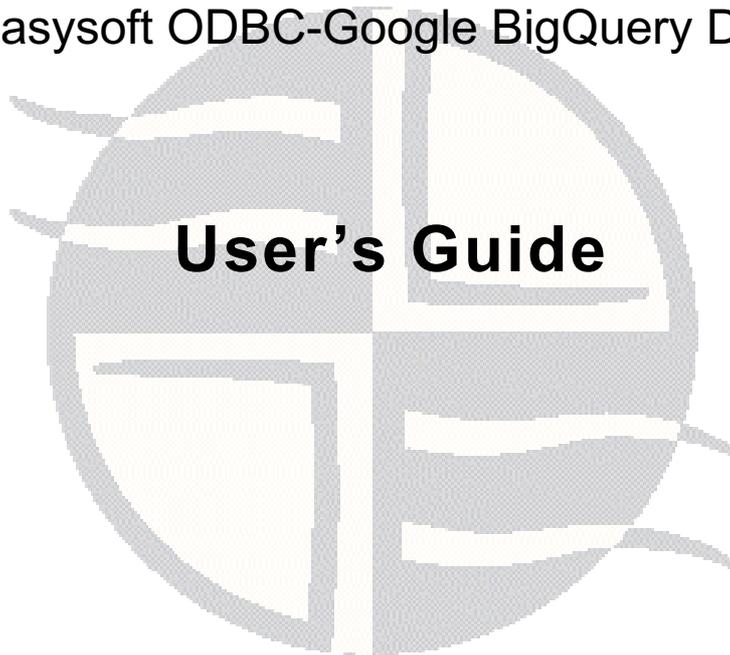


Easysoft Data Access

Easysoft ODBC-Google BigQuery Driver



User's Guide

This manual documents version 1.0.n of the Easysoft ODBC-Google BigQuery Driver.

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PREFACE

About this manual

This manual is intended for use by anyone who wants to install the Easysoft ODBC-Google BigQuery Driver, configure it, and then access Google BigQuery data from an ODBC-enabled application.

Chapter Guide

- **Intended Audience**
- **Notational Conventions**
- **Typographical Conventions**
- **Contents**
- **Trademarks**



PREFACE

Easysoft ODBC-Google BigQuery Driver

Intended Audience

The Unix-based sections require experience of using Unix shell commands. You need to be able to do basic tasks such as editing text files. More complex tasks are described in detail, but it helps to understand how your system handles dynamic linking of shared objects.

Displaying the Manual

This manual is available in the following formats:

- Portable Document Format (PDF), which can be displayed and printed by using the Adobe Reader, available free from Adobe at <http://www.adobe.com>.
- HTML.

Notational Conventions

A *note box* provides additional information that may further your understanding of a particular topic in this manual:

Note Note boxes often highlight information that you may need to be aware of when using a particular feature.

A *platform note* provides platform-specific information for a particular procedural step:

Linux

On Linux, you must log on as the `root` user to make many important changes.

A *caution box* provides important information that you should check and understand, prior to starting a particular procedure or reading a particular section of this manual:

Caution!

Be sure to pay attention to these paragraphs because Caution boxes are important!



PREFACE

Easysoft ODBC-Google BigQuery Driver

Typographical Conventions

This manual uses the following typographical conventions:

- User interface components such as icon names, menu names, buttons and selections are displayed in **bold**, for example:

Click **Next** to continue.

- Commands to be typed are displayed in a `monospace` font, for example:

At the command prompt, type `admin`.

- File listings and system names (such as file names, directories and database fields) are displayed in a `monospace` font.

Contents

- **Introduction**
Introduces the Easysoft ODBC-Google BigQuery Driver.
- **Installation**
Explains how to install the Easysoft ODBC-Google BigQuery Driver.
- **Configuration**
Explains how to configure the Easysoft ODBC-Google BigQuery Driver.
- Appendices
Technical Reference and **Glossary**.



PREFACE

Easysoft ODBC-Google BigQuery Driver

Trademarks

Throughout this manual, *Windows* refers generically to Microsoft Windows 7, 8, 2012 R2, 10, 2016, 2019, which are trademarks of the Microsoft Corporation. The X Window system is specifically excluded from this and is referred to as *The X Window System* or just *X*.

DB2 is a registered trademark of International Business Machines Corporation in the United States or other countries or both.

Note also that although the name UNIX is a registered trademark of The Open Group, the term has come to encompass a whole range of UNIX-like operating systems, including the free, public Linux and even the proprietary Solaris. Easysoft use Unix (note the case) as a general term covering the wide range of Open and proprietary operating systems commonly understood to be Unix 'flavors'.

Mac OS is a trademark of Apple Computer, Inc., registered in the U.S. and other countries.

Easysoft and Easysoft Data Access are trademarks of Easysoft Limited.

CHAPTER 1 INTRODUCTION

Introducing the Easysoft ODBC-Google BigQuery Driver

The Easysoft ODBC-Google BigQuery Driver is an ODBC driver for Google BigQuery. It lets ODBC-enabled applications access Google BigQuery data from Linux, Unix and Windows platforms.

Chapter Guide

- [Overview](#)
- [Product Status](#)



INTRODUCTION

Easysoft ODBC-Google BigQuery Driver

Overview

The Easysoft ODBC-Google BigQuery Driver connects ODBC-enabled applications on Linux, Unix and Windows to Google BigQuery data. Example applications include:

- Crystal Reports
- Cognos
- Microsoft Access
- Microsoft Excel
- Oracle Business Intelligence Enterprise Edition
- Oracle Heterogeneous Services
- SQL Server
- Tableau

Product Status

The Easysoft ODBC-Google BigQuery Driver is currently available on Unix, Linux and Windows platforms. The most up to date list of Easysoft ODBC-Google BigQuery Driver platforms is available at:

http://www.easysoft.com/products/data_access/odbc-google-bigquery-driver/index.html

Software problems can be reported to support@easysoft.com by users who have either purchased support or registered at the Easysoft web site at <http://www.easysoft.com> and are evaluating Easysoft products.

CHAPTER 2 INSTALLATION

Installing the Easysoft ODBC-Google BigQuery Driver

This chapter explains how to install, license and remove the Easysoft ODBC-Google BigQuery Driver.

The Windows installation can be carried out by anyone with local administrator privileges for the target machine.

The Unix installation instructions assume you are, or are able to consult with, a system administrator.

Chapter Guide

- **Obtaining the Easysoft ODBC-Google BigQuery Driver**
- **What to Install**
- **Installing the Easysoft ODBC-Google BigQuery Driver on Unix**
- **Uninstalling the Easysoft ODBC-Google BigQuery Driver on Unix**
- **Installing the Easysoft ODBC-Google BigQuery Driver on Windows**
- **Uninstalling the Easysoft ODBC-Google BigQuery Driver on Windows**



INSTALLATION

Easysoft ODBC-Google BigQuery Driver

Obtaining the Easysoft ODBC-Google BigQuery Driver

There are three ways to obtain the Easysoft ODBC-Google BigQuery Driver:

- The Easysoft web site is available 24 hours a day at <http://www.easysoft.com> and lets you download product releases and documentation.

Choose **Download** from the Easysoft ODBC-Google BigQuery Driver section of the web site and then choose the platform release that you require.

If you have not already done so, you will need to register at the web site to download Easysoft software.

- The Easysoft FTP site is available 24 hours a day at <ftp://ftp.easysoft.com> and lets you download free patches, upgrades, documentation and beta releases of Easysoft products, as well as definitive releases.

Change to the `pub/google-bigquery` subdirectory and then choose the platform release that you require.

