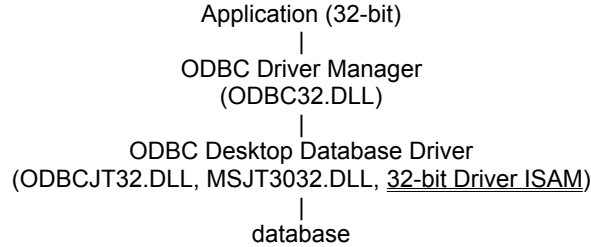


## Overview

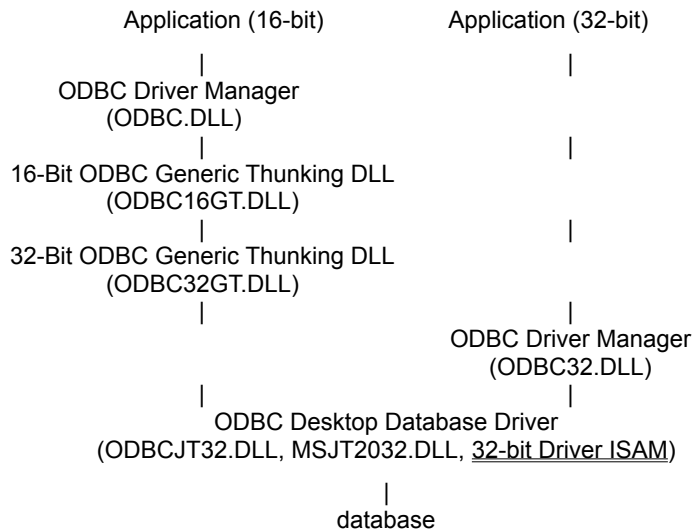
The ODBC Desktop Database Drivers 3.0 are designed for use on Microsoft Windows 95 or later, or Windows NT 3.51 or later. Only 32-bit applications are supported on Windows 95 or later; 16-bit and 32-bit applications are supported on Windows NT 3.51 or later. The ODBC drivers on Windows NT 3.51 or later support 16-bit applications by the use of thinking layers.

The ODBC Desktop Database Drivers include 32-bit drivers for Microsoft Access, dBASE, Microsoft Excel, Microsoft FoxPro, Paradox, and Text. No 16-bit drivers are included.

The application/driver architecture on Windows 95 or later is:



The application/driver architecture on Windows NT 3.51 or later is:



## Driver ISAM Files

The ODBC Desktop Database Drivers include ISAM files. Note that 16-bit ISAMs have been deleted, and 32-bit ISAMs have been renamed. Support for **Microsoft Access 7.0**, **dBASE V** (dBASE for Windows), and **Paradox 5.0** (Paradox for Windows) is new. These files are as follows:

Driver	32-bit ISAM	Versions
<b>Microsoft Access</b>	None (Included in MSJT3032.DLL)	Microsoft Access version 7.0
<b>Microsoft Access</b>	MSRD2X32.DLL	Microsoft Access versions 1.0, 1.1, 2.0
<b>dBase</b>	MSXB3032.DLL	dBase versions III, IV, and V (dBASE for Windows)
<b>Microsoft Excel</b>	MSXL3032.DLL	Microsoft Excel versions 3.0, 4.0, 5.0 (For versions earlier than 3.0, see note below)
<b>Microsoft FoxPro</b>	MSXB3032.DLL	Microsoft FoxPro versions 2.0, 2.5, 2.6
<b>Paradox</b>	MSPX3032.DLL	Paradox versions 3.5, 4.0, 4.5, and 5.0 (Paradox for Windows)
<b>Text</b>	MSTX3032.DLL	ASCII Text

## ODBC Component Files

The following table lists the files required by each component of the ODBC Desktop Database Drivers. Some files are required by more than one component. These files must be redistributed if you intend to redistribute any of the ODBC Desktop Database Drivers with your commercial application.

The following files are common for each of the ODBC Desktop Database Drivers:

CTL3D32.DLL (Windows NT only)	ODBCINST.CNT
DS16GT.DLL	ODBCINST.HLP
DS32GT.DLL	ODBCINT.DLL
MSJINT32.DLL	ODBCJET.HLP
MSJT3032.DLL	ODBCJET.CNT
MSJTER32.DLL	ODBCJI32.DLL
MSVCRT20.DLL (Windows NT only)	ODBCJT32.DLL
ODBC16GT.DLL	ODBCJTNW.HLP
ODBC32.DLL	ODBCJTNW.CNT
ODBC32GT.DLL	ODBCTL32.DLL
ODBCCP32.CPL	VEN2232.OLB
ODBCCP32.DLL	VBAJET32.DLL
ODBCCR32.DLL	VBAR2232.DLL

The following files are unique to each driver:

