DataDirect Connect® Series *for* ODBC

Troubleshooting Guide

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DataDirect OpenAccess SDK client for ODBC, DataDirect OpenAccess SDK client for ADO, DataDirect Open Access SDK client for JDBC, and DataDirect OpenAccess SDK server include: DataDirect SequeLink.

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Preface

This book is your troubleshooting guide to the DataDirect Connect® Series *for* ODBC from DataDirect Technologies, which includes the following products:

- DataDirect Connect® *for* ODBC
- DataDirect Connect64® *for* ODBC
- DataDirect Connect XE (Extended Edition) *for* ODBC
- DataDirect Connect64 XE *for* ODBC

Using this Book

The content of this book assumes that you are familiar with your operating system and its commands. It contains the following information:

- Chapter 1 "Diagnostic Tools" on page 13 discusses the diagnostic tools that are available to you when you are configuring and troubleshooting your ODBC environment.
- Chapter 2 "Error Messages" on page 21 discusses error messages that you might encounter.
- Chapter 3 "Troubleshooting" on page 23 describes issues you might encounter, provides some typical causes of the issues, lists some diagnostic tools that are useful to troubleshoot the issues, and, in some cases, explains possible actions you can take to resolve the issues.

Conventions Used in This Book

The following sections describe the typography and other conventions used in this book.

Typographical Conventions

This book uses the following typographical conventions:

Convention	Explanation
italics	Introduces new terms with which you may not be familiar, and is used occasionally for emphasis.
bold	Emphasizes important information. Also indicates button, menu, and icon names on which you can act. For example, click **Next**.
UPPERCASE	Indicates keys or key combinations that you can use. For example, press the ENTER key. Also used for SQL reserved words.
`monospace`	Indicates syntax examples, values that you specify, or results that you receive.
`monospaced italics`	Indicates names that are placeholders for values that you specify. For example, *`filename`*.
forward slash /	Separates menus and their associated commands. For example, Select File / Copy means that you should select Copy from the File menu. The slash also separates directory levels when specifying locations under UNIX.
vertical rule |	Indicates an "OR" separator used to delineate items.
brackets [ ]	Indicates optional items. For example, in the following statement: SELECT [DISTINCT], DISTINCT is an optional keyword. Also indicates sections of the Windows Registry.

Convention	Explanation
braces { }	Indicates that you must select one item. For example, {yes | no} means that you must specify either yes or no.
ellipsis . . .	Indicates that the immediately preceding item can be repeated any number of times in succession. An ellipsis following a closing bracket indicates that all information in that unit can be repeated.

Environment-Specific Information

The drivers are supported in the Windows, UNIX, and Linux environments. When the information provided is not applicable to all supported environments, the following symbols are used to identify that information:

The Windows symbol signifies text that is applicable only to Windows.

The UNIX symbol signifies text that is applicable only to UNIX and Linux.

About the Product Documentation

The product library consists of the following books:

- *DataDirect Connect Series for ODBC Installation Guide* details requirements and procedures for installing the product.
- *DataDirect Connect Series for ODBC User's Guide* provides information about configuring and using the product.

- *DataDirect Connect Series for ODBC Reference* provides detailed reference information about the product.
- *DataDirect Connect Series for ODBC Troubleshooting Guide* provides information about error messages and troubleshooting procedures for the product.

HTML Version

This library, except for the installation guide, is placed on your system as HTML-based online help during a normal installation of the product. It is located in the help subdirectory of the product installation directory. To use the help, you must have an Internet browser installed.

On Windows, you can access the entire Help system by selecting the help icon that appears in the DataDirect program group.

On all platforms, you can access the entire Help system by opening the following file from within your browser:

install_dir/help/help.htm

where *install_dir* is the path to the product installation directory.

Or, from a command-line environment, at a command prompt, enter:

browser_exe install_dir/help/help.htm

where *browser_exe* is the name of your browser executable and *install_dir* is the path to the product installation directory.

After the browser opens, the left pane displays the Table of Contents, Index, and Search tabs for the entire documentation library. When you have opened the main screen of the Help system in your browser, you can bookmark it in the browser for quick access later.

