** even if you are going to use a SAS data view to access non-SAS data. See “SAS Data Sets” on page 5 for information about SAS data views.

The SAS ODBC Driver Configuration dialog appears (Display 2.3 on page 13).
At the top of this dialog are four tabs—General, Servers, Libraries, and SQL Options. Select these tabs to move from one dialog page to the next. In each page, supply information about the data source that you want to be able to access.

After you have supplied all the necessary information, select [OK] from any page to save your data source definition. Selecting [Cancel] discards any new or changed information that you have supplied and returns you to the Data Sources dialog (Display 2.1 on page 12).

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**Naming Your Data Source and Server**

When you first access the SAS ODBC Driver Configuration dialog, the General page is at the foreground, as shown in Display 2.3 on page 13.

1 In the **Data Source Name** field, enter a name for the data source that you want to access. The name must begin with a letter, and it cannot contain commas, semicolons, or any of the following special characters: [ ] { } ( ) ? * = ! @ . For example, if you are defining SAS data that is stored on a machine named **CICERO**, you might call your data source **SAS_CICERO**. If you or other users are concerned only with the type of data (or with the type of application that uses that data), and not with where the data is stored, then you might have data sources with names like **Finance** or **Payroll**.

2 (Optional) In the **Description** field, you can supply a description of the data source.

3 The **Server** field has a drop-list icon next to it that you select in order to expand the list of defined servers. The first time you define a data source, the list is empty. Define one or more servers (as described in the next section), then come back to the General page to make a selection from the Server list. You must specify a server for every data source.

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**Defining Servers**

The SAS ODBC driver uses a SAS server to access your data sources. To access local data, the driver uses a SAS ODBC server. To access remote data, it uses a SAS/SHARE server. (See “SAS Servers” on page 7 for more information.)

This section explains how to provide the SAS ODBC driver with necessary information about the server(s) you will be using.

1 Select the **Servers** tab in the SAS ODBC Driver Configuration dialog to go to the Servers page. Supply the information described in the following steps. If at any time you want to clear all of the fields on the right side of the dialog and start again, select [Clear].
2 In the Name field, enter a name for the SAS server that you are defining. If you supply a one-part name such as shr1, the SAS ODBC driver infers that the server is local. If you supply a two-part name such as machine.shr2, the driver infers that the server is remote.
   - The driver interprets the first part of the name as a node name and the second part as the server name. The server name must match both the ID= field in PROC SERVER (the SAS/SHARE server that is running on the remote host), and the server-name that you (or your server administrator) specified when you defined the server as a service in the TCP/IP SERVICES file. See “The TCP/IP Services File” on page 28 for more information.

3 If user access to the server is password protected, then enter the password in the Password field. This should be the same password that was specified for the UAPW= option in PROC SERVER (for a SAS/SHARE server), or in PROC ODBCSERV (for a local access server).

4 If the server is a SAS ODBC server (used to access local data sources), then Local (Single User) is displayed in the SAS Server Type field. If the server is a SAS/SHARE server (used by multiple users), SAS/SHARE (Multi-User) is displayed.

5 Select Configure. A configuration dialog appears.
   - If you specified a one-part server name in the Name field of the Servers page (Display 2.4 on page 15), then the SAS ODBC driver infers that you are using a local SAS server. The Local Options dialog appears.
Display 2.5  Local Options Dialog

When you access a local SAS data source from an ODBC-compliant application, the SAS ODBC driver uses the information in this dialog to invoke a SAS ODBC server, provided there isn’t one already running. (If a SAS ODBC server is already running, the driver finds it and connects to it.) Each field contains default values that you can change by typing over them.

Path:

This field specifies the fully qualified path name for the SAS executable file (SAS.EXE) that you use to start a SAS session. The default is c:\sas\sas.exe. If this field is empty, then no attempt is made to start a SAS ODBC server when you connect to your data source.

Working Directory:

This field specifies the fully qualified path name for the directory that you want to use as the SAS working directory. This directory is usually where your SAS program files and documents are located. The default is c:\sas.

Startup Parameters:

This field specifies the parameters that are used to invoke the SAS System. The default values are as follows: The initialization statement (-initstmt) executes a SAS macro (%sasodbc), which in turn invokes the ODBC server. The shr1 value is only an example. It is a SAS macro parameter whose value is taken from the name that you specified in the Name field of the Servers page (Display 2.4 on page 15). The -icon option specifies that the server session should be invoked in iconified mode, because no interaction with the server is required. The -nologo option (not shown) specifies that the SAS session will be invoked without displaying the SAS System logo and copyright information.