<b>Microsoft Access</b>	MSRD2X32.DLL
<b>dBASE</b>	MSXB3032.DLL ODDBSE32.DLL
<b>Microsoft Excel</b>	MSXL3032.DLL ODEXL32.DLL
<b>Microsoft FoxPro</b>	MSXB3032.DLL ODFOX32.DLL

<b>Paradox</b>	MSPX3032.DLL ODPDX32.DLL
<b>Text</b>	MSTX3032.DLL ODTEXT32.DLL

## **Software Requirements**

New software requirements for the Microsoft ODBC Desktop Database Drivers are as follows:

- The 32-bit ODBC Driver Manager, version 2.5 or later (ODBC32.DLL). Note that this file is included with the ODBC Desktop Database Drivers.
- Microsoft Windows 95 or later, or Windows NT 3.51 or later.

## **Base Address of Drivers**

Each of the ODBC Desktop Database Drivers has been linked with a base address of 0x04c00000.

## **Data Source Conversion**

The 32-bit data sources used with the ODBC Desktop Database Drivers version 2.0 are automatically converted to new 32-bit data sources for version 3.0 drivers. No conversion is provided for 16-bit data sources. To change a 16-bit data source to a 32-bit data source, create a new 32-bit data source, then (optionally) delete the old 16-bit data source. A 32-bit data source and a 16-bit data source cannot share the same name.

## **Setting Up Drivers**

Drivers can no longer be added or deleted from the Control Panel or Administrator. The Add and Delete buttons have been removed from the Drivers dialog box that is displayed when the ODBC icon in the Control Panel (or Administrator) is chosen, then the Drivers button in the Data Sources dialog box is chosen. Adding or deleting drivers is only supported during installation of the ODBC Desktop Database Drivers.

## Adding a System Data Source

A data source can be set up with a system data-source name (DSN) that can be used by more than one user on the same machine. The system DSN can also be used by a system-wide service, which can then gain access to the data source even if no user is logged onto the machine.

- 1** Double click the Control Panel icon. In the Control Panel window, double-click the ODBC icon.
- 2** In the Data Sources dialog box, choose the System DSN button.
- 3** In the System Data Sources dialog box, choose the Add button.
- 4** In the Add Data Source dialog box, select the driver's name from the Installed ODBC Drivers list and choose OK.
- 5** In the ODBC Setup dialog box, enter information to set up the data source. (Note that the description entry cannot exceed 79 characters). Choose OK.

## Extensions List Setup Option

When the **Text** driver is used, the Extensions List box lists the filename extensions of the text files to be used in the data source. The Default is (\*.\*). When the Default check box is checked, all files in the directory will be used in the data source. To use only those files with certain extensions, clear the Default (\*.\*) check box and add each extension you want to use.

To add an extension, type the extension in the Extension box and click the Add button. The extension must use the format \*.xxx. For example, to use .DAT files, type the extension \*.DAT. To remove an extension, highlight the extension in the Extensions list and click the Remove button. Removing all extensions is like checking the Default (\*.\*) check box: all files will be displayed.



## Product Support

### CompuServe

The Microsoft Connection on CompuServe provides online technical information for Microsoft products, including the ODBC Desktop Database Drivers. With the Microsoft Connection, you can exchange messages with Microsoft professionals and experienced Microsoft users, and you can download free software—such as patches, tools, and add-ons—provided by Microsoft and CompuServe members.

By using the Microsoft Connection, you can access the Microsoft Developer Services area. You are encouraged to use this area to speak directly to Microsoft about developer-related issues. The Microsoft Developer Services area offers the following advantages:

- **Developer Forums** The ODBC section of the Windows Extension (WinEXT) forum provides information about the ODBC API, application development, and driver development (GO WINEXT). The ODBC Desktop Drivers section of the WinEXT forum provides information about the use of the ODBC Desktop Database Drivers. The section leads for these sections are from Microsoft Product Support and can help answer your questions about the Desktop Database Drivers.
- **Confidential Technical Service Requests** Microsoft offers private (fee-based per incident) technical support to help solve your more complex development problems. For more details, see the Microsoft Developer Services area.
- **Microsoft Knowledge Base** This up-to-date reference tool, compiled by Microsoft Product Support, contains developer-specific technical information about Microsoft products (GO MSKB).

To connect to the Microsoft Connection, type **GO MICROSOFT** at the CompuServe “!” prompt. For information about establishing a CompuServe account, call (800) 848-8199, 8:00 a.m. to 10:00 p.m. EST. Ask for operator 230 and receive a \$15 connect-time usage credit.

### Support Plans

Microsoft also offers pay-as-you-go telephone support from a Microsoft engineer, and a variety of annual paid support plans. In the United States, call (800) 936-3500 for further information on Microsoft support options. Outside of the United States, contact your local Microsoft Subsidiary for information regarding the availability of these products and services.

