

# Objectivity/SQL++ ODBC Driver User's Guide

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## Objectivity/SQL++ ODBC Driver User's Guide

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## Overview

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This book describes how to install and use the Objectivity/SQL++ ODBC Driver (Objectivity/ODBC) with Microsoft ODBC-compliant client applications such as PowerBuilder, Microsoft Access, and Microsoft Visual Basic. Objectivity/ODBC enables ODBC-compliant applications to access an Objectivity/SQL++ ODBC server, which in turn accesses Objectivity/DB federated databases.

## Basic Concepts

In an Objectivity/DB system, data for a particular application is normally stored in one or more individual databases that are unified in a single *federated database*. A federated database provides a consistent logical view of the data, even when the component databases are physically distributed among multiple hosts on a network of computers. Physically, a federated database is represented by two files:

- A *federated database file*, which contains the first (or only) database in the federation
- A *boot file*, which contains information about the federated database, including its location

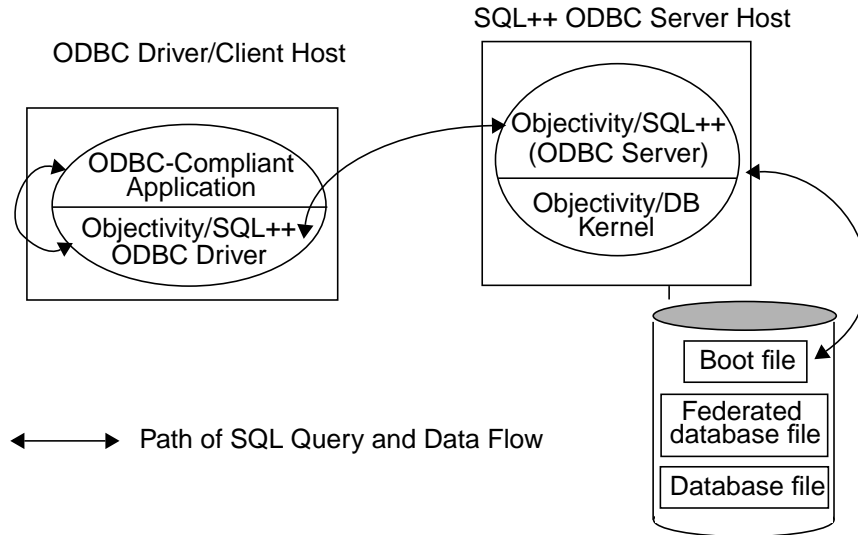
Objectivity/DB applications and tools locate and open a federated database by specifying its boot file.

You can access an Objectivity/DB federated database through your ODBC-compliant application. To do so, you must install the Objectivity/SQL++ ODBC Driver on the same *host* (machine) as your ODBC-compliant application and then register the federated database as a *data source*. Registering a data source tells the driver which federated database is to be accessed (using the name of the boot file), and where to find the Objectivity/SQL++ ODBC *server* that is to access it.

The Objectivity/SQL++ ODBC server is a process that interprets SQL statements sent from the ODBC-compliant application through the Objectivity/ODBC driver. There can be multiple data sources specifying the same federated database but

accessed through different ODBC servers (each on a different host). The ODBC server uses the Objectivity/DB *kernel*, which provides Objectivity/DB database services, to open the federated database and access the requested data.

Figure 1-1 illustrates the interaction of the processes just described.



**Figure 1-1** How an ODBC-compliant Application Accesses Objectivity/DB

Servers, drivers, and federated databases must all be on a network that uses *TCP/IP*, a popular network *protocol* (a service that allows machines and processes on a network to communicate with each other). Objectivity/DB already uses this protocol.

## Summary of Steps for Using Objectivity/ODBC

To use Objectivity/ODBC, you or your system administrator must perform the following steps:

1. Confirm that the Objectivity/SQL++ ODBC server is properly configured and running:
  - For an Objectivity/SQL++ ODBC server running on a UNIX host, set the `OO_SQL_DIR`, `OO_FDDDB_PATH`, and `TEMP` environment variables on that host.
  - For an Objectivity/SQL++ ODBC server running on a Windows NT host, use the Objectivity Network Services tool on that host to start and configure the ODBC server.