The %sasodbc macro is shipped with the SAS System and is found in !SASROOT\CORE\SASMACRO\SASODBC.SAS.* The SASODBC.SAS file executes the SAS procedure PROC ODBCSERV.

The SASODBC.SAS file can be modified to add additional SAS system options or SAS statements such as the LIBNAME statements mentioned

* !SASROOT is a logical name for the directory in which you install the SAS System. For more information, see the SAS documentation for the Microsoft Windows or Microsoft Windows NT operating environment.
in “Defining Libraries at Server Startup Time” on page 20. You can also specify options for PROC ODBCSERV. The available options are the same as those for PROC SERVER. See the SAS/SHARE User's Guide for details.

An additional option, LOG=QUERY, is particularly relevant for servers that are used by the SAS ODBC driver. This option causes the server to log SQL queries. (By default, the server logs update and output operations, but not queries.) Hence, this option is useful when you need to see the queries that the server receives from an ODBC client application.

If your SAS session is installed on a network drive and is shared by multiple users, then you probably don't want individual users to modify the SASODBC.SAS file. Instead, users can make their own copies of the file and store them in their personal libraries. In this case, they must also add the -sasautos option either to the Startup Parameters field or to their local CONFIG.SAS file to indicate the pathname for the library, as in the following example:

-sasautos c:\programs\sas

For more information about SAS system options and SAS statements, see the SAS documentation for the Microsoft Windows or Microsoft Windows NT operating environment.

**Timeout:**

This field specifies in seconds how long to wait for the local SAS ODBC server to start and to register itself. The default is 60 seconds.

- If you specified a two-part server name before selecting Configure, the SAS/SHARE Options dialog appears.

Display 2.6 SAS/SHARE Options Dialog

Supply the requested information in the dialog as follows:

**Server Address:**

This field is automatically filled with the node name that you specified in the Name field of the Servers page (Display 2.4 on page 15). In a
complex networking environment, you may need to supply a fully qualified domain address for the server (for example, machine.sas.com).

User Name:
This field is for your userid on the system where the server is running. It is required if the server is running in secured mode; otherwise, it is ignored.

User Password:
This field is for your password on the system where the server is running. If you supply a Server User Name without a Server User Password, then you will be prompted for a password at connection time.

Connect Options:
This field is for providing additional connection options that are used when you are connecting to an SPDS server through the ODBC client. The connection options are name value pairs delimited by white space. Each of the values must be in single quotes. For example:

```
DBQ='tmp' HOST='bigone.unx.sas.com' SERV='5129'
```

where:
- **DBQ** is the SPDS server libname domain.
- **HOST** is the location of the host computer on your network where the SPDS nameserver is running.
- **SERV** is the port number of the SPDS name server running on the HOST.

See the documentation shipped with the SPDS server for more details.

6 When you have finished making any necessary changes to the Local Options or SAS/SHARE Options dialogs, select [OK] to return to the Servers page (Display 2.4 on page 15).

7 Important! Select [Add] to save your server definition. The server name now appears in the list of defined servers at the left.

8 To define another server, select [Clear] and then repeat steps 2-8.

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**Deleting a Server Definition**

To delete a previously defined server, do the following:

1. Select the server name from the Servers list at the left of the Servers page.
2. Select [Remove].

**CAUTION:**
If you delete a server, then any data sources that use that server will no longer be accessible until you redefine that server.

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**Modifying a Server Definition**

To change the information for a previously defined server, do the following:

1. Select the server name from the Servers list at the left of the Servers page.
2 Make the desired changes to the Password field. Select [Configure] to make changes in the Local Options or SAS/SHARE Options dialogs (Display 2.5 on page 16 and Display 2.6 on page 17).

The Name field is greyed out to indicate that you cannot change the name of the server. The reason for this is that you may have already defined data sources that use that server; if you changed the server name, then you would no longer be able to access those data sources.

3 Select [<<Update>>] to save your changes.

For instructions on how to specify a different server for a data source that you have already defined, see “Specifying a Different Server for a Defined Data Source” on page 23.