NOTE: Security features set in your browser can prevent the Help system from launching. A security warning message is displayed. Often, the warning message provides instructions for unblocking the Help system for the current session. To allow the Help system to launch without encountering a security warning message, the security settings in your browser can be modified. Check with your system administrator before disabling any security features.

Help is also available from the setup dialog box for each driver. When you click **Help**, your browser opens to the correct topic without opening the help Table of Contents. A grey toolbar appears at the top of the browser window.

This tool bar contains previous and next navigation buttons. If, after viewing the help topic, you want to see the entire library, click:

on the left side of the toolbar, which opens the left pane and displays the Table of Contents, Index, and Search tabs.

PDF Version

DataDirect product documentation is also provided in PDF format, which allows you to view it, perform text searches, or print it. You can view the PDF documentation using Adobe Reader. The PDF documentation is available on the product CD and also on the DataDirect Technologies Web site:

http://www.datadirect.com/techres/odbcproddoc/index.ssp

You can download the entire library as a compressed file. When you uncompress the file, it appears in the correct directory structure.

If you want to copy the documentation library from the product CD, you must maintain the same directory structure that is on the CD.

- **To copy all product books**, copy the entire \books directory to your local or network drive.
- **To copy a specific set of books**, copy that book set's directory structure (beneath the \books directory) to your local or network drive. For example, in the case of:

  `\books\odbc`

  you would copy the entire `\odbc` directory.

NOTE: Maintaining the correct directory structure allows cross-book text searches and cross-references. If you download or copy the books individually outside of their normal directory structure, their cross-book search indexes and hyperlinked cross-references to other books will not work. You can view a book individually, but it will not open other books to which it has cross-references.

To help you navigate through the library, a file named **books.pdf** is provided. This file lists each online book provided for the product. We recommend that you open this file first and, from this file, open the book you want to view.

Contacting Technical Support

DataDirect Technologies offers a variety of options to meet your technical support needs. Please visit our Web site for more details and for contact information:

http://support.datadirect.com

The DataDirect Technologies Web site provides the latest support information through our global service network. The SupportLink program provides access to support contact details, tools, patches, and valuable information, including a list of FAQs for each product. In addition, you can search our Knowledgebase for technical bulletins and other information.

To obtain technical support for an evaluation copy of the product, go to:

http://www.datadirect.com/support/eval_help/index.ssp

or contact your sales representative.

When you contact us for assistance, please provide the following information:

- The serial number that corresponds to the product for which you are seeking support, or a case number if you have been provided one for your issue. If you do not have a SupportLink contract, the SupportLink representative assisting you will connect you with our Sales team.
- Your name, phone number, email address, and organization. For a first-time call, you may be asked for full customer information, including location.
- The DataDirect product and the version that you are using.
- The type and version of the operating system where you have installed your DataDirect product.
- Any database, database version, third-party software, or other environment information required to understand the problem.
- A brief description of the problem, including, but not limited to, any error messages you have received, what steps you followed prior to the initial occurrence of the problem, any trace logs capturing the issue, and so on. Depending on the

complexity of the problem, you may be asked to submit an example or reproducible application so that the issue can be recreated.

- A description of what you have attempted to resolve the issue. If you have researched your issue on Web search engines, our Knowledgebase, or have tested additional configurations, applications, or other vendor products, you will want to carefully note everything you have already attempted.
- A simple assessment of how the severity of the issue is impacting your organization.

1 Diagnostic Tools

This chapter discusses the diagnostic tools that are available to you when you are configuring and troubleshooting your ODBC environment.

These tools are:

ODBC Trace

ODBC tracing allows you to trace calls to ODBC drivers and create a log of the traces. Creating a trace log is particularly useful when you are troubleshooting an issue.

To create a trace log:

1. Enable tracing (see "Enabling Tracing" on page 14 for more information).
2. Start the ODBC application and reproduce the issue.
3. Stop the application and turn off tracing.
4. Open the log file in a text editor and review the output to help you debug the problem.

For a more thorough explanation of tracing, refer to the following DataDirect Knowledgebase document:

http://knowledgebase.datadirect.com/article.aspx?article=3049&p=4

Enabling Tracing

Select the Tracing tab of the ODBC Data Source Administrator. To specify the path and name of the trace log file, type the path and name in the Log File Path field or click **Browse** to select a log file. If no location is specified, the trace log resides in the working directory of the application you are using.