For more information, see the Objectivity/SQL++ installation chapter of the *Installation and Platform Notes* for the appropriate platform. See also the Objectivity/SQL++ book.

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**WARNING** If the Objectivity/SQL++ ODBC server is not properly configured and running, your ODBC-compliant application will be unable to find the federated database.

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2. Install the Objectivity/SQL++ ODBC Driver on the same host where you plan to use the ODBC-compliant application (see “Installing Objectivity/ODBC” on page 10).
3. Create a data source corresponding to the federated database you need to access (see “Registering Objectivity/DB Data Sources” on page 11).
4. Perform any necessary configuration steps for the ODBC-compliant applications that are to access the federated database (see “Notes for ODBC-Compliant Applications” on page 15).
5. Use the ODBC-compliant application:
  - a. Start the application.
  - b. Connect to the data source that you have just configured.
  - c. Submit your queries.



# 2

## Installation

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This chapter describes the requirements and steps for installing the Objectivity/SQL++ ODBC Driver (abbreviated Objectivity/ODBC).

## System Requirements

You can install Objectivity/ODBC on the Windows platforms listed in Table 2-1.

**Table 2-1:** Supported Windows Platforms

Hardware	Operating System	Abbreviation
Intel x86	Windows 95	Windows 95
	Windows NT Workstation Versions 4.0 Windows NT Server Versions 4.0	Windows NT

## Software Requirements

Objectivity/ODBC requires that the following software be installed on each system that is to run an ODBC-compliant client application:

- Winsock-compatible TCP/IP software
- Microsoft ODBC Administrator 2.x and up

Microsoft TCP/IP and Microsoft ODBC Administrator are included with Windows 95 and Windows NT.

In addition, Objectivity/ODBC requires that an Objectivity/SQL++ ODBC server be installed in the same network.

## Installing Objectivity/ODBC

To install Objectivity/ODBC:

1. Ask your system administrator to verify that required software has been completely and correctly installed. See “Software Requirements” on this page.
2. Insert the **Objectivity/SQL++ ODBC Driver** diskette into your machine’s 3.5-inch floppy disk drive.
3. Run `a:\setup`, where `a:` is the drive containing the diskette.
4. Follow the prompts to complete the installation.
5. Register the desired Objectivity/DB federated databases as data sources. Follow the steps in “Registering Objectivity/DB Data Sources” on page 11.
6. Ask your system administrator to configure the network to enable Objectivity/ODBC to communicate with an Objectivity/SQL++ ODBC server. The instructions are in “Configuring the Network” on page 12.
7. Optional: Test Objectivity/ODBC with an Objectivity/SQL++ ODBC server by browsing the provided demo federated database (see “Testing Objectivity/ODBC” on page 14).
8. Read:
  - The printed *Objectivity Release Notes* for new and changed features.
  - The online release notes on the Objectivity Technical Support web site for known problems and current configuration information. Contact Objectivity Customer Support to get access to this web site.

## What Objectivity/ODBC Setup Does

The Objectivity/ODBC setup program:

- Inserts an entry for Objectivity/ODBC in your machine’s `odbcinst.ini` file. This entry makes the driver available to the Microsoft ODBC Administrator.

## Registering Objectivity/DB Data Sources

You enable ODBC-compliant client applications to access an Objectivity/DB federated database by registering the federated database as a *data source*. A data source consists of the data to be accessed, plus the means of accessing it (typically host and network information). A data source for a federated database is a unique combination of a boot file and a host running a particular Objectivity/SQL++ ODBC server.

Before you register a federated database as a data source:

- Identify the Objectivity/SQL++ ODBC server that is to access the desired federated database, and obtain the TCP/IP name of the host that runs this server.
- Obtain the simple name of the federated database's boot file (more specifically, the name of the copy that was placed in the boot file directory for the Objectivity/SQL++ ODBC server).
- Ensure that you have a valid user account on the host running the Objectivity/SQL++ ODBC server.