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**Defining Data Libraries**

Each data source can include multiple data libraries. (See “SAS Data Libraries” on page 6 for information.) Therefore, you provide information about each library that you want to access.

This section describes how to use the Libraries page to define your data libraries. See “Defining Libraries at Server Startup Time” on page 20 for information about an alternate way of defining data libraries.

1 Select the Libraries tab in the SAS ODBC Driver Configuration dialog to go to the Libraries page (Display 2.7 on page 19). Supply the information described in the following steps. If at any point you want to clear all of the fields on the right side of the dialog and start again, select [Clear].

**Display 2.7 Libraries Page**

![SAS ODBC Driver Configuration dialog with Libraries page displayed](image)

2 In the Name field, enter a name for an existing physical SAS data library that you want to access. (For those who are familiar with SAS, this field corresponds to the libref in the SAS LIBNAME statement.) The name can be up to eight characters...
long. The first character must be a letter or an underscore. Subsequent characters can be letters, numeric digits, or underscores. Blanks and special characters are not allowed. For example, you might use the name `cost` to designate a library of cost-accounting data.

The SAS data library can include SAS data files, SAS data views, or both. See “SAS Data Sets” on page 5 for more information.

Note: If you use an ODBC application that exports databases using one-level names, you will need to define a library called `user`. △

3 In the Host File field, enter the physical name of the library. This must be a valid pathname for the operating system that your data library is stored on. For example, for a library that is stored on a PC in the Windows environment, `c:\data\costacct` would be a valid pathname.

4 (Optional) In the Description field, supply a description of the library, to remind yourself or other users of what the library contains.

5 (Optional) In the Engine field, enter the name of the SAS engine that is required for writing to and reading from this library. This is necessary only if you do not want the SAS server to use the default engine for the version and release number of the SAS System that you are running. (For Version 7 of the SAS System, the default engine would be `V7`.) For information about other engines that may be available, see the description of the LIBNAME statement in the SAS Companion for the operating system under which your data library is stored.

6 (Optional) In the Options field, you may enter the following option for the library that you are defining:

```
ACCESS=READONLY
```

This option limits users to "read only" access to the SAS data sets in the library.

Note: In order to honor this option, the SAS server through which the library is accessed must be running under one of the following releases of the SAS system:*△

- For Release 6.08, maintenance level TS415 or later
- For Release 6.09, the second maintenance level or later
- Release 6.10 or later.

7 Select [<<Add>>] to save your library information. The Library Name is added to the Libraries list at the left.

8 To include another data library with your data source, repeat steps 2-7.

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**Defining Libraries at Server Startup Time**

Server administrators may prefer to define SAS data libraries at server startup time rather than defining them through the SAS ODBC driver dialogs. Defining libraries at server startup time can make opening the data source faster. It also enables you to avoid hard-coding the physical names of your libraries in your SAS ODBC data-source definitions.

* This option was available with earlier releases, but in the interface that is used by the SAS ODBC driver, this option has been supported only since the stated releases and maintenance levels.
Defining Your Data Sources

As explained in "SAS Servers" on page 7, the SAS ODBC driver uses a SAS/SHARE server (invoked by PROC SERVER) to access remote data sources. It uses a SAS ODBC server (invoked by PROC ODBCSERV) to access local data sources. To define a data library at server startup time, you precede the PROC SERVER or PROC ODBCSERV statement with a SAS LIBNAME statement. For example, you could define a library of cost-accounting data to a SAS/SHARE server as follows:

```
libname cost 'e:\fin\acct';
proc server id=acctserv authenticate=optional;
run;
```

Note: Depending on the version of the SAS server, the `authenticate=optional` option may not be needed.

To define this library to a SAS ODBC server, you would add only the above LIBNAME statement to the !SASROOT\CORE\SASMACRO\SASODBC.SAS file. See Startup Parameters on page 16 for more information.

When a user requests access to the particular SAS ODBC data source from an ODBC client application, the server would automatically make this library available, along with any libraries that were defined via the SAS ODBC Libraries page.

For more information about the SAS LIBNAME statement, see the SAS Companion for the operating system under which your data library is stored.

Deleting a Data Library Definition

To delete a previously defined data library, do the following:

1. Select the library name from the Libraries list at the left of the Libraries page (Display 2.7 on page 19).
2. Select `>>Remove`.

