



Easysoft Data Access

SQL-Sage Tetra CS/3 Driver

Installation Guide and User Manual



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PREFACE



About this manual

This manual is intended for use by anyone who has a Sage Tetra CS/3 installation on a remote server and needs to connect to the Sage Tetra CS/3 data from ODBC- or JDBC-compliant applications running on computers connected to the server over a network.

Intended Audience

It is assumed that you have a reasonable understanding of the operating systems that you are using.

Displaying the Manual

This manual is available in the following formats:

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

PREFACE

About this manual

Notational Conventions

Across the range of Easysoft manuals you will encounter passages that are emphasized with a box and a label.

A *note box* provides additional information that may further your understanding of a particular procedure or piece of information relating to a particular section of this manual:

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

A *reference box* refers to resources external to the manual, such as a useful website or suggested reading:

REF For more manuals that use this convention, see the rest of the Easysoft documentation.

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

Linux In Linux you must log on as the `root` user in order to make many important changes.

A *caution box* is used to provide 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!

Information has also been grouped within some chapters into two broad classes of operating system, Windows and Unix, for which side tabs are used to help you turn to the section relevant to you.

Typographical Conventions

To avoid ambiguity, typographic effects have been applied to certain types of reference:

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

Click **Next** to continue.

Where there is a chain of submenus, the following convention is used:

Choose **Start > Programs > Command Prompt**.

- Commands to be typed are presented using a `monotype` font, for example:

At the command prompt type `admin`.

- Keyboard Commands

It is assumed that all typed commands will be committed by pressing the `<Enter>` key, and as such this will not normally be indicated in this manual. Other key presses are italicized and enclosed by angle brackets, for example:

Press `<F1>` for help.

- File listings and system names (such as file names, directories and database fields) are presented using the `monotype plain text` style.

Contents

- **Introduction**

Introduces the Easysoft SQI-Sage Tetra CS/3 Driver and gives an overview of the install procedure.

- **Installation**

Explains the installation procedure for installing the Easysoft SQI-Sage Tetra CS/3 Driver onto your server machine.

- **Administration**

Explains how to enable users to access the Easysoft SQI-Sage Tetra CS/3 Driver and grant them rights to the Sage Tetra CS/3 data.

- **Client Setup**

Explains what needs to be done on each client machine to connect to the Sage Tetra CS/3 data on the server.

- **Appendices**

Comprising Configuration Options, Conformance Details and a Glossary.

Trademarks

Throughout this manual, *Windows* refers generically to Microsoft Windows 95, 98, 2000, NT or XP, 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*.

Note also that although the name UNIX is a registered trademark of UNIX System Laboratories, 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'.

Easysoft and Easysoft Data Access are trademarks of Easysoft Limited.

INTRODUCTION

1

Introducing Easysoft Data Access

Easysoft Data Access is a series of programs that allow you to have heterogeneous access to any database on any platform. With Easysoft software you can connect applications on more platforms to more database systems than ever before.

This section explains how the Easysoft SQL-Sage Tetra CS/3 Driver works, and provides an overview of the installation procedure.

Chapter Guide

- **About Sage Tetra CS/3**
- **Introducing the Easysoft SQL-Sage Tetra CS/3 Driver**
- **How the Easysoft SQL-Sage Tetra CS/3 Driver works**
- **Overview of the installation and setup procedure**

INTRODUCTION

Introducing Easysoft Data Access

About Sage Tetra CS/3

Sage Tetra CS/3 is a modular financial system offering a variety of functionality from routine accounting to sophisticated business management tools.

You can combine different modules to tailor the system precisely to your company's needs.

Sage Tetra CS/3 is a real-time multi-user system. For example, once an invoice is entered by one user, another user can generate a report drawing on the very latest data.

Sage Tetra CS/3 is also a client server system. When the Sage Tetra CS/3 server is installed on a Unix machine, you might use the Sage Tetra CS/3 Windows GUI client to work with the Sage Tetra CS/3 data from a Windows PC, but it is more difficult to work with the Sage Tetra CS/3 data within other Windows applications such as Microsoft Excel.

This is the shortcoming that the Easysoft SQI-Sage Tetra CS/3 Driver overcomes.

Introducing the Easysoft SQL-Sage Tetra CS/3 Driver

The Easysoft SQL-Sage Tetra CS/3 Driver is an ODBC 3.5 driver which allows you direct access to C-ISAM based Sage Tetra CS/3 data using ODBC-compliant applications such as Microsoft Excel, or JDBC-compliant applications such as bespoke web programs.

Once connected to your Sage Tetra CS/3 data, you can query it for precisely the information you want.

The Easysoft SQL-Sage Tetra CS/3 Driver provides:

- direct support of the Sage Tetra CS/3 Data Dictionary which describes the format of the Sage Tetra CS/3 database. Easysoft reads the table (dbtable), column (dbcolum) and index (dbkey) definitions on-the-fly, so you do not need to specify them manually. This also means that any user-defined tables are automatically detected, and when you upgrade your Sage Tetra CS/3 installation Easysoft automatically picks up any changes in the Sage Tetra CS/3 files.
- support across multiple Sage Tetra CS/3 companies. You can run queries across multiple companies directly from within the data source.
- easy administration of users and their access rights
- access to all the tables within Sage Tetra CS/3 and full support for its data types
- conformance to ODBC 3.5
- support for the ODBC minimum SQL grammar with the majority of SQL92 extensions.

INTRODUCTION

Introducing Easysoft Data Access

How the Easysoft SQL-Sage Tetra CS/3 Driver works

The Easysoft SQL-Sage Tetra CS/3 Driver is part of the Easysoft Data Access product range: the integrated data access middleware suite created to simplify the development and deployment of powerful ODBC and JDBC solutions with no compromise on performance, functionality and scalability.

The Easysoft SQL-Sage Tetra CS/3 Driver uses established Easysoft Data Access components to achieve its data access:

- the Easysoft ODBC-ODBC Bridge provides full access to any local ODBC data source from any remote client such as Unix, Linux, Open VMS or Windows system. For example, if your Sage Tetra CS/3 server is on Unix box, a user running Microsoft Excel on a networked PC can connect to the Sage Tetra CS/3 data on the server.
- the Easysoft JDBC-ODBC Bridge provides a Type 3 JDBC access from 100% pure Java Applets or Applications anywhere on the network to ODBC data sources where the Easysoft JDBC-ODBC Bridge server is installed. For example, if your Sage Tetra CS/3 server is installed on a Unix box, a Java applet on your company intranet could read and display data from the Sage Tetra CS/3 database.

Integrated with the Easysoft components is unixODBC, the open source ODBC driver manager for Unix, which enables you to configure more than one ODBC driver on your Unix server.

The unixODBC driver manager is installed as part of the Easysoft SQL-Sage Tetra CS/3 Driver installation.