## **Unsupported Data Formats**

This release of the ODBC Desktop Database Drivers 3.0 does not support the following data sources:

- Btrieve
- EMS
- FoxPro 3.0
- Lotus 1-2-3

## **Create Database Button**

When the **Microsoft Access** driver is used, the Create button may be pressed to create a new database. A database created using the Create button will only work with Microsoft Access 7.0.

## **CREATE TABLE Statement Limitations**

When the **Paradox** driver is used, columns cannot be added once an index has been defined on a table. If the first column of the argument list of a CREATE TABLE statement created an index, a second column cannot be included in the argument list.

## Identifiers Limitations

The shorthand form of the reserved words listed in the SQL grammar in Appendix C of the *Microsoft ODBC Programmer's Reference* should not be used as identifiers (that is, table or column names), unless you surround the word in back quotes (`).

## **INSERT Statement Limitations**

When a **dBASE**, **Microsoft Excel**, **Microsoft FoxPro**, **Paradox**, or **Text** driver is used, inserting a zero-length string into a column actually inserts a NULL instead.

When the **Microsoft Excel** driver is used, inserting a NULL into a column of the first row of the table, when the column has a data type other than SQL\_VARCHAR, will cause the data type of the column to change to SQL\_VARCHAR.

## Microsoft Access Data Types

The GUID data type has been added as a **Microsoft Access** data type.

<b>Microsoft Access data type</b>	<b>Data type (CREATETABLE)</b>	<b>ODBC SQL data type</b>
GUID	Binary	SQL_LONGBINARY

## dBASE Data Types (Advanced)

Data types have been added for dBASE 5.0 support that are not supported for earlier versions of dBASE. The dBASE data types are listed below.

<b>dBASE data type</b>	<b>ODBC data type</b>
CHAR	SQL_VARCHAR
DATE	SQL_DATE
FLOAT *	SQL_DOUBLE
LOGICAL	SQL_BIT
MEMO	SQL_LONGVARCHAR
NUMERIC (BCD)	SQL_DOUBLE
OLEOBJECT *	SQL_LONGBINARY

\* Only valid for dBASE version 5.x

## Paradox Data Types (Advanced)

Data types have been added for Paradox 5.x support that are not supported for earlier versions of Paradox. The Paradox data types are listed below.

<b>Paradox data type</b>	<b>ODBC data type</b>
ALPHANUMERIC	SQL_VARCHAR
AUTOINCREMENT #	SQL_INTEGER
BCD #	SQL_DOUBLE
BYTES #	SQL_BINARY
DATE	SQL_DATE
IMAGE *	SQL_LONGVARBINARY
LOGICAL #	SQL_BIT
LONG #	SQL_INTEGER
MEMO	SQL_LONGVARCHAR
MONEY #	SQL_DOUBLE
NUMBER	SQL_DOUBLE
SHORT	SQL_SMALLINT
TIME #	SQL_TIMESTAMP
TIMESTAMP #	SQL_TIMESTAMP

\* Only valid for Paradox versions 4.x and 5.x.

# Only valid for Paradox versions 5.x.



## Data Type Limitations







BIT data types	With the Microsoft ODBC Desktop Database Drivers 2.0, TRUE for a BIT data type was represented as -1, not 1, so comparisons might not operate properly. BIT Columns would display as 0 or 1 when a SELECT was performed, but a query making a direct comparison of a BIT data type to the number "1" would not succeed. If a direct comparison had to be made, the comparison should have been made to TRUE or <>0. This is not true for the Microsoft ODBC Desktop Database Drivers 3.0. TRUE for a BIT data type is represented as 1. Direct comparisons can be made to 1.
TEXT data type	When the <b>Microsoft Excel</b> driver is used, inserting a NULL into a column with a data type other than SQL_VARCHAR will cause the data type of the column to change to SQL_VARCHAR.
Zero-length strings	When a <b>dBASE, Microsoft Excel, Microsoft FoxPro, Paradox, or Text</b> driver is used, inserting a zero-length string into a column actually inserts a NULL instead.

## **Error Messages**

Error messages returned by the Driver Manager have the following format: [Microsoft][ODBC Driver Manager] *message-text*, not [Microsoft][ODBC DLL] *message-text*.

## SQLGetInfo Returned Values

The following table lists the C-language #define values for the *InfoType* argument to **SQLGetInfo** for which the returned values have changed in version 3.0 of the ODBC Desktop Database.