What to Install

The name of the Easysoft ODBC-Google BigQuery Driver distribution file varies from platform to platform. The file name format is:

- `odbc-bigquery-x_y_z-windows.exe` (Windows)

– OR –

- `odbc-bigquery-x.y.z-platform.tar` (Unix)

where *x* is the major version number, *y* is the minor version number and *z* is the build index, which is incremented when minor changes are made.

platform depends on the operating system distribution you require. File names may have this format:

Note

Select the highest release available for your platform within your licensed major version number (installing software with a different major version number requires a new Easysoft license).

Caution!

On Unix, as long as you stop all Easysoft software first (or software that uses the Easysoft drivers under Unix), it is safe to reinstall or upgrade the Easysoft ODBC-Google BigQuery Driver without uninstalling.

If you do uninstall, you should first back up any configuration data that you still need, as uninstalling some Easysoft products will result in this information being deleted (license details remain in place).



INSTALLATION

Easysoft ODBC-Google BigQuery Driver

To continue, refer to the installation instructions for your platform:

- **"Installing the Easysoft ODBC-Google BigQuery Driver on Unix" on page 17**
- **"Installing the Easysoft ODBC-Google BigQuery Driver on Windows" on page 36**

Installing the Easysoft ODBC-Google BigQuery Driver on Unix

These instructions show how to install the Easysoft ODBC-Google BigQuery Driver on Unix platforms. Please read this section carefully **before** installing the Easysoft ODBC-Google BigQuery Driver.

BEFORE YOU INSTALL

Requirements

To install the Easysoft ODBC-Google BigQuery Driver on Unix you need:

- The Bourne shell in `/bin/sh`. If your Bourne shell is not located there, you may need to edit the first line of the installation script.
- Various commonly used Unix commands such as:
`grep, awk, test, cut, ps, sed, cat, wc, uname, tr, find, echo, sum, head, tee, id`

If you do not have any of these commands, they can usually be obtained from the [Free Software Foundation](#). As the `tee` command does not work correctly on some systems, the distribution includes a `tee` replacement.

- For Easysoft Licensing to work, you must do one of the following:
 - Install the Easysoft ODBC-Google BigQuery Driver in `/usr/local/easysoft`.
 - Install the Easysoft ODBC-Google BigQuery Driver elsewhere and symbolically link `/usr/local/easysoft` to wherever you chose to install the software.

INSTALLATION

Easysoft ODBC-Google BigQuery Driver

The installation will do this automatically for you so long as you run the installation as someone with permission to create `/usr/local/easysoft`.

- Install the Easysoft ODBC-Google BigQuery Driver elsewhere and set the `EASYSOFT_ROOT` environment variable.

For more information about setting the `EASYSOFT_ROOT` environment variable, see **"Post installation" on page 32**.

- An ODBC Driver Manager. Easysoft ODBC-Google BigQuery Driver distributions include the unixODBC Driver Manager.
- You do not have to be the `root` user to install, but you will need permission to create a directory in the chosen installation path. Also, if you are not the `root` user, it may not be possible for the installation to:
 1. Register the Easysoft ODBC-Google BigQuery Driver with unixODBC.
 2. Create the example data source in the SYSTEM `odbc.ini` file.
 3. Update the dynamic linker entries (some platforms only).

If you are not `root`, these tasks will have to be done manually later.

Easysoft recommend you install all components as the `root` user.

What you can Install

This distribution contains:

- The Easysoft ODBC-Google BigQuery Driver.
- The unixODBC Driver Manager.

You will need an ODBC Driver Manager to use the Easysoft ODBC-Google BigQuery Driver from your applications. The distribution therefore contains the **unixODBC Driver Manager**. Most (if not all) Unix applications and interfaces support the unixODBC Driver Manager. For example, Perl DBD::ODBC, PHP, Python and so on.

You do not have to install the unixODBC Driver Manager included with this distribution. You can use an existing copy of unixODBC. For example, a version of unixODBC installed by another Easysoft product, a version obtained from your operating system vendor or one that you built yourself. However, as Easysoft ensure that the unixODBC distributed with the Easysoft ODBC-Google BigQuery Driver has been tested with that driver, we recommend you use it.

If you choose to use an existing unixODBC Driver Manager, the installation script will attempt to locate it. The installation script looks for the Driver Manager in the standard places. If you have installed it in a non-standard location, the installation script will prompt you for the location. The installation primarily needs unixODBC's `odbcinst` command to install drivers and data sources.

Where to Install

This installation needs a location for the installed files. The default location is `/usr/local`.

INSTALLATION

Easysoft ODBC-Google BigQuery Driver

At the start of the installation, you will be prompted for an installation path. All files are installed in a subdirectory of your specified path called `easysoft`. For example, if you accept the default location `/usr/local`, the product will be installed in `/usr/local/easysoft` and below.

If you choose a different installation path, the installation script will try to symbolically link `/usr/local/easysoft` to the `easysoft` subdirectory in your chosen location. This allows us to distribute binaries with built in dynamic linker run paths. If you are not `root` or the path `/usr/local/easysoft` already exists and is not a symbolic link, the installation will be unable to create the symbolic link.

Note that you cannot license Easysoft products until either of the following is true:

- `/usr/local/easysoft` exists either as a symbolic link to your chosen installation path or as the installation path itself.
- You have set `EASYSOFT_ROOT` to `installation_path/easysoft`.

Changes Made to Your System

This installation script installs files in subdirectories of the path requested at the start of the installation, Depending on what is installed, a few changes may be made to your system:

1. If you choose to install the Easysoft ODBC-Google BigQuery Driver into `unixODBC`, `unixODBC`'s `odbcinst` command will be run to add an entry to your `odbcinst.ini` file. You can locate this file with `odbcinst -j`. (`odbcinst` is in `installation_path/easysoft/unixODBC/bin`, if you are using the `unixODBC` included with this distribution.)

The `odbcinst.ini` entry for the Easysoft ODBC-Google BigQuery Driver will look similar to this:

```
[Easysoft ODBC-BigQuery]
Driver           = /usr/local/easysoft/bigquery/lib/libesbq.so
Setup           = /usr/local/easysoft/bigquery/lib/libesbqS.so
DontDLClose     = 1
FileUsage       = 1
UsageCount      = 1
```

For information about removing this entry, see ["Uninstalling the Easysoft ODBC-Google BigQuery Driver on Unix" on page 35](#).

2. The installation script installs an example data source into `unixODBC`. The data source will be added to your `SYSTEM odbc.ini` file. You can locate your `SYSTEM odbc.ini` file by using `odbcinst -j`. The data source for the standard driver will look similar to this:

For information about removing these data sources, see ["Uninstalling the Easysoft ODBC-Google BigQuery Driver on Unix" on page 35](#).

3. Dynamic Linker.

On operating systems where the dynamic linker has a file listing locations for shared objects (Linux), the installation script will attempt to add paths under the path you provided at the start of the installation to the end of this list. On Linux, this is usually the file `/etc/ld.so.conf`.



INSTALLATION

Easysoft ODBC-Google BigQuery Driver

Reinstalling or Installing When You Already Have Other Easysoft Products Installed

Each Easysoft distribution contains common files shared between Easysoft products. These shared objects are placed in *installation_path/easysoft/lib*. When you run the installation script, the dates and versions of these files will be compared with the same files in the distribution. The files are only updated if the files being installed are newer or have a later version number.

You should ensure that nothing on your system is using Easysoft software before starting an installation. This is because on some platforms, files in use cannot be replaced. If a file cannot be updated, you will see a warning during the installation. All warnings are written to a file called `warnings` in the directory you unpacked the distribution into.

If the installer detects you are upgrading a product, the installer will suggest you delete the product directory to avoid having problems with files in use. An alternative is to rename the specified directory.

If you are upgrading, you will need a new license from Easysoft to use the new driver.

Gathering Information Required During the Installation

During the installation, you will be prompted for various pieces of information. Before installing, you need to find out whether you have unixODBC already installed and where it is installed. The installation script searches standard places like `/usr` and `/usr/local`. However, if you installed the Driver Manager in a non-standard place and you do not install the included unixODBC, you will need to know the location.