How these components work with the Easysoft SQL-Sage Tetra CS/3 Driver is illustrated and explained below:

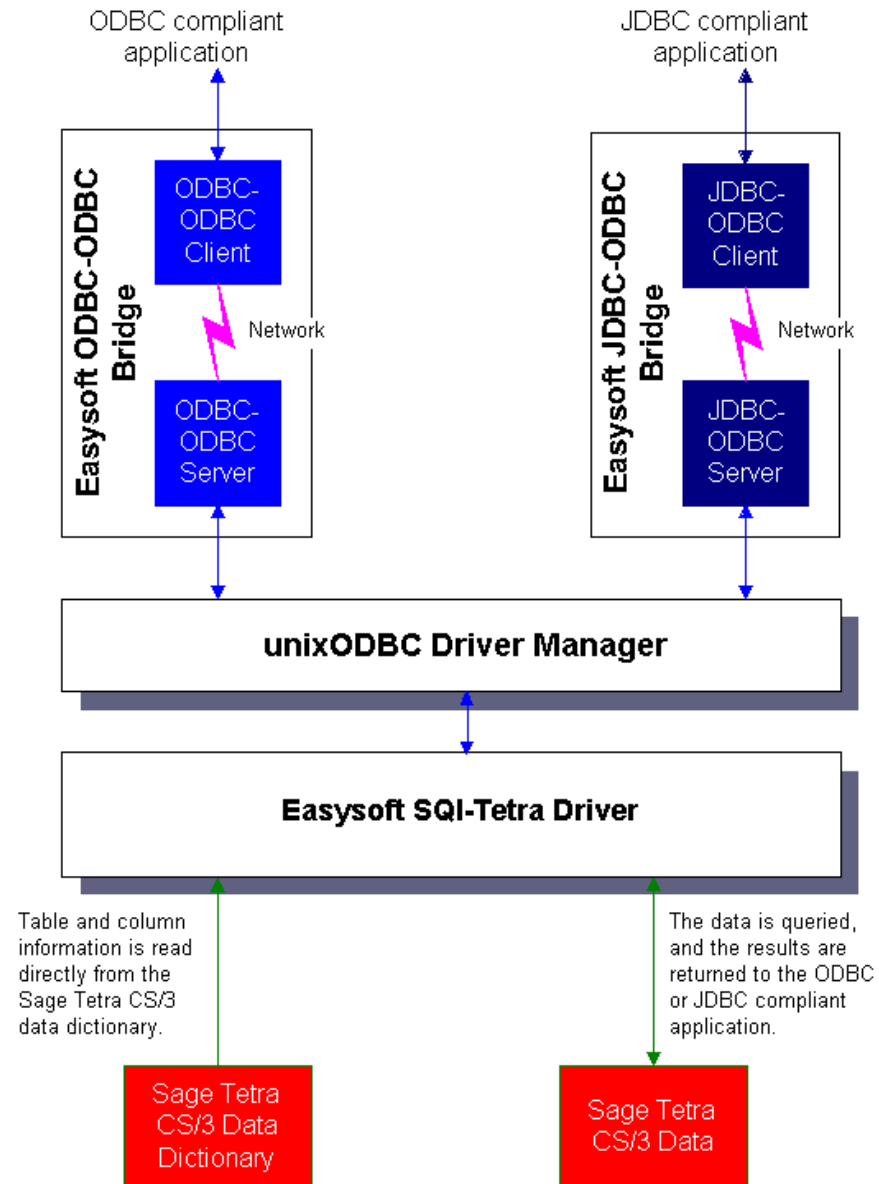


Figure 1: Easysoft SQL-Sage Tetra CS/3 Driver Components

INTRODUCTION

Introducing Easysoft Data Access

From your ODBC or JDBC application, you select a function which involves accessing the Sage Tetra CS/3 data (for example, you run a query to display all outstanding invoices).

The function passes from the application to the Easysoft ODBC-ODBC Bridge client or the Easysoft JDBC-ODBC Bridge client on your local machine, then across the network to the Easysoft ODBC-ODBC Bridge server or the Easysoft JDBC-ODBC Bridge server on the server machine.

It then passes into the unixODBC driver manager which directs the SQL query to the Easysoft SQR-Sage Tetra CS/3 Driver, which reads table and column information directly from the Sage Tetra Data Dictionary and interfaces to the Sage Tetra data.

It converts SQL statements into commands that can query the Sage Tetra CS/3 data, and returns a result set back to the querying application (via unixODBC and the Easysoft ODBC-ODBC Bridge or the Easysoft JDBC-ODBC Bridge).

For more information about the Easysoft ODBC-ODBC Bridge or the Easysoft JDBC-ODBC Bridge, please visit the Easysoft web site at <http://www.easysoft.com>.

You can find out more information about unixODBC from the unixODBC Project web site at <http://www.unixodbc.org>.

NB

This manual describes how to use the Easysoft SQR-Sage Tetra CS/3 Driver with the Easysoft ODBC-ODBC Bridge, but you can install it for use with the Easysoft JDBC-ODBC Bridge equally well.

Overview of the installation and setup procedure

The main stages of the procedure for installing and setting up the Easysoft SQL-Sage Tetra CS/3 Driver are as follows:

1. Install the Easysoft ODBC-ODBC Bridge server. Do not license the Easysoft ODBC-ODBC Bridge server at this point because you will license it at **step 3 on page 17** (see **Installing the Easysoft ODBC-ODBC Bridge server on page 22**).
2. Install the Easysoft SQL-Sage Tetra CS/3 Driver on the server. Installing this component automatically includes setting up a data source on the server to point to the Sage Tetra CS/3 data (see **Installing the Easysoft SQL-Sage Tetra CS/3 Driver on page 24**).
3. License the Easysoft SQL-Sage Tetra CS/3 Driver, which automatically licenses the Easysoft ODBC-ODBC Bridge also (see **Installing on page 24**).
4. Enable users and grant them access to the Easysoft SQL-Sage Tetra CS/3 Driver (see **Giving users access to Sage Tetra CS/3 data on page 37** and **Granting access to tables on page 39**).
5. Install the Easysoft ODBC-ODBC Bridge client on each Sage Tetra CS/3 user's machine (see **Installing the Easysoft ODBC-ODBC Bridge client on page 45**).
6. On the client machines, set up a data source connecting to the Sage Tetra CS/3 data (see **Setting up a data source on your Windows client on page 46**).

Installing the Easysoft ODBC-ODBC Bridge server (**step 1 on page 17**) and the Easysoft ODBC-ODBC Bridge client (**step 5 on page 17**) are explained briefly in this manual, but for full details please refer to the documentation supplied with the Easysoft ODBC-ODBC Bridge.

INSTALLATION

Installing the Easysoft SQI-Sage Tetra CS/3 Driver

This section explains how to install and license the Easysoft SQI-Sage Tetra CS/3 Driver and provides further information which you may only require in particular circumstances.