To register a federated database as a data source:

1. On the host where you installed Objectivity/ODBC (the driver), open the Control Panel and double-click the **ODBC** icon.
2. In the ODBC Data Source Administrator window, select the **System DSN** tab.
3. Click **Add**, select **Objectivity/SQL++ ODBC Driver (32-bit)** in the Create New Data Sources dialog, and click **Finish**.
4. In the resulting dialog, fill in the following fields and then click **OK**:

Data Source Name	A string that uniquely identifies the data source. This string will appear in the list of data sources in the connection dialog. This string must start with the case-sensitive prefix <code>objy:T:</code> and conventionally includes the information you enter in the Host and Database fields—for example: <code>objy:T:myHost:myFDfile</code> . The string may not exceed 32 characters.
Description	Optional: Description of the data source; used for documentation purposes only.
Host	TCP/IP name of the Objectivity/SQL++ ODBC server host.
Database	Name of the boot file for the federated database (more specifically, the name of the copy that resides in the boot file directory). This name must not exceed 10 characters (including any filename extension) and may not contain spaces. Do not include the directory path for this file; the ODBC server is preconfigured to find the boot file directory.

User ID	The username of your Objectivity/SQL++ account. This is normally your login account on the ODBC server host, provided that this account has been granted access rights to tables in the federated database (see your Objectivity/SQL++ database administrator). The Objectivity/SQL++ database administrator account ( <code>sysdba</code> ) has access to all tables.
Password	Password for the account you entered in the User ID field. The password you enter is <i>not</i> encoded before it is sent across the network.

**Objectivity ODBC Setup**

Enter data source name and desired options, then choose OK.

Data Source Name:

Description:

Host:

Database:

User ID:

Password:

- If you want to add other data sources, repeat steps 3 and 4.
- When you are finished adding data sources, click **Exit**.

## Configuring the Network

You or your system administrator must perform the following steps to enable your ODBC-compliant application to communicate with the Objectivity/SQL++ ODBC server across the network.

### Identifying the ODBC Server's Host to TCP/IP

TCP/IP must be able to recognize the hostname you specify when you register a data source. That is, TCP/IP must be able to convert the hostname into an Internet address. Many sites use the TCP/IP `hosts` file to map host names to

Internet addresses, although some sites use domain name servers for this purpose.

If your site uses a TCP/IP `hosts` file, you must make sure it contains an entry for the hostname of the Objectivity/SQL++ ODBC server to which your client application is to connect. To do this:

1. Open the TCP/IP `hosts` file on the host where you installed Objectivity/ODBC (the driver). The location of this file depends on the TCP/IP vendor (see Table 2-2 for the Microsoft TCP/IP file locations).

**Table 2-2:** Location of Microsoft TCP/IP Hosts File

Operating System	Hosts File
Windows NT	\winnt\system32\drivers\etc\hosts
Windows 95	\windows\hosts

2. Add an entry with the following format, if such an entry does not already exist:

*internetAddress*            *hostName*

where

*internetAddress*            IP address for the Objectivity/SQL++ ODBC server host.

*hostName*                    The name you will use to refer to the Objectivity/SQL++ ODBC server host.

---

**EXAMPLE**    The following entry from a TCP/IP `hosts` file includes both a host name and a domain name:

```
192.42.242.23                    objy23 objy23.objy.com
```

---

## Specifying the ODBC Server's Port Number

As installed, the Objectivity/SQL++ ODBC server and the Objectivity/SQL++ ODBC Driver communicate through a default TCP/IP port. If the ODBC server has been assigned a nondefault port number (for example, due to a port conflict), you must register the new port number with TCP/IP on each Objectivity/ODBC (driver) host.

To register the ODBC server's port number with TCP/IP:

1. Find the TCP port assigned to the `oosqlnw` service on the host running the Objectivity/SQL++ ODBC server. For example, use the Objectivity Network Services tool on the ODBC server host.

2. On the host where you installed Objectivity/ODBC (the driver), open the TCP/IP `services` file. The location of this file depends on the TCP/IP vendor (see Table 2-3 for the Microsoft TCP/IP file locations).