INSTALLATION

Unpacking the Distribution

The distribution for Unix platforms is a tar file (`.tar`). To extract the installation files from the tar file, use:

```
tar -xvf odbc-bigquery-x.y.z-platform.tar
```

This will create a directory with the same name as the tar file (without the `.tar` postfix) containing further archives, checksum files, an installation script and various other installation files.

Change directory into the directory created by unpacking the tar file.

License to Use

The End-User License Agreement is contained in the file `license.txt`. Be sure to understand the terms of the agreement before continuing, as you will be required to accept the license terms at the start of the installation.

INSTALLATION

Easysoft ODBC-Google BigQuery Driver

Answering Questions During the Installation

Throughout the installation, you will be asked to answer some questions. In each case, the default choice will be displayed in square brackets and you need only press Enter to accept the default. If there are alternative responses, these will be shown in round brackets; to choose one of these, type the response and press Enter.

For example:

```
Do you want to continue? (y/n) [n] :
```

The possible answers to this question are `y` or `n`. The default answer when you type nothing and press Enter is `n`.

Running the Installer

Before you run the installer, make sure you have read **"Installation on page 23"**. If you are considering running the installation as a non `root` user, we suggest you review this carefully as you will have to get a `root` user to manually complete some parts of the installation afterwards. Easysoft recommend installing as the `root` user. (If you are concerned about the changes that will be made to your system, see **"Changes Made to Your System" on page 20.**)

To start the installation, run:

```
./install
```

You will need to:

- Confirm your acceptance of the license agreement by typing "yes" or "no".

For more information about the license agreement, see "[License to Use](#)" on page 23.

- Supply the location where the software is to be installed. Easysoft recommend accepting the default installation path.

For more information, see "[Where to Install](#)" on page 19.

<p>Note If you are upgrading, you will need a new license from Easysoft.</p>

Locating or Installing unixODBC

Easysoft strongly recommend you use the unixODBC Driver Manager because:

- The installation script is designed to work with unixODBC and can automatically add Easysoft ODBC-Google BigQuery Driver and data sources during the installation.
- Most ODBC-enabled applications and interfaces support unixODBC. The Easysoft ODBC-Google BigQuery Driver and any data sources that you add during the installation will be automatically available to your applications and interfaces therefore.
- The unixODBC project is currently led by Easysoft developer Nick Gorham. This means that there is a great deal of experience at Easysoft of unixODBC in general and of supporting the Easysoft ODBC-Google BigQuery Driver running under unixODBC. It also means that if you find a problem in unixODBC, it is much easier for us to facilitate a fix.

The installation starts by searching for unixODBC. There are two possible outcomes here:

INSTALLATION

Easysoft ODBC-Google BigQuery Driver

1. If the installation script finds unixODBC, the following message will be output:

```
Found unixODBC under /unixODBC_path  
and it is version n.n.n
```

2. If the installation script cannot find unixODBC in the standard places, you will be asked whether you have it installed.

If unixODBC is installed, you need to provide the unixODBC installation path. Usually, the path required is the directory above where `odbcinst` is installed. For example, if `odbcinst` is in `/opt/unixODBC/bin/odbcinst`, the required path is `/opt/unixODBC`.

If unixODBC is not installed, you should install the unixODBC included with this distribution.

If you already have unixODBC installed, you do not have to install the unixODBC included with the distribution, but you might consider doing so if your version is older than the one included.

The unixODBC in the Easysoft ODBC-Google BigQuery Driver distribution is not built with the default options in unixODBC's configure line.

Option	Description
<code>--prefix=/etc</code>	This means the default SYSTEM <code>odbc.ini</code> file where SYSTEM data sources are located will be <code>/etc/odbc.ini</code> .
<code>--enable-drivers=no</code>	This means other ODBC drivers that come with unixODBC are not installed.

EASYSOFT ODBC-GOOGLE BIGQUERY DRIVER

Easysoft ODBC-Google BigQuery Driver

Option	Description
<code>--enable-iconv=no</code>	This means unixODBC will not look for a libiconv. Warnings about not finding an iconv library were confusing our customers.
<code>--enable-stats=no</code>	Disables unixODBC statistics, which use system semaphores to keep track of used handles. Many systems do not have sufficient semaphore resources to keep track of used handles. In addition, the statistics are only available in the GUI ODBC Administrator.
<code>--enable-readline=no</code>	This disables readline support in <code>isql</code> . We disabled this because it ties <code>isql</code> to the version of <code>libreadline</code> on the system we build on. We build on as old a version of the operating system as we can for forward compatibility. Many newer Linux systems no longer include the older readline libraries and so enabling readline support makes <code>isql</code> unusable on these systems.
<code>--prefix=/usr/local/easysoft/unixODBC</code>	This installs unixODBC into <code>/usr/local/easysoft/unixODBC</code> .

Figure 1: Easysoft unixODBC configure line options.

INSTALLATION

Easysoft ODBC-Google BigQuery Driver

Installing the Easysoft ODBC-Google BigQuery Driver

The Easysoft ODBC-Google BigQuery Driver installation script:

- Installs the driver.
- Registers the driver with the unixODBC Driver Manager.

If the Easysoft ODBC-Google BigQuery Driver is already registered with unixODBC, a warning will be displayed that lists the drivers unixODBC knows about. If you are installing the Easysoft ODBC-Google BigQuery Driver into a different directory than it was installed before, you will need to edit your `odbcinst.ini` file after the installation and correct the Driver and Setup paths. unixODBC's `odbcinst` will not update these paths if a driver is already registered.

- Creates an example Easysoft ODBC-Google BigQuery Driver data source.

If unixODBC is installed and you registered the Easysoft ODBC-Google BigQuery Driver with unixODBC, an example data source will be added to your `odbc.ini` file.

If you already have a sample data source created by a previous Easysoft ODBC-Google BigQuery Driver installation, the existing data source will be displayed and you have the option to replace it.

Licensing

The `installation_path/easysoft/license/licshell` program lets you obtain or list licenses.

Licenses are stored in the `installation_path/easysoft/license/licenses` file. After obtaining a license, you should make a backup copy of this file.

The installation script asks you if you want to request an Easysoft ODBC-Google BigQuery Driver license:

```
Would you like to request a Easysoft ODBC-Google  
BigQuery Driver license now (y/n) [y]:
```

You do not need to obtain a license during the installation, you can run `licshell` after the installation to obtain or view licenses.

If you answer yes, the installation runs the `licshell` script. The process of obtaining a license is best described in the [Licensing Guide](#).

To obtain a license automatically, you will need to be connected to the Internet and allow outgoing connections to `license.easysoft.com` on port 8884. If you are not connected to the Internet or do not allow outgoing connections on port 8884, the License Client can create a license request file that you can mail or fax to Easysoft. You can also supply the details to us by telephone.

Start the License Client. The following menu is displayed:

```
[0] exit  
[1] view existing license  
[n] obtain a license for the desired product.
```

To obtain a license, select one of the options from [2] onwards for the product you are installing. The License Client will then run a program that generates a key that is used to identify the product and operating system (we need this key to license you).

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Easysoft ODBC-Google BigQuery Driver

After you have chosen the product to license (Easysoft ODBC-Google BigQuery Driver), you need to supply:

- Your full name.
- Your company name.
- An email contact address. This **must** be the email address that you used when you registered on the Easysoft web site.
- Your telephone number (you need to specify this if you telephone us to request a license).
- Your fax number (you need to specify this if you fax the license request to us).
- A reference number. When applying for a trial license, just press Enter when prompted for a reference number. This field is used to enter a reference number that we will supply you for full (paid) licenses.

You will then be asked to specify how you want to obtain the license. The choices are:

[1] Automatically by contacting the Easysoft License Daemon

This requires a connection to the Internet and the ability to support an outgoing TCP/IP connection to `license.easysoft.com` on port 8884.