The default DLL, odbctrac.dll, performs tracing. If you want to use a custom DLL instead, type the path and name of the DLL in the Custom Trace DLL field or click **Browse** to select a DLL.

After making these changes on the Trace tab, click **Apply** for them to take effect.

Enable tracing by clicking **Start Tracing Now** on the Tracing tab of the ODBC Data Source Administrator. Click **Stop Tracing Now** to disable tracing. Tracing continues until you disable it. Be sure to turn off tracing when you are finished reproducing the issue because tracing decreases the performance of your ODBC application.

On UNIX and Linux, you can enable tracing either through the DataDirect ODBC Data Source Administrator for UNIX/Linux (the UNIX ODBC Administrator) or by modifying the [ODBC] section in the system information (odbc.ini) file, as discussed next.

UNIX ODBC Administrator

If you are using the Administrator, select the **Enable Tracing** check box on the Tracing tab of the Administrator. Clear the check box to disable tracing. Tracing continues until you disable it. Be sure to turn off tracing when you are finished reproducing the issue because tracing decreases the performance of your ODBC application.

To specify the path and name of the trace log file, type the path and name in the Trace File field or click **Browse** to select a log file. If no location is specified, the trace log resides in the working directory of the application you are using.

DataDirect ships a default shared object, odbctrac.so, to perform tracing. If you want to use a custom shared object instead, type the path and name of the shared object in the Trace Library field or click **Browse** to select a shared object.

After making changes on the Trace tab, click **Apply** for them to take effect.

System Information (odbc.ini) File

The [ODBC] section of the system information file includes three keywords related to tracing: Trace, TraceFile, and TraceDll. For example:

```
Trace=1
TraceFile=odbctrace.out
TraceDll=ODBCHOME/lib/odbctrac.so
```

In this example, tracing is enabled, trace information is logged in a file named odbctrace.out, and odbctrac.so performs the tracing.

You enable tracing by setting the value of Trace to 1. Set the value to 0 to disable tracing. Tracing continues until you disable it. Be sure to turn off tracing when you are finished reproducing

the issue because tracing decreases the performance of your ODBC application.

To specify the path and name of the trace log file, enter it as the value for TraceFile. If no location is specified, the trace log resides in the working directory of the application you are using.

DataDirect ships a default shared object, odbctrac.so, to perform tracing. If you want to use a custom shared object instead, enter the path and name of the shared object as the value for TraceDll.

The Test Loading Tool

Before using the test loading tool, be sure that your environment variables are set correctly. Refer to "Environment Variables" in Chapter 4 "Configuring the Product on UNIX/Linux" of the *DataDirect Connect Series for ODBC User's Guide* for details about environment variables.

The ivtestlib (32-bit drivers) and ddtestlib (64-bit drivers) test loading tools are provided to test load drivers and help diagnose configuration problems in the UNIX and Linux environments, such as environment variables not correctly set or missing database client components. This tool is installed in the /bin subdirectory in the product installation directory. It attempts to load a specified ODBC driver and prints out all available error information if the load fails.

For example, if the drivers are installed in /opt/odbc/lib, the following command attempts to load the 32-bit Oracle Wire

Protocol driver on Solaris, where *xx* reprsents the version number of the driver:

```
ivtestlib /opt/odbc/lib/ivoraxx.so
```

NOTE: On Solaris, AIX, and Linux, the full path to the driver does not have to be specified for tool. The HP-UX version, however, requires the full path.

If the load is successful, the tool returns a success message along with the version string of the driver. If the driver cannot be loaded, the tool returns an error message explaining why.

Refer to "Version String Information" in Chapter 2 "Using The Product" of the *DataDirect Connect Series for ODBC User's Guide* for details about version strings.

ODBC Test

On Windows, Microsoft® ships along with their ODBC SDK an ODBC-enabled application, named ODBC Test, that you can use to test ODBC drivers and the ODBC Driver Manager. ODBC 3.51 includes both ANSI and Unicode-enabled versions of ODBC Test.