Chapter Guide

- **Installation requirements**
- **Obtaining the Easysoft SQI-Sage Tetra CS/3 Driver**
- **Download requirements**
- **Installing the Easysoft ODBC-ODBC Bridge server**
- **Installing the Easysoft SQI-Sage Tetra CS/3 Driver**
- **Setting up additional data sources**
- **Querying a data source**
- **Uninstalling the Easysoft SQI-Sage Tetra CS/3 Driver**

Installation requirements

The installation routine has the following requirements:

- The Easysoft ODBC-ODBC Bridge or the Easysoft JDBC-ODBC Bridge software to access the data remotely.
- Bourne shell (or BASH) must be in the `/bin/sh` directory. If your Bourne shell is not located there you may need to edit the first line of the install file.
- various common Unix commands such as: `grep`, `awk`, `cut`, `ps`, `sed`, `cat`, `wc`, `uname`, `tr`, `find`.

If you are missing any of these commands they can generally be obtained from the Free Software Foundation (<http://www.fsf.org>).

- Depending on the platform, you will need up to 10Mb of free disk space for the installed programs and up to 10Mb of temporary disk space for the installation files themselves.
- You must know the location of your existing Sage Tetra CS/3 installation, for example `/u/cs3`.

Obtaining the Easysoft SQL-Sage Tetra CS/3 Driver

1. There are three ways to obtain the Easysoft SQL-Sage Tetra CS/3 Driver:
 - The Easysoft web site is available 24 hours a day at <http://www.easysoft.com> for downloads of definitive releases and documentation. Select **Download** from the **Free Trials** page on the Easysoft SQL-Sage Tetra CS/3 Driver section of the website, and then choose the platform release that you require. First time visitors must complete the new user form and click **Register**. Note that your personal Internet options may require you to login and click **Continue** if you have previously registered.
 - The Easysoft FTP server is available 24 hours a day at <ftp://ftp.easysoft.com>. It contains free patches, upgrades, documentation and beta releases of Easysoft products, as well as definitive releases. The FTP site is useful if you have a slow connection or if you want to write a script to retrieve the file. Change to the `pub/tetra_sqi` directory and then choose the platform release that you require.
 - If you have an extremely slow connection you can order Easysoft software on CD by email, telephone or post (see **Contact Details**).

Download requirements

- the Easysoft SQL-Sage Tetra CS/3 Driver for whichever platform your Sage Tetra CS/3 server is running on.
- the Easysoft ODBC-ODBC Bridge for whichever platform your Sage Tetra CS/3 server is running on.
- the Easysoft ODBC-ODBC Bridge for whichever platform the users who will be connecting to the Sage Tetra CS/3 data are using.

For example, if your Sage Tetra CS/3 server is installed on a SCO OpenServer machine and your users want to access the Sage Tetra data from PCs running Microsoft Windows NT, you will need to download:

- the Easysoft SQL-Sage Tetra CS/3 Driver for SCO OpenServer.
- the Easysoft ODBC-ODBC Bridge for SCO OpenServer (to install the Easysoft ODBC-ODBC Bridge server program onto your Sage Tetra CS/3 server).
- the Easysoft ODBC-ODBC Bridge for Windows NT/95 (to install the Easysoft ODBC-ODBC Bridge client onto your users' machines).

The Easysoft SQL-Sage Tetra CS/3 Driver distribution file takes the following naming convention:

`eda-tetra-w.x.y.z.platform.tar`

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

"platform" will also vary, depending on the operating system distribution you require.

INSTALLATION

Installing the Easysoft SQL-Sage Tetra CS/3 Driver

For example:

```
eda-tetra-1.0.0.11.sco_sv.tar
```

The filename may be suffixed with `.gz` for a 'gzipped' archive, or `.z` for a 'compressed' archive.

NB

When downloading the Easysoft ODBC-ODBC Bridge client and server components, ensure that the first 3 digits of the version numbers match. See the Easysoft ODBC-ODBC Bridge manual for more information.

Once you have downloaded the distribution files, place the files for installation on the server into a temporary directory on the server.

Installing the Easysoft ODBC-ODBC Bridge server

The first step in installing the Easysoft SQL-Sage Tetra CS/3 Driver is to install the Easysoft ODBC-ODBC Bridge server onto the machine running the Sage Tetra CS/3 server

Caution!

If you have a previous installation of the Easysoft ODBC-ODBC Bridge server, ensure that you uninstall it before installing the latest version. Refer to the manual supplied with the Easysoft ODBC-ODBC Bridge for details of uninstalling a previous version.

To install the Easysoft ODBC-ODBC Bridge server, you should:

1. Log onto the server machine as the `root` user.
2. Extract the Easysoft ODBC-ODBC Bridge server installation files from the downloaded distribution file.
3. Run the `install` script.

The installation enables you to install the Easysoft ODBC-ODBC Bridge client in addition to the Easysoft ODBC-ODBC Bridge server.

INSTALLATION

Installing the Easysoft SQL-Sage Tetra CS/3 Driver

There is no harm in installing the Bridge client, although you will probably not need to unless your server holds applications that want to access data from other machines.

Do not choose to license the Easysoft ODBC-ODBC Bridge server during this installation: you will license all components when you install the Easysoft SQL-Sage Tetra CS/3 Driver.

Please refer to the manual supplied with the Easysoft ODBC-ODBC Bridge for full details of installing the server component (you can download this manual from the Easysoft ODBC-ODBC Bridge sections of the Easysoft web site or FTP site specified earlier in "**Obtaining the Easysoft SQL-Sage Tetra CS/3 Driver**" on page 20).

NB

In addition to the Easysoft ODBC-ODBC Bridge manual, several comprehensive documents including a detailed list of Frequently Asked Questions (`FAQ.txt`) for installing, configuring and using the Bridge are copied into the `/easysoft/oob/doc` subdirectory when you unpack the `.tar` file.

Installing the Easysoft SQL-Sage Tetra CS/3 Driver

Before beginning this installation:

- the Easysoft ODBC-ODBC Bridge server should be installed and running on the same machine as Sage Tetra CS/3.
- the distribution file (e.g. `eda-tetra-1.0.0.11.sco_sv.tar`) must be in a temporary directory on the machine on which Sage Tetra CS/3 is running.
- you must change into the directory containing the distribution file, making it the current directory.

UNCOMPRESSING THE INSTALL FILE

If you have obtained the gzipped distribution file (i.e. the filename ends in `.gz`), unzip it using:

```
gunzip eda-tetra-v.w.x.z.platform.tar.gz
```

If you have obtained the compressed distribution file (i.e. the filename ends in `.Z`), uncompress it using:

```
uncompress eda-tetra-v.w.x.z.platform.tar.Z
```

If you obtained a non-compacted version of the distribution file (i.e. the filename ends in `.tar`), then the archive is ready for extraction.