[2] Write information to file so you can fax, telephone it

The license request is output to `license_request.txt`.

[3] Cancel this operation

If you choose to obtain the license automatically, the License Client will start a TCP/IP connection to `license.easysoft.com` on port 8884 and send the details you supplied and your machine number. No other data is sent. The data sent is transmitted as plain text, so if you want to avoid the possibility of this information being intercepted by someone else on the Internet, you should choose [2] and telephone or fax the request to us. The License daemon will return the license key, print it to the screen and make it available to the installation script in the file `licenses.out`.

If you choose option [2], the license request is written to the file `license_request.txt`. You should then exit the License Client by choosing option [0] and complete the installation. After you have mailed, faxed or telephoned the license request to us, we will return a license key. Add this to the end of the file `installation_path/easysoft/license/licenses`.

If any warnings or errors are output during this process, please mail the output to support@easysoft.com and we will correct the problem.

INSTALLATION

Easysoft ODBC-Google BigQuery Driver

POST INSTALLATION

Supplied Documents and Examples

The last part of the installation runs a post install script that lists the resources available to you.

- The Easysoft ODBC-Google BigQuery Driver documentation is installed in
`installation_path/easysoft/bigquery/doc:`
 - The Easysoft ODBC-Google BigQuery Driver manual in PDF format.
 - The Easysoft ODBC-Google BigQuery Driver EULA.

`installation_path/easysoft/bigquery/doc/CHANGES.txt` lists all the changes in each version of the Easysoft ODBC-Google BigQuery Driver.

There are also many resources at the [Easysoft web site](#).

SETTING DYNAMIC LINKER SEARCH PATHS

Your applications will be linked against an ODBC Driver Manager, which will load the ODBC Driver you require. The dynamic linker needs to know where to find the ODBC Driver Manager shared object. The ODBC Driver Manager will load the Easysoft ODBC-Google BigQuery Driver, which is dependent on further common Easysoft shared objects; the dynamic linker needs to locate these too.

On operating systems where the dynamic linker has a file specifying locations for shared objects (Linux, for example), the installation will attempt to add paths under the path you provided at the start of the installation to the end of this list; no further action should be

required. For more information, see **"Dynamic Linker." on page 21.**

On other Unix platforms, there are two methods of telling the dynamic linker where to look for shared objects:

1. You add the search paths to an environment variable and export it. This method always works and overrides the second method, described below.
2. At build time, a run path is inserted into the executable or shared objects. On most System V systems, Easysoft distribute Easysoft ODBC-Google BigQuery Driver shared objects with an embedded run path. The dynamic linker uses the run path to locate Easysoft ODBC-Google BigQuery Driver shared object dependencies.

For the first method, the environment variable you need to set depends on the platform (refer to the platform documentation for `ld(1)`, `dlopen` or `ld.so(8)`).

Environment Variable	Platform
LD_LIBRARY_PATH	System V based operating systems and Solaris.
LIBPATH	AIX
SHLIB_PATH	HP-UX
LD_RUN_PATH	Many platforms use this in addition to those listed above.

Figure 2: Dynamic linker search path environment variables.

To use the Easysoft ODBC-Google BigQuery Driver, you need to add:

```
installationdir/easysoft/lib
```

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Easysoft ODBC-Google BigQuery Driver

where *installationdir* is the directory in which you chose to install the Easysoft ODBC-Google BigQuery Driver. If you accepted the default location, this is `/usr/local`.

An example of setting the environment path in the Bourne shell on Solaris is:

```
LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/local/easysoft/lib
```

```
export LD_LIBRARY_PATH
```

Note The exact command you need to set and export an environment variable depends on your shell.

If you installed the unixODBC Driver Manager included in the Easysoft ODBC-Google BigQuery Driver distribution, you also need to add `installationdir/easysoft/unixODBC/lib` to the dynamic linker search path.

Uninstalling the Easysoft ODBC-Google BigQuery Driver on Unix

There is no automated way to remove the Easysoft ODBC-Google BigQuery Driver in this release. However, removal is quite simple. To do this, follow these instructions.

To uninstall the Easysoft ODBC-Google BigQuery Driver

1. Change directory to `installation_path/easysoft` and delete the `bigquery` directory. `installation_path` is the Easysoft ODBC-Google BigQuery Driver installation directory, by default `/usr/local`.
2. If you had to add this path to the dynamic linker search paths (for example, `/etc/ld.so.conf` on Linux), remove it. You may have to run a linker command such as `/sbin/ldconfig` to get the dynamic linker to reread its configuration file. Usually, this step can only be done by the `root` user.
3. If you were using `unixODBC`, the Easysoft ODBC-Google BigQuery Driver entry needs to be removed from the `odbcinst.ini` file. To check whether the Easysoft ODBC-Google BigQuery Driver is configured under `unixODBC`, use `odbcinst -q -d`. If the command output contains `[Easysoft ODBC-BigQuery]`, uninstall the drivers from `unixODBC` by using:

```
odbcinst -u -d -n 'Easysoft ODBC-BigQuery'
```

INSTALLATION

Easysoft ODBC-Google BigQuery Driver

Installing the Easysoft ODBC-Google BigQuery Driver on Windows

INSTALLING THE EASYSOFT ODBC-GOOGLE BIGQUERY DRIVER

- Execute the file distribution that you downloaded in "[Obtaining the Easysoft ODBC-Google BigQuery Driver](#)" on page 14

Follow the on screen instructions.

UPDATING FILES THAT ARE IN USE

To avoid rebooting your computer, the Easysoft ODBC-Google BigQuery Driver installer prompts you when files that it needs to update are in use by another application or service. This frees the locked files and allows the installation to complete without a system restart.

On Windows Vista and later, the Easysoft ODBC-Google BigQuery Driver installer uses the Restart Manager to locate the applications that are using files that need updating. These applications are displayed in the Files in Use dialog box. To avoid a system restart, choose **Automatically close applications and attempt to restart them after setup is complete**. The Easysoft ODBC-Google BigQuery Driver installer then uses the Restart Manager to try to stop and restart each application or service in the list. If possible, the Restart Manager restores applications to the same state and with the same data that they were in before it shut them down.

On earlier versions of Windows, when the Files in Use dialog is displayed, manually shut down each application in the list and then click **Retry** to avoid a system restart.

LICENSING ON WINDOWS

The install program starts the Easysoft License Manager (documented in the [Licensing Guide](#)), because you cannot use the Easysoft ODBC-Google BigQuery Driver until a license is obtained.

The following types of license are available:

- a *free time-limited trial license* which gives you free and unrestricted use of the product for a limited period (usually 14 days).
- a *full license* if you have purchased the product. On purchasing the product you are given an authorization code, which you use to obtain a license.

4. Enter your contact details.

You **MUST** enter the **Name**, **E-Mail Address** and **Company** fields.

The **Telephone** and **Facsimile** fields are important if you require Easysoft to contact you by those methods.

The **E-Mail Address MUST** be the same as the address used to register and download from the Easysoft web site or you will be unable to obtain trial licenses.

5. Click **Request License**.

You are asked for a license type.



INSTALLATION

Easysoft ODBC-Google BigQuery Driver

6. For a trial license click **Time Limited Trial** and then click **Next**.

The License Manager asks what software you are licensing:

Select your required version of the Easysoft ODBC-Google BigQuery Driver (Standard or Remote, for example) from the drop-down list and then click **Next**.

– OR –

If you have obtained an authorization code for a purchased license, select **Non-expiring License** and then click **Next**.

The License Manager requests your authorization code.

Enter the authorization code and then click **Next**.

7. The License Manager displays a summary of the information you entered and allows you to choose the method of applying for your license.
8. Choose **On-line Request** if your machine is connected to the internet and can make outgoing connections to port 8884.