Modifying a Data Library Definition

To change the information for a previously defined library, do the following:

1. Select the library name from the Libraries list on the Libraries page.
2. Make the desired changes to the Host File, Description, Engine, and Options fields.
3. Select `<<Update>>` to save your changes.

Specifying SQL Options

SQL options affect the interaction between the SAS ODBC driver, SAS, and ODBC-compliant applications. The default settings for the options are those that most ODBC-compliant applications will expect and will work best with. However, you can override the defaults by selecting any of the items on the SQL Options page.

1. Select the SQL Options tab to go to the SQL Options page.
2. Click on the box to the left of any option that you want to specify. A check mark appears in the box when the associated option has been selected. Select as many options as you want. To deselect an option, click on it again.

- **Preserve trailing blanks**
  
  preserves trailing blanks at the end of character fields. The default action is that trailing blanks are removed, so that each field ends in a null.

- **Support VARCHAR**
  
  causes character fields that are longer than 80 characters to be reported as variable-length fields, and causes the trailing blanks to be removed. See “Support VARCHAR Option” on page 36 for more information.

- **Infer INTEGER from FORMAT**
  
  causes SAS numeric data types (typically reported as SQL_DOUBLE) to be reported as SQL_INTEGER. See “Infer INTEGER from FORMAT Option” on page 36 for more information.

- **Return SQLTables REMARKS**
  
  causes the SAS ODBC driver to read and return the SAS data set label for each data set in the library you are accessing. (SQLTables is the name of an ODBC function that can be used for this purpose.) For SAS data sets, this can have a negative impact on performance, because each data set must be opened in order to read the label. Therefore, you should not select this option unless there is information in the label that you really need to see.

- **UNDO_POLICY=REQUIRED**
  
  implements the UNDO_POLICY option of the SAS System's SQL procedure with a setting of REQUIRED. With this setting, INSERT or UPDATE operations that fail are undone. However, this action is performed only for operations that affect multiple records; a statement that affects a single
record behaves the same regardless of the UNDO_POLICY setting. When UNDO_POLICY=REQUIRED, the associated statement handle (hstmt) of an UPDATE or INSERT statement must be the only active hstmt against the table. If another user, or an hstmt within the same user’s application, has an active SELECT statement, the UPDATE or INSERT statement fails.

Fuzz Numbers at N Places
specifies the degree of precision to use when comparing numbers. See “Fuzz Numbers at N Places Option” on page 37 for more information. By default, this option is selected. You can change the default value, 12, by typing over it.

Tech Support
is for specifying options only as directed by SAS Institute Technical Support staff, if you require their assistance.

**Saving Your Data Source Definition**

When you have finished defining your data source, select **OK** to save your data source definition and return to the Data Sources dialog (Display 2.1 on page 12). Your newly defined data source now appears in the list of Data Sources on the left.

You can either add additional data sources, or select **OK** to return to the Microsoft Windows Control Panel (or to the location from which you entered the Data Sources dialog).

**Modifying a Data Source Definition**

To modify a previously defined data source, do the following:

1. Select the name of the data source from the Data Sources dialog (Display 2.1 on page 12).
2. Select **Configure**. The SAS ODBC Driver Configuration dialog (Display 2.3 on page 13) appears.
3. Use the tabs in this dialog to access other SAS ODBC pages. Use the other pages as described in previous sections to modify server definitions, library definitions, or SQL options.
4. When you are finished, select **OK** to save your changes.

**Specifying a Different Server for a Defined Data Source**

Suppose that a data source named Payroll has been moved from a server named CICERO to one named DA VINCI. In this case, you need to change the server that you specified for the Payroll data source by doing the following:

1. Select the Payroll data source from the Data Sources dialog (Display 2.1 on page 12).
2. Select **Configure**. The SAS ODBC Driver Configuration dialog (Display 2.3 on page 13) appears, with CICERO listed in the Servers field.
3 Use the Servers page to define the DAVINCI server, if it is not already defined.
4 From the General page, if DAVINCI is not already visible in the Servers field, select the drop-list icon next to that field, and then select DAVINCI from the list.
5 Select [OK] to save your changes.

Note: The server name specified must be defined in the TCP/IP Services file. For more information, see “The TCP/IP Services File” on page 28.

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**Deleting a Data Source Definition**

To delete a previously defined data source, do the following:

1 Select the name of the data source from the Data Sources dialog (Display 2.1 on page 12).
2 Select [Remove].