INSTALLING

To install the Easysoft SQL-Sage Tetra CS/3 Driver:

1. Log onto the server machine as `root`.
2. Extract the files from the distribution file by typing:

```
tar xvf eda-tetra-v.w.x.z.platform.tar
```


A directory called `eda-tetra-v.w.x.z.platform` is created.

3. Change into this directory, then type:

```
./install
```

During the installation, you are asked to answer some questions. The default response is displayed in square brackets [] and you can press `<Enter>` to accept it. Any alternative responses are shown in round brackets (); to choose one of these, type the response then press `<Enter>`.

4. If you accept the License Agreement, press `<Enter>` to continue.

Occasionally, the install program pauses to give you time to read the information displayed on screen. Press `<Enter>` to continue when you have read the current screen of information.

5. Specify the directory into which you want to install the Easysoft SQL-Sage Tetra CS/3 Driver. If you accept the default base directory, the files are installed into a subdirectory called `/easysoft` within the specified path. For example, if you accept the default path of `/usr/local`, the files are installed into `/usr/local/easysoft` and below.

If you specify an alternative directory, the files are installed into that directory but a symbolic link is created from `/usr/local/easysoft` pointing to the install directory. This link is necessary for licensing to work.

6. Depending on the server platform, there may be more than one configuration of the Easysoft SQL-Sage Tetra CS/3 Driver in the distribution file. If this is the case, you will be asked to choose the configuration that best suits your system.

INSTALLATION

Installing the Easysoft SQI-Sage Tetra CS/3 Driver

7. The Easysoft SQI-Sage Tetra CS/3 Driver requires unixODBC to be installed. If you do not already have unixODBC installed, it is installed now.

The install program now begins the licensing procedure.

8. Choose the option to license the Easysoft SQI-Sage Tetra CS/3 Driver.

NB

By licensing the Easysoft SQI-Sage Tetra CS/3 Driver, you also license the Easysoft ODBC-ODBC Bridge.

9. You will then be asked to provide information such as your name, company and a method for Easysoft to contact you. Fill in these details as requested on screen.

At the **Ref** prompt, enter your authorization code if you have purchased a license, or leave it blank if you want a time-limited trial license.

10. Now choose whether to obtain the license automatically or manually:
 - the automatic method requires an Internet connection on the machine running the Sage Tetra CS/3 server.
 - the manual method writes the required information to a text file (`/usr/local/easysoft/license/license_request.txt`) which you will need to activate the server.
11. After choosing your licensing method, the License Manager presents the list of options again. Select 0 to exit.

NB

The View Existing Licenses option will not display any license you obtained during this License Manager session. You must quit the License Manager and allow the install script to finish applying the license.

If you chose the automatic licensing method, any licenses that are retrieved are output to a file called `licenses.out` and the install script will ask whether you want to add any possible new licenses it detects in this file to the license database.

12. If you obtained licenses and you want to add them now, enter `y`.

– OR –

If you did not obtain licenses, enter `n`.

– OR –

If you do not see this message, then read on. You will need to complete the offline licensing procedure as explained in **"Completing the offline licensing procedure" on page 27**.

13. After the licensing is complete, the install program asks for the location of your Sage Tetra CS/3 installation.
14. After specifying the location of your Sage Tetra CS/3 installation, the install program sets up a data source for your Sage Tetra CS/3 data.

Once the Easysoft SQR-Sage Tetra CS/3 Driver is installed and licensed, you can start the Web Administrator program to enable users and grant them access to the Sage Tetra CS/3 tables, as explained in **"Administration" on page 34**.

COMPLETING THE OFFLINE LICENSING PROCEDURE

If at **step 10** you chose to write the licensing information to a file, you still need to complete the licensing procedure before the Easysoft SQR-Sage Tetra CS/3 Driver can be activated.

The licensing information is written to the `license_request.txt` file, which contains information including a site number (a number unique to your machine) which Easysoft require before a license key can be issued.

INSTALLATION

Installing the Easysoft SQL-Sage Tetra CS/3 Driver

1. Do any one of the following:
 - Display the `license_request.txt` file (e.g. using `cat license_request.txt`) and note the site number. Now run a web browser and go to <http://www.easysoft.com/sales/autolicense.phtml>. Log in to Easysoft's web site. On the License Generator screen, choose the type of license you want, then enter your site number and click **Continue**. You can now close the web browser. You will shortly receive your license key(s) via email.
 - Email the file `license_request.txt` to autolicense@easysoft.com. Your license key(s) will be emailed to you automatically.
 - Email the file `license_request.txt` to license@easysoft.com. A member of the Licensing Department will email the license keys(s) to you.
2. When you receive your license key(s), append them to the file `<InstallDir>/easysoft/license/licenses` removing any `LIC:` prefixes.

NB The Easysoft license responder puts an attachment in its outgoing emails that allows Windows users to activate Easysoft product licenses with a double-click. If you read your email in Windows, this attachment will be visible but it will not work for licensing Unix versions of the software.

The Easysoft SQL-Sage Tetra CS/3 Driver is now licensed and you can begin using it.

If you need further information about licensing, please refer to the [Licensing Guide](#).

Setting up additional data sources

If you have more than one Sage Tetra CS/3 data source, any additional data sources must be added manually so that the unixODBC Driver Manager can access them:

1. Change into the `/usr/local/easysoft/sqi/tetra` directory.
2. Open the file `dsn_template.sample` in an editor.
3. Edit the following settings:
 - replace the data source name, `[TETRA]` by default, with the name of your data source.
 - change `tetra_path` to point to the directory containing your Sage Tetra CS/3 installation.
 - change `schema_path` to point to the directory containing the schema files of the data source. The schema directory stores information such as users, passwords and privileges set up via the Web Administrator, and any views you have created.
4. Save the file under a new name.
5. Change into the `/usr/local/easysoft/unixODBC/bin` directory.
6. Type:

```
odbc_system_dsn=1 ./odbcinst -i -s -f filename
```

where *filename* is the name you chose at [step 4 on page 29](#).

This creates a system-wide data source and sets it up in `odbc.ini` so that it can be accessed by the unixODBC Driver Manager.

See "[Configuration](#)" on [page 52](#) for details of other settings that you can specify per data source for inclusion in `odbc.ini`.

Querying a data source

Once you have installed the Easysoft SQL-Sage Tetra CS/3 Driver, you can type SQL queries at the system prompt.

This allows you to test whether or not the Easysoft SQL-Sage Tetra CS/3 Driver is successfully accessing your Sage Tetra CS/3 data.

An Easysoft script called `isql` is provided to enable you to run the SQL command without needing to set `LD_LIBRARY_PATH`.

This script determines the `LD_LIBRARY_PATH` values from a separate configuration file (`es.ld.so.conf`) and then runs the `'sql'` command, specifying the data source to query and the user name and password to use to access the data source.