The License Manager then sends a request to the Easysoft license server to activate your license key automatically. This is the quickest method and results in your details being entered immediately into our support database. You can now go to **step 9 on page 40**.

NB Only your license request identifier and contact details as they are displayed in the main License Manager screen are sent to Easysoft.

The remaining three options (**Email Request**, **Print Request** and **View Request**) are all ways to obtain a license if your machine is off-line (i.e. does not have a connection to the internet).

Each of these methods involves providing Easysoft with information including your machine number (a number unique to your machine) and then waiting to receive your license key.

Instead of emailing your details to Easysoft, you can enter them directly at the Easysoft web site and your license key will be emailed to you automatically.

To use this method, click **View Request**, and then visit:

- http://www.easysoft.com/support/licensing/trial_license.html
(trial licenses)
- http://www.easysoft.com/support/licensing/full_license.html
(purchased licenses)

In the Licensing page, enter your machine number (and authorization code for purchased license), click **Submit** and your license key will be emailed to you.

NB You can copy your machine number from the **View Request** dialog box using CTRL-C and then paste it into the License Generator by using CTRL-V.

INSTALLATION

Easysoft ODBC-Google BigQuery Driver

When you receive the license key, you can activate it either by double-clicking the email attachment or by clicking **Enter License** on the License Manager main screen and pasting the license key into the dialog box.

9. A message tells you how many licenses have been added.

NB

If you use the **Email Request** option, the license key is emailed to the email address as displayed on the License Manager screen, not the `from:` address of your email.

For more information about the licensing procedure refer to the [Licensing Guide](#).

10. Click **Finish** in the License Manager.

The installation is complete.

REPAIRING THE EASYSOFT ODBC-GOOGLE BIGQUERY DRIVER INSTALLATION

The installer can repair a broken Easysoft ODBC-Google BigQuery Driver installation. For example, you can use the installer to restore missing Easysoft ODBC-Google BigQuery Driver files or registry keys.

In Windows Vista and later versions of Windows:

1. In **Control Panel**, open **Programs and Features**.
2. Right-click **Easysoft BigQuery ODBC Driver**, and then click **Repair**.

In earlier versions of Windows:

1. In **Control Panel**, open **Add or Remove Programs**.
2. Select **Easysoft BigQuery ODBC Driver** and click **Change/Remove**.

Uninstalling the Easysoft ODBC-Google BigQuery Driver on Windows

This section explains how to remove the Easysoft ODBC-Google BigQuery Driver from your system.

REMOVING EASYSOFT ODBC-GOOGLE BIGQUERY DRIVER DATA SOURCES

Easysoft ODBC-Google BigQuery Driver data sources are not removed when you uninstall. You therefore do not need to recreate your Easysoft ODBC-Google BigQuery Driver data sources if you reinstall or upgrade. If you do not want to keep your Easysoft ODBC-Google BigQuery Driver data sources, use ODBC Administrator to remove them, **before** uninstalling the Easysoft ODBC-Google BigQuery Driver.

1. In **Control Panel**, double-click **Administrative Tools** and then **Data Sources (ODBC)**.
2. Select the data source in the **ODBC Administrator** and click the **Remove** button.

There is both a 32-bit and a 64-bit version of ODBC Administrator. The 64-bit ODBC Administrator is located in Control Panel under Administrative tools. To access the 32-bit ODBC Administrator, in the Windows Run dialog box, type:

```
%windir%\syswow64\odbcad32.exe
```

If you do not see the data source in the 64-bit ODBC Administrator, look for it in the 32-bit ODBC Administrator.

64-bit Windows



INSTALLATION

Easysoft ODBC-Google BigQuery Driver

REMOVING THE EASYSOFT ODBC-GOOGLE BIGQUERY DRIVER

In Windows Vista and later versions of Windows:

1. In **Control Panel**, open **Programs and Features**.
2. Double-click **Easysoft ODBC-Google BigQuery Driver**.

In earlier versions of Windows:

1. In **Control Panel**, open **Add or Remove Programs**.
2. Select **Easysoft BigQuery ODBC Driver** and click **Change/Remove**.

The uninstall process is complete.

Any licenses you obtained for the Easysoft ODBC-Google BigQuery Driver and other Easysoft products are held in the Windows registry.

When you uninstall, your licenses are not removed so you do not need to relicense the product if you reinstall or upgrade.

CHAPTER 3 CONFIGURATION

Configuring the Easysoft ODBC-Google BigQuery Driver

The Easysoft ODBC-Google BigQuery Driver is installed on the computer where your applications are running. ODBC applications access ODBC drivers through the ODBC Driver Manager and a data source. The data source tells the Driver Manager which ODBC driver to load and contains Google BigQuery connection details. This chapter describes how to create data sources and configure the Easysoft ODBC-Google BigQuery Driver.

Before setting up a data source, you must have successfully installed the Easysoft ODBC-Google BigQuery Driver.

For Easysoft ODBC-Google BigQuery Driver installation instructions, see "[Installation](#)" on page 13.

Chapter Guide

- [Configuring the Easysoft ODBC-Google BigQuery Driver](#)
- [Setting Up Data Sources on Unix](#)
- [Setting Up Data Sources on Windows](#)
- [Attribute Fields](#)



CONFIGURATION

Easysoft ODBC-Google BigQuery Driver

Configuring the Easysoft ODBC-Google BigQuery Driver

This section describes how to configure the Easysoft ODBC-Google BigQuery Driver to connect to BigQuery by using a data source. The section assumes you are, or are able to consult with, a database administrator.

Setting Up Data Sources on Unix

There are two ways to set up a data source to your Google BigQuery data:

- Create a SYSTEM data source, which is available to anyone who logs on to this Unix machine.
- OR –
- Create a USER data source, which is only available to the user who is currently logged on to this Unix machine.

By default, the Easysoft ODBC-Google BigQuery Driver installation creates a SYSTEM data source named `[BQ_SAMPLE]`. If you are using the unixODBC included in the Easysoft ODBC-Google BigQuery Driver distribution, the SYSTEM `odbc.ini` file is in `/etc`.

If you built unixODBC yourself, or installed it from some other source, SYSTEM data sources are stored in the path specified with the configure option `--sysconfdir=directory`. If `sysconfdir` was not specified when unixODBC was configured and built, it defaults to `/usr/local/etc`.

If you accepted the default choices when installing the Easysoft ODBC-Google BigQuery Driver, USER data sources must be created and edited in `$HOME/.odbc.ini`.

Note

To display the directory where unixODBC stores SYSTEM and USER data sources, type `odbcinst -j`.
By default, you must be logged in as `root` to edit a SYSTEM data source defined in `/etc/odbc.ini`.

You can either edit the sample data source or create new data sources.

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Easysoft ODBC-Google BigQuery Driver

Each section of the `odbc.ini` file starts with a data source name in square brackets `[]` followed by a number of *attribute=value* pairs.

Note Attribute names in `odbc.ini` are not case sensitive.

The `Driver` attribute identifies the ODBC driver in the `odbcinst.ini` file to use for a data source.

When the Easysoft ODBC-Google BigQuery Driver is installed into unixODBC, it places an `Easysoft BigQuery` entry in `odbcinst.ini`. For Easysoft ODBC-Google BigQuery Driver data sources therefore, you need to include a `Driver = Easysoft Big Query ODBC driver` entry.

To configure a Google BigQuery data source, in your `odbc.ini` file, you need to specify:

- A refresh token that you have obtained by running `installation_directory/bigquery/bq_oauth`.

