Paper 293

# More Windows to the Outside World:
## Configuring and Using ODBC in Version 7 of the SAS® System

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## ABSTRACT

Open DataBase Connectivity (ODBC) has evolved into the standard for exchanging information between almost all of the common database applications. SAS introduced support for ODBC several years ago in Version 6.10. Using ODBC, it is possible to exchange data between SAS and most other DBMSs, such as Oracle, Excel, Lotus, and SQL Server.

This is an update to the paper originally presented at SUGI 21 in 1996. The original paper introduced the concepts behind ODBC, and illustrated how to configure and use ODBC with the SAS System. The interfaces to ODBC have changed with Version 7 of the SAS System. This paper will examine those changes and the new procedures to interface SAS and ODBC. The presentation is intended for those with Intermediate to Advanced levels of SAS knowledge.

## INTRODUCTION

At SUGI 21 in 1996, I presented a paper titled "*ODBC: Windows to the Outside World"* which served as a fundamental introduction to Open DataBase Connectivity (ODBC). That paper defined the core concepts behind ODBC, the fundamentals of ODBC architecture, and described how to configure and use ODBC with the SAS® System. It also reviewed the SQL syntax needed to create ODBC queries from within SAS.

In Version 7 of the SAS System, there have been several changes to the SAS implementation of ODBC. This paper will not reexamine the core concepts or architecture of ODBC. These have not changed in the intervening years. For a basic understanding of ODBC, the reader is encouraged to refer to the original paper that can be found in the SUGI 21 Proceedings or downloaded from the author's website at WWW.JADETEK.COM. Instead, this paper will be devoted to those changes that have been implemented in the current release of SAS software, Version 7.0.

## MAJOR CHANGES IN VERSION 7 ODBC

Starting with Release 6.10 of the SAS System, the Version 6 implementation of ODBC by SAS Institute served the fundamental purpose of supporting the ODBC standard and providing access to ODBC data sources. However, the Release 6 implementations had a variety of problems. These problems caused the SAS implementation of ODBC support to be harder to use, generally inefficient, and lacking in features.

SAS Version 7 ODBC support has fixed many of the problems that occurred previously. Below are some of the major changes that are present in SAS Version 7 ODBC:

- Prior to Version 7, the SAS implementation of ODBC used TCP/IP for communications over networks and DDE for local communications. Version 6 supported DDE because 16-bit Windows applications (Win 3.1 and Win 32s) did not support TCP/IP. ODBC Version 7 has eliminated support for DDE. Instead, TCP/IP is used as the only communications method. While Data Sources configured as DDE will continue to function in Version 7, for optimum efficiency SAS recommends that these Data Sources should be converted to TCP.

- One of the major complaints about the Version 6 implementation of ODBC was field type incompatibilities between SAS and other ODBC applications such as Microsoft Excel. A key problem was that dates were interpreted differently, and the SQL Pass-Through Facility did not always translate dates correctly. This has been corrected in Version 7. Version 7 supports the date9x, time8x, and datetime19x variable types for creating date, time, and datetime variables. In addition, the Date and Datetime data types were increased in width to allow formatting of all 4 digits of the year. These data types also address Year 2000 problems that may be encountered in transferring date values through ODBC.

- The SAS/Access® Interface to ODBC has changed the way AS/400 and SQL Server data is accessed. In Version 6, View Descriptors were needed in SAS/Access® to AS/400 and in SAS/Access® to SQL Server. SAS/Access® to the AS/400 was available only for OS/2 and it has since been discontinued. Support for SQL Server was provided by SAS/Access® to Sybase and SQL Server. This product has been reconfigured in Version 7 to SAS/Access® to Sybase. In both instances, the decision was made to use the SAS/Access® Interface to ODBC to access AS/400 and SQL Server data.

  In order to facilitate the move from Version 6 to Version 7, SAS now supplies a conversion procedure, PROC CV2ODBC to convert Version 6 views and descriptors to Version 7 SQL views. The syntax for PROC CV2ODBC can be found in the online help or in the ODBC documentation.

- SAS Institute now supplies two ODBC drivers. Besides the SAS ODBC driver (which has been updated to support Version 7 data structures), there is now a new SAS Universal ODBC driver. The SAS ODBC driver still requires Base SAS software in the background to interpret the ODBC requests. The SAS Universal ODBC driver does not require access to the SAS System. Also, the SAS ODBC driver now provides read and write access to SAS ODBC data, and supports long variable names and the use of name literals.