To use ODBC Test, you must understand the ODBC API, the C language, and SQL. For more information about ODBC Test, refer to the *Microsoft ODBC SDK Guide*.

The demoodbc Application

For UNIX and Linux platforms, DataDirect provides a simple C application, named demoodbc, that is useful for:

- Executing `SELECT * FROM emp`, where `emp` is a database table (one for each supported database) that is provided with the product. The scripts for building the `emp` database tables are in the demo subdirectory in the product installation directory.
- Testing database connections.
- Creating reproducibles.
- Persisting data to an XML data file.

The demoodbc application is installed in the demo subdirectory in the product installation directory. Refer to the readme in the demo directory for an explanation of how to build and use this application.

The example Application

For UNIX and Linux platforms, DataDirect provides a simple C application, named example, that is useful for:

- Executing any type of SQL statement
- Testing database connections
- Testing SQL statements
- Verifying your database environment

The example application is installed in the example subdirectory in the product installation directory. Refer to the readme in the example directory for an explanation of how to build and use this application.

Other Tools

The DataDirect Technologies Support Web site provides other diagnostic tools that you can download to assist you with troubleshooting. These tools are not shipped with the product. Refer to the DataDirect Web page:

http://www.datadirect.com/support/downloads/tools/index.ssp

DataDirect Technologies also provides a knowledgebase that is useful in troubleshooting problems. Refer to the DataDirect Knowledgebase page:

http://knowledgebase.datadirect.com/

2 Error Messages

Error messages can be generated from:

- An ODBC driver
- The database system
- The ODBC driver manager

An error reported on an ODBC driver has the following format:

```
[vendor] [ODBC_component] message
```

where *ODBC_component* is the component in which the error occurred. For example, an error message from a DataDirect Oracle driver would look like this:

```
[DataDirect] [ODBC Oracle driver] Invalid precision
specified.
```

If you receive this type of error, check the last ODBC call made by your application for possible problems or contact your ODBC application vendor.

An error that occurs in the data source includes the data store name, in the following format:

```
[vendor] [ODBC_component] [data_store] message
```

With this type of message, *ODBC_component* is the component that received the error specified by the data store. For example, you may receive the following message from an Oracle data store:

```
[DataDirect] [ODBC Oracle driver] [Oracle] ORA-0919:
specified length too long for CHAR column
```

This type of error is generated by the database system. Check your database system documentation for more information or consult your database administrator. In this example, you would check your Oracle documentation.

On Windows, the Microsoft Driver Manager is a DLL that establishes connections with drivers, submits requests to drivers, and returns results to applications. An error that occurs in the Driver Manager has the following format:

```
[vendor] [ODBC XXX] message
```

For example, an error from the Microsoft Driver Manager might look like this:

```
[Microsoft] [ODBC Driver Manager] Driver does not support
this function
```

If you receive this type of error, consult the *Programmer's Reference* for the Microsoft ODBC Software Development Kit available from Microsoft.

On UNIX and Linux, the Driver Manager is provided by DataDirect. For example, an error from the DataDirect Driver Manager might look like this:

```
[DataDirect][ODBC lib] String data code page conversion
failed.
```

UNIX and Linux error handling follows the X/Open XPG3 messaging catalog system. Localized error messages are stored in the subdirectory:

```
locale/localized_territory_directory/LC_MESSAGES
```

where *localized_territory_directory* depends on your language.

For instance, German localization files are stored in `locale/de/LC_MESSAGES`, where `de` is the locale for German.

If localized error messages are not available for your locale, then they will contain message numbers instead of text. For example:

```
[DataDirect] [ODBC 20101 driver] 30040
```

3 Troubleshooting

If you are having an issue while using the DataDirect Connect Series *for* ODBC, first determine the type of issue that you are seeing:

- Setup/connection
- Performance
- Interoperability (ODBC application, ODBC driver, ODBC Driver Manager, and/or data source)

This chapter describes these three types of issues, provides some typical causes of the issues, lists some diagnostic tools that are useful to troubleshoot the issues, and, in some cases, explains possible actions you can take to resolve the issues.