For example:

```
[BQ_SAMPLE]
Driver=Easysoft BigQuery
Description=Easysoft Big Query ODBC driver
Refresh_Token=1//03qVbOYYtf
Project_Id=notional-grove-123
Dataset=TestDataset1
```

ENVIRONMENT

The Easysoft ODBC-Google BigQuery Driver must be able to find the following shared objects, which are installed during the Easysoft ODBC-Google BigQuery Driver installation:

- `libodbcinst.so`

By default, this is located in

`/usr/local/easysoft/unixODBC/lib.`

- `libeslicshr_r.so`

By default, this is located in `/usr/local/easysoft/lib.`

- `libessupp_r.so`

By default, this is located in `/usr/local/easysoft/lib.`

You may need to set and export `LD_LIBRARY_PATH`, `SHLIB_PATH` or `LIBPATH` (depending on your operating system and run-time linker) to include the directories where `libodbcinst.so`, `libeslicshr.so` and `libessupp.so` are located.

Note The shared object file extension (`.so`) may vary depending on the operating system (`.so`, `.a` or `.sl`).

CONFIGURATION

Easysoft ODBC-Google BigQuery Driver

ESTABLISHING A TEST CONNECTION

The `isql` query tool lets you test your Easysoft ODBC-Google BigQuery Driver data sources.

To test the Easysoft ODBC-Google BigQuery Driver connection

1. Change directory into `/usr/local/easysoft/unixODBC/bin`.
2. Type `./isql.sh -v data_source`, where `data_source` is the name of the target data source.
3. At the prompt, type an SQL query. For example:

```
SQL> SELECT * FROM `bigquery-public-  
data.hud_zipcode_crosswalk.census_tracts_to_zipcode` LIMIT 1
```

– OR –

Type `help` to return a list of tables:

```
SQL> help
```

Setting Up Data Sources on Windows

To connect an ODBC application on a Windows machine to a Google BigQuery:

1. Open ODBC Data Source Administrator:
 - For Microsoft Windows 10 and later, use the Windows search facility to look for "ODBC".
 - For Microsoft Windows 8, in the Windows desktop, point to the upper-right corner of the screen, move the mouse pointer down, and then choose **Settings > Control Panel > Administrative Tools > ODBC Data Sources (64-bit)**.
 - For Microsoft Windows Vista and Windows 7, choose **Start > Control Panel > Administrative Tools > Data Sources (ODBC)**.
 - For Microsoft Windows Server 2008 and Windows Server 2008 R2, choose **Start > Administrative Tools > Data Sources (ODBC)**.
 - For Microsoft Windows 2000, Windows XP and Windows Server 2003, choose **Start > Settings > Control Panel > Administrative Tools > Data Sources**.

The **ODBC Data Source Administrator** dialog box is displayed:

2. Select the **User DSN** tab to set up a data source that only you can access.

– OR –

Select the **System DSN** tab to create a data source which is available to anyone who logs on to this Windows machine.

3. Click **Add...** to add a new data source.



CONFIGURATION

Easysoft ODBC-Google BigQuery Driver

The **Create New Data Source** dialog box displays a list of drivers:

4. Select Easysoft ODBC-Google BigQuery Driver and click Finish.

The DSN Setup dialog box is displayed.

For details of the attributes that can be set on this dialog box, see **"Attribute Fields" on page 52.**

BigQuery Authentication

To use the Easysoft ODBC-Google BigQuery Driver to work with your BigQuery data, you need either to obtain a refresh token or create a Service Account in the Google console.

To obtain a refresh token on Windows, choose the **Authenticate and obtain token** button in the configuration dialog box when setting up your data source. This launches your default browser. Sign into your Google account and then allow the Easysoft ODBC-Google BigQuery Driver to **View and manage your data in Google BigQuery** when prompted. Then follow the onscreen instructions.

To obtain a refresh token on Linux and UNIX, change to the *installation_directory/easysoft/bigquery* and then run `bq_oauth`. In a web browser on the same machine, go to the URL returned by the program. Sign into your Google account and then allow the Easysoft ODBC-Google BigQuery Driver to **View and manage your data in Google BigQuery** when prompted. Then follow the onscreen instructions. Paste the refresh token returned by this process into your ODBC data source in `odbc.ini`. The refresh token is the value for the `Refresh_Token` attribute.

You can also grant access to the Easysoft ODBC-Google BigQuery Driver to your BigQuery data by setting up a Google Service Account in the Google console. The Google Service Account member needs to be a BigQuery Admin. You need to generate a JSON format key for the account. Download the key to your Easysoft ODBC-Google BigQuery Driver machine. Specify the path to your key file in the Service Acct File attribute (Windows ODBC data source) or SAKeyFile attribute (Linux / UNIX ODBC data source).

CONFIGURATION

Easysoft ODBC-Google BigQuery Driver

Attribute Fields

This section lists the attributes which can be set for the Easysoft ODBC-Google BigQuery Driver in a table showing:

- The label of the attribute on the Windows dialog box
- The entry required when editing the Unix `odbc.ini` file.
- The string to be used in a call to `SQLDriverConnect` or in a connect string for ADO type use.

Attributes which are text fields are displayed as *value*.

Attributes which are logical fields can contain either 0 (to set to off) or 1 (to set to on) and are displayed as “0 | 1”.

If an attribute can contain one of several specific values then each possible entry is displayed and separated by a pipe symbol.

For example, in the statement:

```
DIALECT=1 | 2 | 3
```

the value entered may be “1”, “2” or “3”.

DSN

The name of the User or System data source to be created, as used by the application when calling the `SQLConnect` or `SQLDriverConnect` functions.

Interface	Value
DSN Dialog Box (Windows)	DSN
odbc.ini file (Unix)	[<i>value</i>]
Connect String	DSN= <i>value</i>

DESCRIPTION

Descriptive text that may be retrieved by certain applications to describe the data source.

Interface	Value
DSN Dialog Box (Windows)	Description
odbc.ini file (Unix)	Description= <i>value</i>
Connect String	Not Used

REFRESH TOKEN

The refresh token that you obtain from Google for authorising access to BigQuery. This is an alternative authentication mechanism to using a Service Account.

Interface	Value
DSN Dialog Box (Windows)	Refresh Token
odbc.ini file (Unix)	Refresh_Token= <i>value</i>
Connect String	REFRESH_TOKEN= <i>value</i>

SERVICE ACCT FILE

If you want to use the Service Account Authentication mechanism, set this option to the full path of the .json key file that is used to authenticate the service account email address. The key file is

CONFIGURATION

Easysoft ODBC-Google BigQuery Driver

generated when setting up Service Account Account Authentication in the Google console.

Interface	Value
DSN Dialog Box (Windows)	Service Acct File
odbc.ini file (Unix)	SAKeyFile= <i>value</i>
Connect String	SAKEYFILE= <i>value</i>

PROJECT ID

The BigQuery project ID. If you do not specify a project ID the Easysoft ODBC-Google BigQuery Driver will attempt to discover the during the connection process. The method used depends on whether you have chosen to use User authentication or Service Account authentication.

This is the project that will be used if you specify an unqualified table name in a SQL query. For example, `select * from MyTable` as opposed to `SELECT * FROM `bigquery-public-data.utility_eu.time``.

Interface	Value
DSN Dialog Box (Windows)	Project Id
odbc.ini file (Unix)	Project_Id = <i>value</i>
Connect String	PROJECT_ID= <i>value</i>

DATASET

The BigQuery dataset. If you do not specify a dataset, the Easysoft ODBC-Google BigQuery Driver will attempt to discover the data set during the connection process.

This is the dataset that will be used if you specify an unqualified table name in a SQL query.

Interface	Value
DSN Dialog Box (Windows)	Dataset
odbc.ini file (Unix)	Dataset = <i>value</i>
Connect String	DATASET= <i>value</i>

ADDITIONAL PROJECTS

A comma-separated list of public BigQuery projects that the Easysoft ODBC-Google BigQuery Driver can access and use as catalogs.