**Table 2-3:** Location of Microsoft TCP/IP Services File

Operating System	Services File
Windows NT	\winnt\system32\drivers\etc\services
Windows 95	\windows\services

3. Add the following entry to the TCP/IP `services` file, if such an entry does not already exist:

```
oosqlnw      portNumber/tcp      # Objectivity/SQL++ Server
```

where

```
portNumber      TCP port number
```

## Testing Objectivity/ODBC

You can verify the correct operation of Objectivity/ODBC in combination with an Objectivity/SQL++ ODBC server by successfully browsing a demo federated database through Microsoft Access 97. The demo federated database is provided with Objectivity/SQL++ on the server host.

To test Objectivity/ODBC installation:

1. Verify that the demo federated database and the Objectivity/SQL++ ODBC server have been set up for this test:
  - If your ODBC server runs on Windows NT, see “Preparing the ODBC Server for Testing” in Chapter 7 in *Installation and Platform Notes for Windows*.
  - If your ODBC server runs on UNIX, see “Preparing the ODBC Server for Testing” in Chapter 7 in *Installation and Platform Notes for UNIX*.
2. On the Objectivity/ODBC host, register the federated database from the Interactive SQL++ demo as the data source. Perform the steps in “Registering Objectivity/DB Data Sources” on page 11 using the following information:

```
Data Source Name  objy:T:hostName:DEMO
```

```
Host              hostName (name of the host running your Objectivity/SQL++
                  ODBC server)
```

```
Database          DEMO (name of the boot file for the demo federated database).
```

User ID	A username that has been granted access rights for the tables in the demo federated database. By default, this is the Objectivity/SQL++ database administrator account ( <code>sysupe</code> ) unless the Objectivity/SQL++ database administrator has granted access to other user accounts on the ODBC server host.
Password	Password for the account you entered in the User ID field.

3. Open Microsoft Access 97 and use it to create a new blank database.
4. Select **File->Get External Data -> Link Tables**.
5. In the Files of Type list of the file selection dialog, choose **ODBC Databases**.
6. In the Select Data Source dialog, choose the data source you registered in step 2 (`Objy:T:hostName:DEMO`) and click **OK**.
7. From the Link Tables window, select `sysupe.component` and click **OK**.
8. In the dialog, select `name` as the unique record identifier, and browse the data.

Successfully browsing the data indicates that Objectivity/ODBC is installed correctly.

## Notes for ODBC-Compliant Applications

You can use most ODBC-compliant applications with Objectivity/SQL++. Objectivity has tested the following applications:

- Microsoft Access 1.1 and 2.0
- Microsoft Access 97
- Microsoft Visual Basic 3.0 and later
- Crystal Reports 4.0 and 5.0
- Microsoft Excel 7.0

### Microsoft Access 1.1 and 2.0

You can perform all operations supported by Microsoft Access on the data stored in the Objectivity/DB federated database. The Microsoft Access *User's Guide* describes how to make connections to ODBC data sources. The Objectivity/SQL++-specific information is:

1. In the [ODBC] section in file `MSACC20.INI` (for Microsoft Access 2.0) or `MSACCESS.INI` (for Microsoft Access 1.1):
  - Disable asynchronous query execution by specifying `DisableAsync=1`
  - Enable dynasets for performing updates using Microsoft Access by specifying `SnapshotOnly=0`

2. In the [Debug] section in file MSACC20 .INI (for Microsoft Access 2.0) or MSACCESS .INI (for Microsoft Access 1.1):
  - Force synchronous query execution by adding: RmtTrace=16

You must create these sections if they do not already exist.

## Microsoft Access 97

No additional setup is required for Microsoft Access 97.

## Microsoft Visual Basic

After starting the Microsoft Visual Basic ODBC Demo, perform the following steps:

1. Select **Add Connection** from the **Connections** menu.
2. Select the Objectivity/SQL++ data source you want to use and select **OK**.
3. Select **Tables** to get a list of tables for the data source or type in a **SELECT** statement and select **Query** to execute the SQL statement and retrieve the results.

## Crystal Reports

No additional setup is required for Crystal Reports 4.0 and 5.0.

## Microsoft Excel

No additional setup is required for Microsoft Excel 7.0.

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