By default, this script specifies:

- the data source name as `tetra` (`dsn=tetra`)
- the user name as `manager` (`uid=manager`)
- the password as `reganam` (`pwd=reganam`).

If any of your details differ from the above (e.g. if you have changed the manager's password, as explained in "[Administration](#)" on [page 34](#)), edit the script to change those details.

NB

Before editing the `isql` script, you will need to change permissions to the file so that you are able to edit it, but remember to remove write permissions to the file after you have finished.

If you have more than one data source, you could create a copy of the `isql` script for each data source, specifying the appropriate data source name in each copy of the script, giving you a script ready to run for querying each data source.

To query a data source using the `isql` script:

1. Change into the `<InstallDir>/easysoft/sqi/tetra` directory.
2. Type:

```
./isql
```

If an 'invalid user' or 'invalid password' error is displayed, check that the script specifies the correct user name and password.

If a line beginning "conn =" is displayed, then the connection has been made and you can type an SQL statement to query the data source.

For example:

```
select * from sys.sop_order_header;
```

To finish your SQL session, press `<Enter>` to return to the system prompt.

Another utility, also called `isql`, is included in unixODBC, the Open Source ODBC Driver Manager for non-Windows platforms, which is installed with the Easysoft SQL-Sage Tetra CS/3 Driver under Unix.

To run this program, go to the

`<InstallDir>/easysoft/unixODBC/bin` directory and type:

```
./isql DSN [UID [PWD]] [options]
```

where

- DSN is the data source name
- UID is the user name
- PWD is the password

Type `./isql` only for option details.

Uninstalling the Easysoft SQI-Sage Tetra CS/3 Driver

To uninstall the Easysoft SQI-Sage Tetra CS/3 Driver, you need to:

- stop the Web Administrator if you have had it running (the Web Administrator is explained fully in "[Administration](#)" on page [34](#)).
- remove the `usr/local/easysoft/sqi/tetra` directory.

To stop the Web Administrator:

1. Log onto the server machine as the `root` user.
2. Change into the `/usr/local/easysoft/sqi/tetra` directory.
3. You can check if the Web Administrator is running by typing

```
cat /etc/services
```

A list of the ports currently in use is displayed. By default the Web Administrator listens at port 8450.

4. Type
5. When asked if you want to stop all http administration servers, type

```
y
```

If you do not stop the Web Administrator and then later perform another installation of the Easysoft SQI-Sage Tetra CS/3 Driver, the installation may not be successful.

To remove the `usr/local/easysoft/sqi/tetra` directory:

6. Change into the `/usr/local/easysoft/sqi/tetra` directory.
7. Type


```
rm -rf *
```

to delete all the files and directories below the current directory.

8. Type

```
cd ..
```

to move back up one level in the directory structure.

9. Type

```
rmdir tetra
```

to remove the `tetra` subdirectory.

For details of uninstalling the Easysoft ODBC-ODBC Bridge server and client components, please refer to the Easysoft ODBC-ODBC Bridge manual.

ADMINISTRATION

3

Administering the Easysoft SQL-Sage Tetra CS/3 Driver

This section explains how to give users access to the Easysoft SQL-Sage Tetra CS/3 Driver and how to grant access to specific tables. You carry out these tasks using the Web Administrator provided with the Easysoft SQL-Sage Tetra CS/3 Driver.

Chapter Guide

- **Starting the Web Administrator**
- **Logging onto the Web Administrator**
- **Giving users access to Sage Tetra CS/3 data**
- **Granting access to tables**
- **Viewing reports**

Starting the Web Administrator

To start the Web Administrator:

1. Log onto the server machine as the `root` user.
2. Change into the `/usr/local/easysoft/cgi/tetra` directory.
3. Type:

```
./start_http.sh
```

Accept the default port (8450) or specify another unused port.

4. On your server or on a client machine, run a web browser and go to `http://server:8450` where `server` is the name or IP address of the machine on which the Easysoft SGI-Sage Tetra CS/3 Driver is installed and 8450 is the Web Administrator port:



Figure 2: The Web Administrator main screen

ADMINISTRATION

Administering the Easysoft SQL-Sage Tetra CS/3 Driver

The data sources listed on this screen are derived from the Sage Tetra CS/3 data sources listed in

`/usr/local/easysoft/etc/odbc.ini` file.

Setting up multiple Sage Tetra CS/3 data sources is explained in "**Setting up additional data sources**" on page 29.

If you ever need to stop the Web Administrator, run `./stop_http.sh` rather than `./start_http.sh` in **step 3 on page 35** above.

You should only ever need to restart the Web Administrator if the server fails or if you want to start it on another port.

Logging onto the Web Administrator

To set up user access and grant rights to tables, you must log in to the Web Administrator as 'manager' and enter the manager password.

You are required to log in when you click the **Users**, **Access Rights** or **Reports** button for the first time in a Web Administrator session, and again if you select a different data source or change the manager's password.

When asked to login for the first time, enter:

Username: `manager`

Password: `reganam`

Once you are logged in, the first thing you should do is change the manager password.

To do this:

1. Click **Users** to display a list of Sage Tetra CS/3 users.

2. Enter a new manager password in the **Password** box, and enter the old manager password in the **Old Password** box (you must enter your old password otherwise the new password does not take effect).
3. Click **Submit**.

The new manager password is saved.

NB The manager user automatically has access to all Sage Tetra CS/3 data sources and tables.

Giving users access to Sage Tetra CS/3 data

You can specify which users have access to Sage Tetra CS/3 data via the Easysoft SQL-Sage Tetra CS/3 Driver and you can set up a password for each user to prevent any unauthorized access.

To do this:

1. Log on to the **Web Administrator** as described in "[Logging onto the Web Administrator](#)" on page 36.
2. Click the **Users** button (you must log in as manager if you have not already done so) to see a list of the users which are currently set up.
3. Select the data source and company for which you want to specify user access.

The Web Administrator lists only companies that contain data, so if you have set up a new company and it is still blank, the Web Administrator does not list it.

Whenever you select a different data source or company, click the adjacent **Refresh** button to update the remainder of the page to ensure that you are viewing the correct data for that selection.

ADMINISTRATION

Administering the Easysoft SQL-Sage Tetra CS/3 Driver

- In the list of users, set **Allow Access** to **Yes** for users whom need access (via the Easysoft SQL-Sage Tetra CS/3 Driver) to the selected data source.

When first enabled, a user has access to all companies within the same data source but no access to any tables within any company. Use the **Access Rights** button to grant access to tables.

See "[Granting access to tables](#)" on page 39 for more information.

- Optionally set a password for each user to whom you have enabled access.

Leave a user's **Password** box empty if you do not want to set a password for that user.

- Click **Submit** to confirm the users and passwords that you have set up:



This list of user names is derived from the list of users currently set up in Sage Tetra CS/3.