  The SAS Universal ODBC driver provides additional support for:

  - SAS data sets
  - CFO Vision™ Financial Database (FDB) files
  - SAS/MDDB™ multi-dimensional database files
  - SAS catalogs
  - JMP® files

- In Version 6, the ability to write data to an external DMBS was very limited. The only workaround was a very kludgy and inefficient use of SQL program statements. Statements such as CREATE TABLE and INSERT could be used to load external data from within SAS. This workaround has now been replaced with new functionality in PROC DBLOAD.

- While not specifically ODBC related, SAS has updated the Import Data Wizard to add Microsoft Access tables for those sites that license SAS/Access® to PC File Formats.

## VERSION 7 ODBC DOCUMENTATION

The documentation has been improved as well. Since the SAS implementation of ODBC is part of SAS/ACCESS® for Relational Databases, the primary SAS documentation for ODBC can be found in the *SAS/ACCESS Software for Relational Databases, First Edition.* This is available as part of the SAS Online Doc Version 7-0 CD Rom.

In addition, SAS Institute has updated the User's Guide. When ODBC is installed, a PDF file named TECHRPT.PDF is loaded which is the *ODBC Driver Technical Report: User's Guide and Programmer's Reference* in Adobe PDF format. Finally, a Microsoft Word file is installed which contains last minute supplemental information. This file is named ODBCREAD.DOC. It is not a very long document, but contains important information about compatibility issues.

Documentation for the SAS Universal ODBC Driver can be found in the online Help by performing the following steps:

- Open the ODBC icon in the Control Panel
- Select the SAS Universal Data Source
- Press the Configure button
- In the SAS Universal ODBC Driver Setup window, press the Help button
- Click on Contents for a full Table of Contents

## VERSION 7 ODBC INSTALLATION

The good news is that ODBC installation and configuration have been greatly improved. Version 7 has completely changed the old process necessary to install and configure ODBC. SAS now uses a standard autorun-enabled Windows Installation Wizard process. It is simple and easy to use. As the final step of the Install process, the Wizard presents two options:

- View the Online ODBC Documentation
- Configure ODBC Data Sources

The only drawback is that the ODBC driver is installed in a default directory named SAS Institute Inc. There are no provisions during the Install process to change the name or location of this default directory. Most implementations of the Windows Install Wizard allow the user to select destination directory names and locations. My understanding is that this might be a bug in Version 7 which will be fixed in Version 8.

## VERSION 7 ODBC CONFIGURATION

Once the ODBC drivers have been installed, configuration is basically the same as before. The ODBC Driver Manager controls the configuration of new Data Sources. The ODBC configuration process has not changed between Versions 6 and 7, since this is a Windows supplied program. The steps necessary to set up Data Sources, Libraries, etc. is the same under both Versions 6 and 7 of the SAS System.

## CONCLUSION

SAS Institute has made some major improvements in the newest release of ODBC support. The functionality of the ODBC drivers was increased, the installation process was simplified, and the documentation was improved. This paper looked at some of the key changes implemented in Version 7.

## REFERENCES

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## SPEAKER BIO:

S. David Riba is CEO of JADE Tech, Inc., a SAS Institute Quality Partner who specializes entirely in applications development, consulting and training in the SAS System.

Dave is the founder and President of the Florida Gulf Coast SAS Users Group. He chartered and served as Co-Chair of the first SouthEast SAS Users Group conference, SESUG '93. Dave currently serves as President of the SouthEast SAS Users Group, and serves on the Executive Council of CONSUG, the Consultant's SAS Users Group. His first SUGI was in 1983, and he has been actively involved in both SUGI and the Regional SAS User Group community since then. He has presented papers and assisted in various capacities at SUGI, SESUG, NESUG, MWSUG, SCSUG, and PharmaSUG.

Dave is an unrepentant SAS bigot. His major areas of interest are efficient programming techniques and applications development using the SAS System. His SAS software product specialties are SAS/AF and FRAME technology, SAS/EIS, SAS/IntrNet, webAF, HR/Vision, and CFO/Vision.