

An Update on SAS® and ODBC

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ABSTRACT

ODBC (Open Data Base Connectivity) is a windows service created especially for the exchange of data. After reading this paper, the user will be able to use ODBC to set up their data for use with Base SAS and any other ODBC compliant application.

We will look at using ODBC under the latest operating conditions such as Windows 98 and SAS 6.12 and get a sneak peek at SAS 7.0. We will review the definition of ODBC, how to set up databases so that they can be accessed from SAS and all other ODBC compliant applications such as MS Access, Paradox, MS Excel and Lotus 123.

We will compare ODBC with other third party products such as DBMS Copy.

CONNECTIVITY

In my opinion, data should be universal. We shouldn't have to worry about what format to save our data in. We should be able to access all our data with any application without having to know anything about the format, or file extensions. We should be able to exchange data with anyone without a long conversation about how it is stored.

We are a long way from achieving this.

ODBC

ODBC is a standard developed by Microsoft to create a common method of accessing information from a variety of data sources. ODBC allows applications to access different database file types whose drivers are installed on your machine.

Your system comes configured with several standard ODBC drivers. Users can add additional drivers as needed.

WHERE ITS AT - ODBC

The good news is that once a database is configured using the ODBC manager, it can be accessed by many different applications without a big hassle.

The bad news is that using ODBC does require the user to perform some preliminary set up requirements. You also need to know what application your data is stored in and what application you will want to use to access your data.

WHERE TO OBTAIN ODBC

You will need ODBC drivers for each software product that you will be sharing data with. In the following examples, we need the MS Access 97 ODBC driver.

To obtain drivers for Microsoft products, the official link is:

<http://www.microsoft.com/data/odbc/>

The 32-bit SAS ODBC driver is included with SAS Version 7, the 16-bit version is shipped with Release 6.10, 6.11 and 6.12. It is also available on the SAS Web site and runs under Windows 3.1, 32s and Windows for Workgroups

HOW TO SET UP ODBC IN WINDOWS

You have an ODBC Manager in the Control Panel under Windows.



By double clicking on this icon, we see all of the data drivers that are currently configured in your system. These drivers represent the software on your machine that have drivers installed for the support of the exchange of data using ODBC. You can obtain drivers for additional software directly from software vendors. Software vendors are responsible for supplying an ODBC driver for their product. Not all products support ODBC.

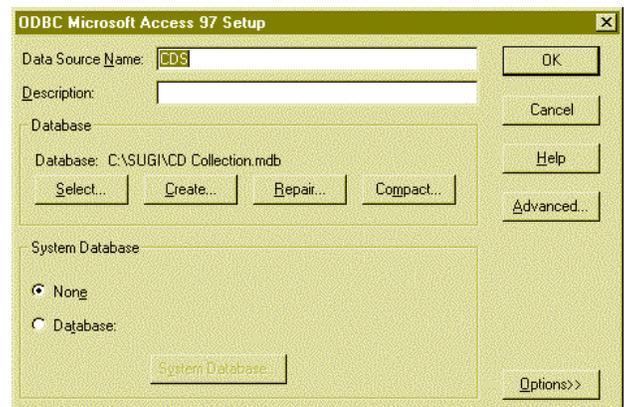
Most machines come with drivers for dbase, MS Excel, Foxpro, MS Access, Paradox, and Text.

The example used in this paper is that we have a MS Access database called 'cd collection'. This contains two tables, albums and artists located, in one database, We will read the data into SAS and perform some statistical analysis on this data.

In this example we will be reading non-SAS data with SAS.

Step #1: Tell the ODBC driver that we want to set up our data to be used with other ODBC compliant software.

In the control panel, double click on the ODBC driver icon. Pick the driver for the software that your data currently resides in. In our example, that would be : MS Access 97 Database (Microsoft Access Driver (*.mdb) (32-bit)). Click the Setup Button. The following screen will appear:



Type in a descriptive name you want to use for your data source. I typed 'CDS'. Then click on the Select button to select the MS Access Database that you want to use as your source. Find the database on your system and click 'Select'.