User	Allow Access	Password	Old Password
manager	Yes		
system	No		
user	No		
easysoft	Yes	easysoft	

Figure 3: The Web Administrator User Access Setup screen

NB

When you have enabled a user, you must inform the user of their user name and password (if any) because they will need to enter these details when setting up a data source on their own computer to connect to the Sage Tetra CS/3 data. The user name and password are case-sensitive, so ensure that you give your users these details in the correct case.

Once a user has access to a Sage Tetra CS/3 data source you can specify precisely which tables within that data source to which the user will be allowed access (see "[Granting access to tables](#)" on [page 39](#)).

NB

If you disable a user's access to a data source, any rights they have been granted are lost, so that if you later enable that user again, you will need to grant their rights again.

Granting access to tables

You choose which tables a user has access to for each specific Sage Tetra CS/3 data source.

If a data source contains more than one company, you can specify different access rights for each company within the same data source.

For example, you can prevent a user from having any access to one particular company by revoking their rights to all that company's tables, but still give them access to the tables of another company.

ADMINISTRATION

Administrating the Easysoft SQL-Sage Tetra CS/3 Driver

You can set access rights by granting access to all tables, to specific tables, or based on key directories, which are used by Sage Tetra CS/3 to group tables into categories.

For example, all tables beginning with POP_ are found in the POFILESDD key directory.

NB

A user must have access to the selected data source before you can grant them rights to particular tables. Click the **Users** button to enable a user's access to a data source.

To grant a user access to specific data source tables:

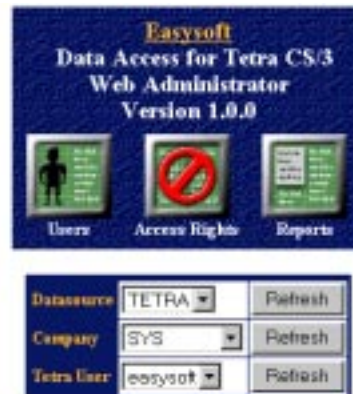
1. Log on to the Web Administrator as described earlier.
2. Click the **Access Rights** button (you must log in as manager if you have not already done so).

Choose the data source and company for which you are granting access.

3. Choose the user for whom you want to grant access (select `Public` to make tables accessible to all users).

The tables to which this user has access in the selected company are listed on this page.

Whenever you select a different data source, company or user, click the adjacent **Refresh** button to update the remainder of the page to ensure that you are viewing the correct data for that selection.



The user must be allowed access to the specified company within Sage Tetra CS/3 before granted tables can be accessed.



Figure 4: The Web Administrator Table Access Setup screen

4. To grant access to tables according to their key directory, click **Key Directory**.

A list box containing the available key directories becomes available. Select the key directory to which you want to grant access, then click **Grant**. Repeat this step to grant access to any other key directory. To remove the user's access to a particular key directory, select it from the list box then click **Revoke**.

5. To grant access to tables individually, click **By Table**.

The tables are listed alphabetically in the **Available Tables** drop-down list box. Select a table from this list box, then click **Grant**. To remove the user's access to a table, select it from the list box then click **Revoke**.

ADMINISTRATION

Administering the Easysoft SQI-Sage Tetra CS/3 Driver

If the selected company has not been set up within Sage Tetra CS/3, the **Available Tables** drop-down list box will show 'No Tables Found'.

6. To grant the user access to all tables in the selected company, click **Grant All**. To remove the user's access to all tables, click **Revoke All**.
7. You can remove a user's access to particular tables by clicking the **Revoke** box in the list of tables, then clicking **Revoke Selection**.

The tables to which the current user has access are listed on this page:

Permissions currently allowed for user **easysoft** in company **SYS**

Company	Table	Grantor	Grantee	Privilege	Grantable	Revoke
SYS	SOP_ORDER_DETAIL	manager	easysoft	SELECT	NO	<input type="checkbox"/>
SYS	SOP_ORDER_HEADER	manager	easysoft	SELECT	NO	<input type="checkbox"/>

Figure 5: The Web Administrator Table Access Details screen

- Company - the Sage Tetra CS/3 company in the current data source
- Table - the name of the table
- Grantor - the person who granted the user access to this table
- Grantee - the user to whom access has been granted
- Privilege - the type of access the user has to this table
- Grantable - whether or not this user can grant other users access to this table. This is NO for all users except manager.

- **Revoke** - click this box if you want to revoke the user's access to this table. When you click **Revoke Selection**, any tables with this box selected will be removed from this list of tables.

NB

A user must have access to the company within Sage Tetra CS/3 before they can access any tables to which you have granted them rights. Check a user's access to companies within Sage Tetra CS/3 using **System Manager > User Management > User Profiles (Allowed options)**.

Viewing reports

The Web Administrator provides some reports which you can run on your own Sage Tetra CS/3 data, such as to check that the Easysoft SQL-Sage Tetra CS/3 Driver has been installed correctly on your server and that your Sage Tetra CS/3 data is being accessed.

To run a report:

1. Log on to the Web Administrator as described earlier.
2. Click the **Reports** button.
3. Select the data source and company on which you want to run the report. The reports available are listed on this page.

Whenever you select a different data source or company, click the adjacent **Refresh** button to update the remainder of the page to ensure that you are viewing the correct data for that selection.

4. Click **View** for the report that you want to run.

The page refreshes to display the report results.

CLIENT SETUP

Setting up clients to connect to Sage Tetra CS/3 data

This section explains how to set up client machines to connect to the Sage Tetra CS/3 data on the server. The procedure involves installing the Easysoft ODBC-ODBC Bridge client and setting up a data source.

Chapter Guide

- **Installing the Easysoft ODBC-ODBC Bridge client**
- **Setting up a data source on your Windows client**
- **Worked example for Windows clients**

Installing the Easysoft ODBC-ODBC Bridge client

You can install the Easysoft ODBC-ODBC Bridge client on Windows and Unix platforms, but while installing the Easysoft ODBC-ODBC Bridge client on Unix would allow your Sage Tetra CS/3 data to be accessed from Perl, CGI and Apache/PHP, most users of the Easysoft SQL-Sage Tetra CS/3 Driver will probably be running Windows machines to access Sage Tetra CS/3 data on a server.

To install the Easysoft ODBC-ODBC Bridge client on Windows:

1. Run the Easysoft ODBC-ODBC Bridge installation file.

This file is supplied as an `.exe` for the Windows platform and you should have downloaded it as described in **"Obtaining the Easysoft SQL-Sage Tetra CS/3 Driver" on page 20**.

2. Follow the instructions on screen to install the client component.

You must install the Easysoft ODBC-ODBC Bridge client on each machine that will be used to access Sage Tetra CS/3 data stored on the server.