Interface	Value
DSN Dialog Box (Windows)	Additional Projects
odbc.ini file (Unix)	Additional-Projects= <i>value</i>
Connect String	ADDITIONAL-PROJECTS= <i>value</i>

CONFIGURATION

Easysoft ODBC-Google BigQuery Driver

MAX STRING LEN

The length that the Easysoft ODBC-Google BigQuery Driver reports for string columns. If you are using the driver under Oracle, and get the error "illegal use of long data type", try setting this attribute to 8000. If you are using the driver under SQL Server and get the error "requested conversion is not supported" try setting this attribute to 2048.

Interface	Value
DSN Dialog Box (Windows)	Max String Len
odbc.ini file (Unix)	MaxStringLength = <i>num</i>
Connect String	MAXSTRINGLEN= <i>num</i>

POS PARAM

Enable this attribute if you want to use positional parameters in your SQL statements.

Interface	Value
DSN Dialog Box (Windows)	Pos Param
odbc.ini file (Unix)	PositionalParameter = Yes No
Connect String	POSITIONALPARAMETER=Yes No

LEGACY SQL

If you want to use legacy BigQuery SQL syntax, enable this attribute.

Interface	Value
DSN Dialog Box (Windows)	LegacySQL
odbc.ini file (Unix)	LegacySQL = Yes No
Connect String	LEGACYSQL = Yes No

BIG NUM AS STR

Whether the Easysoft ODBC-Google BigQuery Driver reports a `BigNumeric` column as a string. Enable this attribute if you want to work with `BigNumeric` columns in SQL Server.

Interface	Value
DSN Dialog Box (Windows)	BigNum As Str
odbc.ini file (Unix)	BNAsVarchar = Yes No
Connect String	BNASVARCHAR = Yes No

CONFIGURATION

Easysoft ODBC-Google BigQuery Driver

HP TIMESTAMP

Whether to return fractional seconds from a `TIMESTAMP` column. For example, `select MyTimeStampCol from MyTestTable` returns `2021-04-07 10:38:55` (HP Timestamp OFF) or `2021-04-07 10:38:34.986427` (HP Timestamp ON).

Interface	Value
DSN Dialog Box (Windows)	HP Timestamp
odbc.ini file (Unix)	HPTimestamp = Yes No
Connect String	HPTIMESTAMP = Yes No

EXPAND TIMESTAMP

If you enable this option, a timestamp ODBC escape sequence is mapped to a datetime. For example, when this option is enabled, `ts = {ts '2001-02-03 04:05:06'}` becomes `ts = DATETIME "2001-02-03 04:05:06"`.

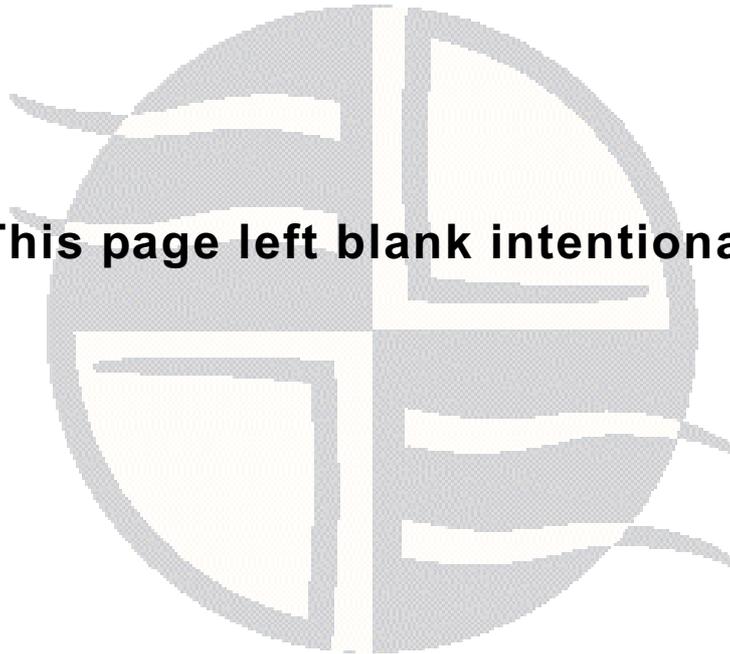
Interface	Value
DSN Dialog Box (Windows)	Expand Timestamp
odbc.ini file (Unix)	ExpandEscape = Yes No
Connect String	EXPANDESCAPE = Yes No

TIME AS TIMESTAMP

When enabled the Easysoft ODBC-Google BigQuery Driver, reports TIME columns as a timestamp.

Interface	Value
DSN Dialog Box (Windows)	Expand Timestamp
odbc.ini file (Unix)	TimeAsTimestamp = Yes No
Connect String	TIMEASTIMESTAMP = Yes No

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APPENDIX A TECHNICAL REFERENCE

Technical Reference for the Easysoft ODBC-Google BigQuery Driver

This section contains extra information relating to the deployment of the Easysoft ODBC-Google BigQuery Driver.

Appendix Guide

- [ODBC Conformance](#)
- [Tracing](#)



TECHNICAL REFERENCE

Easysoft ODBC-Google BigQuery Driver

ODBC Conformance

The Easysoft ODBC-Google BigQuery Driver complies with the ODBC 3.81 specification.

UNICODE

The Easysoft ODBC-Google BigQuery Driver is a Unicode ODBC driver and supports the Unicode ODBC APIs and data types.

To work with Unicode data, use parameterised SQL and bind the statement parameters as Unicode data types. If your application calls `SQLGetData`, request that the data be returned as a Unicode data type.

Tracing

The ODBC calls an application makes can be traced:

- Within the Driver Manager by an application.
- From within the Driver Manager.
- From within the Easysoft ODBC-Google BigQuery Driver.

WITHIN THE DRIVER MANAGER BY AN APPLICATION

An application can turn tracing on in the Driver Manager by using the ODBC API `SQLSetConnectAttr (... ,SQL_ATTR_TRACE,...)`.

The trace file name may also be specified with the `SQLSetConnectAttr` attribute `SQL_ATTR_TRACEFILE`.

FROM WITHIN THE DRIVER MANAGER ON UNIX

For the unixODBC Driver Manager, add two attributes to the [ODBC] section (create one if none exists) in `odbcinst.ini`.

```
Trace = Yes
```

```
TraceFile = logfile
```

For example:

```
[ODBC]
```

```
Trace = Yes
```

```
TraceFile = /tmp/unixodbc.log
```

Ensure that the user who is running the application to be traced has write permission to the log file (and to the directory containing it), or no tracing information will be produced.



TECHNICAL REFERENCE

Easysoft ODBC-Google BigQuery Driver

FROM WITHIN THE DRIVER MANAGER ON WINDOWS

- For Microsoft Windows 10 and later, in the Windows search facility, look for "ODBC".
- For Microsoft Windows 8, in the Windows desktop, point to the upper-right corner of the screen, move the mouse pointer down, and then choose **Settings > Control Panel > Administrative Tools > ODBC Data Sources (64-bit)**.
- For Microsoft Windows Vista and Windows 7, choose **Start > Control Panel > Administrative Tools > Data Sources (ODBC)**.
- For Microsoft Windows Server 2008 and Windows Server 2008 R2, choose **Start > Administrative Tools > Data Sources (ODBC)**.
- For Microsoft Windows 2000, Windows XP and Windows Server 2003, choose **Start > Settings > Control Panel > Administrative Tools > Data Sources**.

Click on **Tracing**, ensure the specified filename is valid and click **Start Tracing Now**.

64-bit Windows

There is both a 64-bit and 32-bit version of the ODBC Data Source Administrator. The 64-bit version enables you to trace the ODBC API calls that are made by a 64-bit application. The 32-bit version enables you to trace the ODBC API calls that are made by a 32-bit application.

The 64-bit version is located in Control Panel (see the previous step). To run the 32-bit version on Windows 7 and earlier, in the Windows Run dialog box, type:

```
%windir%\syswow64\odbcad32.exe
```

On Windows 8, both the 32-bit and 64-bit ODBC Administrator are located in Control Panel under Administrative tools: ODBC Data Sources (32-bit) and ODBC Data Sources (64-bit).