A second way to configure your data to be used with ODBC is to directly alter your ODBC.INI. This file is found in your Windows directory. This method is nice to use if you have many databases that you want to access via ODBC. It saves you the trouble of using the point and click interface of the ODBC Manager. It is easiest to set up your first database via the ODBC Manager, then use a word processor to cut and paste additional sources that you want to use. Following is the section of the ODBC.INI that you want to alter. The last entry is the database we set up in the ODBC Manager. You can add an infinite amount of additional sources.

```
[ODBC 32 bit Data Sources]
MS Access 7.0 Database=Microsoft Access Driver
(*.mdb) (32 bit)
Paradox Files=Microsoft Paradox Driver (*.db) (32
bit)
MS Access 97 Database=Microsoft Access Driver
(*.mdb) (32 bit)
dBASE Files=Microsoft dBase Driver (*.dbf) (32 bit)
Excel Files=Microsoft Excel Driver (*.xls) (32 bit)
FoxPro Files=Microsoft FoxPro Driver (*.dbf) (32
bit)
Text Files=Microsoft Text Driver (*.txt; *.csv) (32
bit)
AdvWorks=Microsoft Access Driver (*.mdb) (32 bit)
CDS=Microsoft Access Driver (*.mdb) (32 bit)
```

You have now told your system that you have a MS Access database that you want to access with any ODBC compliant database. This needs to be done for each database you will want to access via ODBC.

It is important to understand how your data is configured. Our sample Microsoft Access database has two tables, albums and artists. If we were using Microsoft Excel data, we would need to know the names of the workbooks or spreadsheets we wanted to use.

Step #2: Decide which method you want to use within SAS to access your data. This will depend on which SAS products you own. If you are not sure which SAS products you own, start with the first method present here since I have listed them from the easiest to use to the most difficult. If the first method doesn't work, the most likely reason is that you don't own the SAS product needed to use this procedure.

HOW TO USE ODBC WITH SAS

The ease of using ODBC with SAS varies greatly depending on the SAS products that you own. I will present the instructions for accessing our MS Access database using the different SAS products by their ease of use.

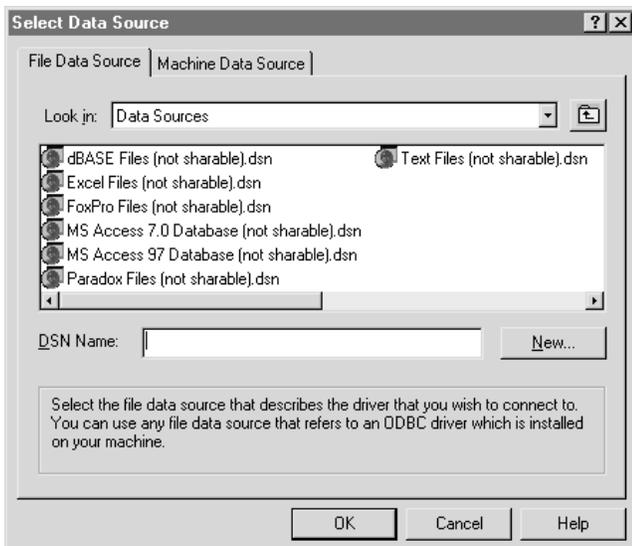
A description of the different options by SAS product follows:

SAS/ACCESS –

If you own SAS/Access, you have the easiest mechanism to access data via ODBC. Using a data access method called SQL Pass-Through, you can send remote SQL directly to a database from within the SAS System.

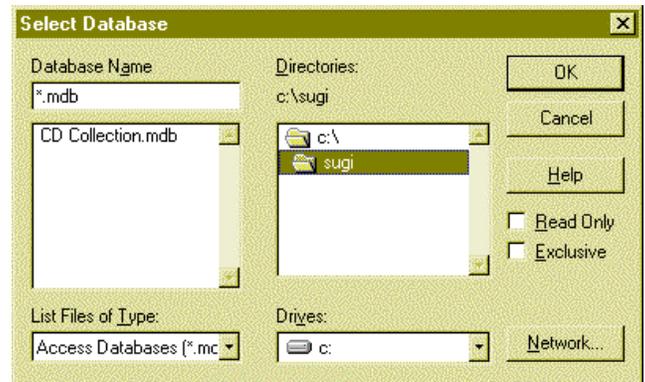
```
proc sql;
connect to odbc (prompt);
```

This will bring up the following dialog box:



From this dialog box, pick the type of database that you want to access. In this example we will pick MS Access 97 database.