You do not need to license the Easysoft ODBC-ODBC Bridge client, because the client license is covered by the Easysoft ODBC-ODBC Bridge server license that you obtained when licensing the Easysoft SQL-Sage Tetra CS/3 Driver.

Once you have installed the Easysoft ODBC-ODBC Bridge client, your Sage Tetra CS/3 users can set up a data source to connect to the Sage Tetra CS/3 data on the server (see **"Setting up a data source on your Windows client" on page 46**).

Please refer to the Easysoft ODBC-ODBC Bridge manual for full details of installing the client component on both Windows and Unix.

Setting up a data source on your Windows client

This section explains how to set up a data source, on your Windows client, to connect to the Sage Tetra CS/3 data on the server.

For details of setting up a data source on a Unix client, please refer to the Easysoft ODBC-ODBC Bridge manual.

To set up a data source on your Windows client:

1. In Windows, select **Start > Settings > Control Panel** and then open **ODBC Data Sources**.

2000

To find the ODBC icon in Windows 2000, open **Administrative Tools** in the **Control Panel**. The ODBC icon is called **Data Sources (ODBC)**.

2. In the **ODBC Data Source Administrator**, either:
Click the **User DSN** tab to set up a data source that only you can access.
– OR –
Click the **System DSN** tab to set up a data source that any users at this machine can access.
3. Click **Add**.
4. On the **Create New Data Source** dialog box, select **Easysoft ODBC-ODBC Bridge** and then click **Finish**.
5. The Easysoft ODBC-ODBC Bridge dialog box is displayed:

The screenshot shows the 'Easysoft ODBC-ODBC Bridge' window. The 'DSN' field contains 'Tetra CS/3' and the 'Description' field contains 'Tetra CS/3 data'. The 'Server' dropdown menu is set to 'demo.easysoft.com', the 'Transport' is 'TCP/IP', and the 'Port' is '8888'. There are empty text boxes for 'User' and 'Password'. Below these are three more empty text boxes labeled 'Target DSN', 'Target User', and 'Target Auth'. In the 'Special Attributes' section, 'Block Fetch Size' is '0', 'MetaDataBlockFetch' is checked, and 'UseOOBDBAuth' is unchecked. On the right side, there are buttons for 'OK', 'Cancel', 'Help', 'Test', and 'OOB Settings'. A logo for 'Data Access by easysoft' is in the top right corner.

Figure 6: The Easysoft ODBC-ODBC Bridge DSN Setup screen

6. In the **DSN** field, type a name for the data source, e.g. "Tetra CS/3".

Choose carefully because you cannot change this later.

CLIENT SETUP

Setting up clients to connect to Sage Tetra CS/3 data

7. In the **Description** field, type a description for the data in the data source, e.g. "Sage Tetra CS/3 data".
8. In the **Server** box, type the hostname or IP address of the Sage Tetra CS/3 server.
9. The **Transport** field shows the network transport protocol that will be used to connect to the data.

By default this is set to `TCP/IP` because this is the only protocol currently supported.
10. The **Port** field shows the port number on the server at which the Easysoft ODBC-ODBC Bridge server is listening for connections.

Accept the default (8888) unless you know that the server is listening at a different port.
11. In the **User** and **Password** fields, type the user name and password that you use to log on to the server machine on which the Sage Tetra CS/3 data is stored.
12. In the **TargetDSN** field, type the name of the Sage Tetra CS/3 data source on the server machine.

Your system administrator will be able to tell you what this name is.
13. In the **Target User** and **Target Auth** fields, type the user name and password that you use to log on to the Easysoft SQL-Sage Tetra CS/3 Driver.

Your system administrator will be able to tell you what your logon details are.
14. Set **Block Fetch Size** to 10. This means that rows of data will be returned in blocks of 10 instead of one row at a time, resulting in faster performance. However, you should set this value to 1 if your ODBC application uses cursors or positioned updates/deletes.

Leave the other special attributes at their default settings.

15. Click **Test** to see if this data source can connect to the data on the server.

The results are displayed in a separate window.

16. If the test is successful, click **OK** on the Easysoft ODBC-ODBC Bridge dialog box.

The new data source is listed on the **User DSN** or **System DSN** tab of the **ODBC Data Source Administrator**.

17. Click **OK** to close the **ODBC Data Source Administrator**.

If the test is unsuccessful, check the errors below for advice about which settings you may need to correct:

- if you see an "*Authentication Failure*" error, double-check the User and Password settings.
- if you see a "*Failed to connect to remote driver*" error and additional text in which a login failure is noted, double-check the Target User and Target Auth settings.
- if you see an error referring to data sources or DSNs, double-check the Target DSN name.
- if you see a message referring to RPC, the client cannot connect to the Easysoft ODBC-ODBC Bridge server so double-check the Server, Transport and Port settings.

The next section takes you through a worked example of using Microsoft Excel to connect to your Sage Tetra CS/3 data.

Worked example for Windows clients

This section provides a worked example of using Microsoft Excel 97 to connect to your Sage Tetra CS/3 data source.

This worked example assumes that:

- you have a data source connecting to your Sage Tetra CS/3 data on the server. Consult your Sage Tetra CS/3 system administrator if you need to create a data source and are unsure where the data is stored on the server.
- your system administrator has given you access (via the Easysoft SQL-Sage Tetra CS/3 Driver) to at least the SALES_CUSTOMER table in the data source.
- you have Microsoft Query installed (so that the **Data - Get External Data** command is available).
- you are familiar with the basics of using Microsoft Excel.

Follow the steps below to obtain a list of customers and display the results in Microsoft Excel:

1. Run Microsoft Excel.
2. Select **Data > Get External Data > Create New Query**.
3. On the **Choose Data Source** dialog box, select the data source that connects to your Sage Tetra CS/3 data.
4. Make sure the **User Query Wizard** to create/edit queries option is selected (the box is ticked when the option is selected).
5. Click **OK** on the dialog box.
6. On the **Query Wizard - Choose Columns** dialog box, scroll down the list of tables to find the SALES_CUSTOMER table.

7. Click the + adjacent to this table to view the columns within it.
8. Select each of the following columns in turn, and click the > button so that they are listed in the **Columns in your query** box

CUSTOMER

ALPHA

NAME

ADDRESS1

ADDRESS2

ADDRESS3

ADDRESS4

ADDRESS5

9. Click **Next** on this and the following dialog boxes until the **Query Wizard - Finish** dialog box is displayed.
10. Ensure that **Return Data to Microsoft Excel** is selected, then click **Finish**.
11. On the **Returning External Data to Microsoft Excel** dialog box, select **Existing worksheet** then click **OK**.

A list of customers and their addresses is displayed in the worksheet.

You could try creating another query using columns from both the SOP_ORDER_HEADER table and SOP_ORDER_DETAIL table to display a list of what these customers have purchased.

When you have finished querying your data, close Microsoft Excel unless you want to continue using it for another task.