	SQL_DBMS_VER
	SQL_DRIVER_ODBC_VER
	SQL_DRIVER_VER
	SQL_LIKE_ESCAPE_CLAUSE
	SQL_OJ_CAPABILITIES
	SQL_TIMEDATE_FUNCTIONS

## **SQL\_DBMS\_VER**

"1.0", "1.1", "2.0", or "7.0" (Microsoft Access)

"3.0", "4.0", or "5.0" (dBASE)

"3.0", "4.0", or "5.0" (Microsoft Excel)

"2.0", "2.5", or "2.6" (Microsoft FoxPro)

"3.x", "4.x", or "5.x" (Paradox)

"1.0" (Text)

**SQL\_DRIVER\_ODBC\_VER**

"2.50"

**SQL\_DRIVER\_VER**

" 2.99.*nnnn*" (*nnnn* specifies the build date.)

## SQL\_LIKE\_ESCAPE\_CLAUSE

"N"

## **SQL\_OJ\_CAPABILITIES**

This *flInfoType* did not appear in ODBC 2.0. It was added for ODBC 2.10.

SQL\_OJ\_LEFT  
SQL\_OJ\_RIGHT  
SQL\_OJ\_NOT\_ORDERED  
SQL\_OJ\_INNER  
SQL\_OJ\_ALL\_COMPARISON\_OPS



## SQL\_TIMEDATE\_FUNCTIONS

The **dBASE**, **Microsoft FoxPro**, and **Paradox** drivers do not support the SQL\_FN\_TD\_CURDATE, SQL\_FN\_TD\_CURTIME, or SQL\_FN\_TD\_NOW options for SQL\_TIMEDATE\_FUNCTIONS.

SQL\_FN\_TD\_CURDATE |  
SQL\_FN\_TD\_CURTIME |  
SQL\_FN\_TD\_DAYOFMONTH |  
SQL\_FN\_TD\_DAYOFWEEK |  
SQL\_FN\_TD\_DAYOFYEAR |  
SQL\_FN\_TD\_HOUR |  
SQL\_FN\_TD\_MINUTE |  
SQL\_FN\_TD\_MONTH |  
SQL\_FN\_TD\_NOW |  
SQL\_FN\_TD\_SECOND |  
SQL\_FN\_TD\_WEEK |  
SQL\_FN\_TD\_YEAR  
(Microsoft Access, Microsoft Excel, Text)

SQL\_FN\_TD\_DAYOFMONTH |  
SQL\_FN\_TD\_DAYOFWEEK |  
SQL\_FN\_TD\_DAYOFYEAR |  
SQL\_FN\_TD\_HOUR |  
SQL\_FN\_TD\_MINUTE |  
SQL\_FN\_TD\_MONTH |  
SQL\_FN\_TD\_SECOND |  
SQL\_FN\_TD\_WEEK |  
SQL\_FN\_TD\_YEAR  
(dBASE, Microsoft FoxPro, Paradox)

## **SQLBindParameter**

When the **Microsoft Excel 3.0/4.0** driver or the **Microsoft Excel 5.0** driver is used, executing an INSERT statement that uses a parameter to insert a NULL into a SQL\_CHAR column will return SQL\_SUCCESS\_WITH\_INFO with SQLSTATE 01004, "Data Truncated".

## SQLConfigDataSource

The **SQLConfigDataSource** function that is used to add, modify, or delete a data source dynamically has the following new definitions.

Keyword	Description
DRIVERID	An integer ID for the driver. 533 (dBASEV) 538 (Paradox5)
FIL	File type (DBASE5; PARADOX 5.x)

## SQLExtendedFetch

The ODBC Desktop Database Drivers do not perform bookmark checking. If an application passes an invalid bookmark into **SQLExtendedFetch**, the results are undefined. **SQLExtendedFetch** does not always return SQLSTATE S1111 (Invalid Bookmark). It can also return SQLSTATE S1000 (General Error) with a message indicating a disk or network error.

When division-by-zero is performed in a SELECT statement, then **SQLExtendedFetch** is called, **SQLExtendedFetch** returns SQLSTATE 22012, "Division by zero", with SQL\_SUCCESS\_WITH\_INFO. For each row affected by the division-by-zero, SQL\_ROW\_ERROR is returned in the *rgfRowStatus* buffer to indicate the error in retrieving data from the row. Rather than returning just SQLSTATE 22012, "Division by zero", **SQLExtendedFetch** should return SQLSTATE 01S01, "Error in Row", then SQLSTATE 22012, "Division by zero". Both should be returned with SQL\_SUCCESS\_WITH\_INFO.

## **SQLSetPos**

When the **Paradox** driver is used, performing a positioned update with **SQLSetPos** (with an fOption of SQL\_REFRESH, SQL\_UPDATE, SQL\_DELETE, or SQL\_ADD) against a table with no index will return SQLSTATE 42000, "Syntax error or access violation". An error message will indicate that the database cannot be updated because it is read-only. This error message will be returned even if the database is not read-only.

## SQLTables

When the **Microsoft Excel 3.0/4.0** driver is used, if you call **SQLTables** with a value for *szTableQualifier* that is not the name of an existing table, the driver will create a table with that name.