Click on the database button and select the MS Access database that you set up previously in the ODBC dialog box.



This data can now be accessed within SAS with the following code:

```
proc print data=artists;
proc print data=albums;
```

Or, the following code will do the same thing:

```
proc sql;
connect to odbc (dsn=cds);
create table artists as select *
from connection to odbc(select * from
"artists");
create table albums as select *
from connection to odbc(select * from
"albums");
disconnect from odbc;
quit;

proc print data=artists;
proc print data=albums;
run;
```

SAS/ASSIST –

SAS/ASSIST software provides a task-oriented visual interface to the SAS System. Users can generate ODBC queries without the knowledge of SQL. This is accessed by choosing SAS/ASSIST under the GLOBALS menu from within SAS and following the prompts.

SAS/SHARE or SAS/SHARE*NET –

SAS/SHARE software, an integrated component of the SAS System, is a data server that allows multiple users to gain simultaneous access to SAS files. This data sharing facility plays a key role in the SAS System's approach to client/server computing because data located on a server machine can be accessed concurrently from multiple clients.

SAS Universal ODBC Driver - This driver is an implementation of the ODBC standard that enables you to access, manipulate, and update SAS data sources from ODBC-compliant applications. The SAS ODBC driver uses a SAS server to access data from your SAS data sources. The server can be an iconified, interactive SAS session running locally or a remote SAS/SHARE server.

BASE SAS –

There is no way currently to use ODBC to access non-SAS databases when only licensing base SAS.

SAS Suggests saving the MS Access Database as a comma separate file (.CSV) and importing it using the Import Wizard, DDE, or reading the file with the INFILE option of the data step.

More information on using these methods can be found in the 'SAS Companion for the Microsoft Windows Environment' or the Tech Support document 'TS325'.

DBMS Copy – DBMS Copy is a third party product available for purchase from Conceptual Software, Inc. This product provides a DBMS/Engines that enables you SAS programs to directly read and write any of the supported packages. After installing the DBMS program, you can use the following statements to access your dataset:

```
libname cds odbc 'c:\sugi\cd collection';
proc print data=cds.cd_collection.albums;
proc print data=cds.cd_collection.artists;
```

FUTURE OF ODBC

SAS Institute insures that the future of ODBC in SAS remains bright. They have beefed up the SAS/ACCESS product in V7 by providing a libname engine in addition to PROC SQL passthru. In fact, the SAS/ACCESS Interface to ODBC is their primary mechanism for accessing Microsoft SQL Server data. They have also ported the ODBC Libname engine to the major Unix boxes in V7.

Also new in System 7 is the Universal ODBC Driver. This is significant because it enables other applications, such as Microsoft Excel, to directly access data stored in SAS formats without requiring the SAS application software. For generations that store large amounts of SAS data on PC networks, this driver opens up the server data to more applications than ever before. This driver is sold separately and operates only on Windows platforms.

CONCLUSION

Using ODBC isn't as straightforward and as easy to use as I would like it to be, but it is a vehicle we can use to access data in other formats from SAS, or access SAS datasets using other software. In the long run, it sure beats exporting and importing databases.

REFERENCES

SAS Institute Inc., *SAS ODBC Driver Technical Report: User's Guide and Programmer's Reference*, Cary, NC: SAS Institute Inc., 1998.

Riba, S. David and Riba, Elisabeth. ODBC: Windows to the Outside World *Proceedings of the Twentieth Annual SAS Users Group International Conference*. SAS Institute, Inc., Cary, NC.

Conceptual Software, www.conceptual.com or 800.328.2686.

ACKNOWLEDGMENTS

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