Setup/Connection Issues

You are experiencing a setup/connection issue if you are encountering an error or hang while you are trying to make a database connection with the ODBC driver or are trying to configure the ODBC driver.

Some common errors that are returned by the ODBC driver if you are experiencing a setup/connection issue include:

- `Specified driver could not be loaded`
- `Data source name not found and no default driver specified`
- `Cannot open share library: libodbc.sl`
- `ORA-12203: Unable to connect to destination`
- `ORA-01017: invalid username/password; logon denied`

Troubleshooting the Issue

Some common reasons that setup/connection issues occur are:

- The library path environment variable is not set correctly for the ODBC drivers:

  32-bit Drivers

  - PATH on Windows
  - LD_LIBRARY_PATH on Solaris and Linux
  - SHLIB_PATH on HP-UX
  - LIBPATH on AIX

  64-bit Drivers

  - PATH on Windows
  - LD_LIBRARY_PATH on Solaris, HP-UX, and Linux
  - LIBPATH on AIX

- The database and/or listener are not started.
- The ODBCINI environment variable is not set correctly for the ODBC drivers on UNIX and Linux.
- The ODBC driver's connection attributes are not set correctly in the system information file on UNIX and Linux (refer to "Data Source Configuration" in Chapter 4 "Configuring the Product on UNIX/Linux" of the *DataDirect Connect Series for ODBC User's Guide*). For example, the host name or port number are not correctly configured. Refer to individual driver chapters in the *DataDirect Connect Series for ODBC User's Guide* for a list of connection string attributes that are required for each driver to connect properly to the underlying database.

For UNIX and Linux users: Refer to Chapter 4 "Configuring the Product on UNIX/Linux" in the *DataDirect Connect Series for ODBC User's Guide* for more information. See also "The Test Loading Tool" on page 16 for information about a helpful diagnostic tool.

Interoperability Issues

Interoperability issues can occur when you have a working ODBC application in place. In these cases, the issue occurs in one or more of the following components of ODBC—the ODBC application, ODBC driver, ODBC Driver Manager, and/or data source. Refer to "What Is ODBC?" in Chapter 2 "Using The Product" of the *DataDirect Connect Series for ODBC User's Guide* for an explanation of the components of ODBC.

Some common examples of what you might experience if you have an interoperability issue are:

- SQL statements fail to execute.
- Data is returned/updated/deleted/inserted incorrectly.
- A hang or core dump.

Troubleshooting the Issue

When you experience an interoperability issue, you must isolate the component in which the issue is occurring. Is it an ODBC application, an ODBC driver, an ODBC Driver Manager, or a data source issue?

The first step

Test to see if your ODBC application is the source of the problem. To do this, replace your ODBC application with a simpler application. If you can reproduce the issue using a simpler ODBC application, then you know your ODBC application is **not** the cause of the issue.

On Windows, you can use ODBC Test, which is part of the Microsoft ODBC SDK, or the example application that is shipped with the DataDirect Connect Series *for* ODBC drivers. See "ODBC Test" on page 17 and "The example Application" on page 18 for details.

On UNIX and Linux, you can use the example application that is shipped with the DataDirect Connect Series *for* ODBC drivers. See "The example Application" on page 18 for details.

The second step

Test to see if the data source is the source of the problem. To do this, use the native database tools that are provided by your database vendor.

The third step

If you find that neither the ODBC application nor the data source is the source of your problem, troubleshoot the ODBC driver and the ODBC Driver Manager.

In this case, we recommend that you create an ODBC trace log to provide to DataDirect technical support. See "ODBC Trace" on page 13 for details.

Performance Issues

Developing performance-oriented ODBC applications is not an easy task. You must be willing to change your application and do some testing to see if your changes helped performance. Microsoft's *ODBC Programmer's Reference* does not provide information about system performance. In addition, ODBC drivers and the ODBC Driver Manager do not return warnings when applications run inefficiently.

Some general guidelines for developing performance-oriented ODBC applications include:

- Use catalog functions appropriately.
- Retrieve only required data.
- Select functions that optimize performance.
- Manage connections and updates.

Refer to Chapter 5 "Designing ODBC Applications for Performance Optimization" in the *DataDirect Connect Series for ODBC Reference* for complete information.

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