If you are not sure which version to use, and do not get a log file after completing the steps in this article, try enabling tracing in the other version of ODBC Data Source Administrator.

TECHNICAL REFERENCE

Easysoft ODBC-Google BigQuery Driver

FROM WITHIN THE EASYSOFT ODBC-GOOGLE BIGQUERY DRIVER ON UNIX

Driver manager trace files show all the ODBC calls applications make, their arguments and return values. Easysoft ODBC-Google BigQuery Driver driver tracing is specific to the Easysoft driver and is of most use when making a support call.

To enable Easysoft ODBC-Google BigQuery Driver logging, add a `LOGFILE` and a `LOGGING` attribute to the relevant DSN section of the `odbc.ini` file.

For example:

```
[BQ_SAMPLE]
.
.
.
LOGFILE = /tmp/bq.log
LOGGING = Yes
```

The `LOGFILE` value is the path and file name of the log file. The value shown in the example specifies a log file named `/tmp/bq.log`. The `LOGGING` value specifies the actions to log. The value shown in the example specifies that all actions should be logged.

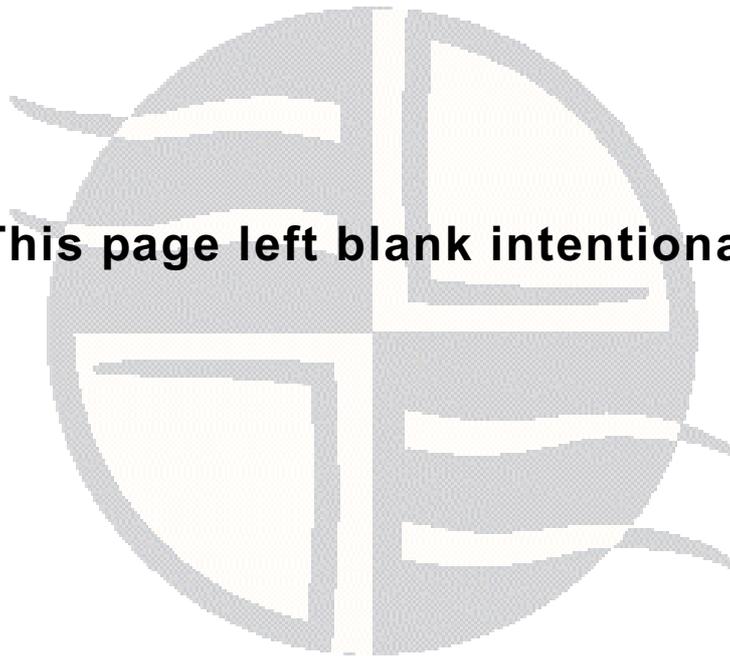
Ensure that the user who is running the application to be traced has write permission to the log file (and to the directory containing it).

**FROM WITHIN THE EASYSOFT ODBC-GOOGLE
BIGQUERY DRIVER ON WINDOWS**

To enable logging:

1. Open the relevant Easysoft ODBC-Google BigQuery Driver data source in ODBC Data Source Administrator.
2. Click **Logging**.
3. Type the file name and path of the file you want the driver to write log information to in the space provided.

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APPENDIX B GLOSSARY

Terms and definitions

Application Programmer Interface (API)

A published set of function calls and constants allowing different programmers to utilize a ready-written library of subroutines.

Authorization code

You must have an authorization code for the Easysoft product you wish to license in order to obtain a purchased license. When you purchase a product your authorization code is emailed to you. You do not need an authorization code to obtain a trial license.

Batch

A set of SQL statements submitted together and run as a group. A script is often a series of batches submitted one after the other.

Column

The vertical component of a database table. A column has a name and a particular data type (for example, character, decimal, or integer).

Commit

To end a unit of work by releasing locks so that the database changes made by that unit of work can be perceived by other processes. This operation makes the data changes permanent.

Cursor

An entity that maps over a result set and establishes a position on a single row within the result set. After the cursor is positioned on a row, operations can be performed on that row, or on a block of rows starting at that position. The most common operation is to fetch (retrieve) the current row or block of rows.

Data Definition Language

The subset of SQL statements that define all attributes and properties of a database and its objects. DDL statements typically start with CREATE, ALTER, or DROP.

Data Manipulation Language

The subset of SQL statements that is used to retrieve and manipulate data. DML statements typically start with SELECT, INSERT, UPDATE, or DELETE.

Data source

A database or other data repository coupled with an ODBC Driver, which has been given a Data Source Name (see ["DSN" on page 71](#)) to identify it to the ODBC Driver Manager.

Data type

An attribute that specifies what type of information can be stored in a column, parameter, or variable.

DBMS

Database Management System -- software that handles access to a database.

Distributed query

A single query that accesses data from multiple data sources.

Distributed Relational Database Architecture (DRDA)

The architecture that defines formats and protocols for providing transparent access to remote data.

Driver

See "[ODBC driver](#)" on page 73.

Driver Manager

Software whose main function is to load ODBC drivers. ODBC applications connect to the Driver Manager and request a data source name (DSN). The Driver Manager loads the driver specified in the DSN's configuration file. On Windows, the ODBC Data Source Administrator is used to set up the Driver Manager.

DSN

Data Source Name. A name associated with an ODBC data source. Driver Managers, such as unixODBC or the Microsoft Windows Driver Manager, use the Data Source Name to cross-reference configuration information and load the required driver.

DSN-less connection

A type of data connection that is created based on information in a data source name (DSN), but is stored as part of a project or application. DSN-less connections are especially useful for Web applications because they let you move the application from one server to another without re-creating the DSN on the new server.



GLOSSARY

Easysoft ODBC-Google BigQuery Driver

Field

A placeholder for a single datum in a record, for example you can have a Surname field in a Contact Details record. Fields are sometimes referred to as cells.

Host

A computer visible on the network.

Index

In a relational database, a database object that provides fast access to data in the rows of a table, based on key values. Indexes can also enforce uniqueness on the rows in a table. The primary key of a table is automatically indexed. In full-text search, a full-text index stores information about significant words and their location within a given column.

Isolation level

An attribute that defines the degree to which an application process is isolated from other concurrently executing application processes. Isolation levels generally relate to the behaviour of an application with respect to locks.

License key

A string that is provided by Easysoft for use in the licensing process.

NULL

An entry that has no explicitly assigned value. `NULL` is not equivalent to zero or blank. A value of `NULL` is not considered to be greater than, less than, or equivalent to any other value, including another value of `NULL`.

ODBC

Open Database Connectivity -- a programming interface that enables applications to access data in database management systems that use Structured Query Language (SQL) as a data access standard.

ODBC driver

Software that accesses a proprietary data source, providing a standardized view of the data to ODBC.

Record

A group of related fields (columns) of information treated as a unit. A record is more commonly called a row in a relational database.

Result set

A set of row values as returned by, for example, a cursor or procedure.

Row

The horizontal component of a table, consisting of a sequence of values, one for each column of the table.

Structured Query Language (SQL)

A standardised language for defining and manipulating data in a relational database.

SQL-92

The version of the SQL standard published in 1992. The international standard is ISO/IEC 9075:1992 Database Language SQL. The American National Standards Institute (ANSI) also published a corresponding standard (Data Language SQL X3.135-1192), so SQL-92 is sometimes referred to as ANSI SQL in the United States.

Stored procedure

An application program, possibly containing SQL statements, that is stored on the database server and can be invoked with the SQL CALL statement.

Table

A data set in a relational database, composed of rows and columns.

Transaction

An atomic series of SQL statements that make up a logical unit of work. All of the data modifications made during a transaction are either committed together as a unit or rolled back as a unit.



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