CONFIGURATION



Advanced Configuration Settings

This section lists settings to include for each data source that you want to set up. You only need to be aware of these settings if you have more than one Sage Tetra CS/3 data source to set up (as explained in "[Setting up additional data sources](#)" on page 29) or if you want to make particular edits to `odbc.ini`.

Appendix Guide

- [odbc.ini settings](#)
- [Obtaining write access to your Sage Tetra CS/3 data](#)

odbc.ini settings

In the following table, settings that you must include for each data source are shown in bold.

Setting	Description/Example
[data source name]	e.g. [TETRA]
driver = SAGE_TETRA_CS3	
sort_path = /tmp	Temporary directory
sort_mem_size = 256	Amount of memory allocated for sorts before the results are saved to disk
rs_mem_size = 256	Number of rows that will cache into memory before being stored on disk
rs_path = /tmp	Temporary directory
blob_path = /tmp	Temporary directory
sqicount = 1	Number of SQIs used by the data source
target_string1 = Tetra SQI	Connection string for SQI
target_driver1 = /usr/local/easysoft/sqi/ tetra/libestetra_sqi.so	Required SQI driver
dtcount = 1	Number of data type libraries present for Sage Tetra SQI
dtlibrary1 = /usr/local/easysoft/sqi/ tetra/libestetra_dt.so	Library for data type conversions
tetra_path = path of Sage Tetra CS/3 installation	e.g. /u/cs3

CONFIGURATION

Advanced Configuration Settings

Setting	Description/Example
schema_path = /usr/local/easysoft/sqi/ tetra/schema/	Directory where the schema files for the data source are stored
cache_expiry = 2	How long files are cached open for (default is 2)
cache_maxopen = 30	Maximum number of concurrently cached files (default is 30)
logging = 3	See " Logging options " on page 56.
logfile = /tmp/tetra	See " Logging options " on page 56.
default_uid =	Specify a default user name for the data source. This overrides any user name specified in the data source on the client (so clients need not enter a Target User when configuring their data source).
default_pwd =	Specify a default password for the data source. This overrides any password specified in the data source on the client (so clients need not enter a Target Auth password when configuring their data source).
spare_columns = 1	Allow columns prefixed with <code>spare_</code> to be returned
uppercase_names = 1	Changes lowercase table names to uppercase so that you do not need to enclose table and column names in quotation marks when querying the data source. Set this to 0 if you do not want your table names uppercased. Table names in mixed case are not affected.

Setting	Description/Example
default_company =	If your Sage Tetra CS/3 data contains multiple companies, specify the company that you want to work with by default. You can then omit the company's schema name from your queries. This setting works in conjunction with the one_company setting below.
one_company = 1	Set to 1 to retrieve tables from the default_company only. When this is on, the driver effectively ignores any schema name you might specify in a query and uses that of the default_company.

Figure 7: odbc.ini settings

NB

The default_company and one_company settings do not restrict access to your Sage Tetra CS/3 companies via the Web Administrator.

Normally you will encounter these settings when editing `dsn_template.sample` to set up more than one data source, as explained in "[Setting up additional data sources](#)" on page 29.

Alternatively, you will need to be familiar with these settings if you intend to edit `odbc.ini` directly.

The `odbc.ini` file is in `/etc/odbc.ini`.

LOGGING OPTIONS

By including particular settings in your `odbc.ini` file, you can specify various levels of logging.

Caution!

Enabling logging will seriously impair performance so remember to disable it once you have finished.

To enable logging, include the `logfile=` and the `logging=` lines in your `odbc.ini` file:

- `logfile=` specifies the directory path and the filename prefix to which the log file is generated. The log filename takes this prefix and the process id. For example, if you set `logfile=/tmp/tetra` then the log filename will be something like `tetra_026503.log`.
- `logging=` specifies the required level of logging. The values you can set it to are:

Log Number	Log Description
1	logs entry to all functions and attributes to all calls in the SQL layer
2	logs exit from all functions
4	logs information regarding the file cache
8	logs information on opening of files and how many reads are performed
16	logs any expression checking that the SQL layer performs
32	logs any errors reported at the SQL layer
64	logs the selection of indexes used when starting a query
128	logs summary information about the SQL function calls

Figure 8: Logging options

You can enable multiple logging options simply by adding the values together. For example, for entry, exit and expression logging, $1+2+16=19$.

Obtaining write access to your Sage Tetra CS/3 data

The Easysoft SQL-Sage Tetra CS/3 Driver includes a facility for the manager user to obtain write access to the Sage Tetra CS/3 data. This means, for example, that the manager user could display Sage Tetra CS/3 data in Microsoft Access, make changes to it, then save the changes back to the Sage Tetra CS/3 data source.

Caution!

Although Easysoft provides the ability to insert, amend and delete information in the Sage Tetra CS/3 database, no validation is performed against the standard Sage Tetra CS/3 business logic.

Therefore, if you enable this write access, you do so *at your own risk*. Easysoft cannot be held responsible for any damage to, or loss of, your Sage Tetra CS/3 data. Refer to the [Easysoft License Agreement](#) for full warranty details.

To enable write access for the manager user, include the following settings in the `odbc.ini` file (remove these lines or set them to 0 to disable write access).

Setting	Description
<code>allow_insert = 1</code>	Allows new data to be inserted
<code>allow_delete = 1</code>	Allows data to be deleted
<code>allow_update = 1</code>	Allows data to be updated

Figure 9: odc.ini write access settings

CONFORMANCE

ODBC and SQL conformance

This section documents the ODBC and SQL conformance in the Easysoft SQL-Sage Tetra CS/3 Driver.

It also contains a list of Sage Tetra CS/3 data types and shows what they have been converted to in SQL.

Appendix Guide

- [Technical Information](#)
- [Sage Tetra CS/3 data types](#)

Technical Information
API SUPPORT

The Easysoft SQL-Sage Tetra CS/3 Driver provides the following API Entry points:

Function	ODBC Conformance
SQLAllocHandle	Core
SQLBindCol	Core
SQLBindParameter	Core
SQLBrowseConnect	Level 1
SQLCancel	Core
SQLCloseCursor	Core
SQLColAttribute	Core
SQLColumnPrivileges	Level 2
SQLColumns	Core
SQLConnect	Core
SQLCopyDesc	Core
SQLDescribeCol	Core
SQLDescribeParam	Level 2
SQLDisconnect	Core
SQLDriverConnect	Core
SQLEndTran	Core
SQLExecDirect	Core
SQLExecute	Core
SQLFetch	Core

Function	ODBC Conformance
SQLFetchScroll	Core
SQLForeignKeys	Level 2
SQLFreeHandle	Core
SQLFreeStmt	Core
SQLGetConnectAttr	Core
SQLGetCursorName	Core
SQLGetData	Core
SQLGetDescField	Core
SQLGetDescRec	Core
SQLGetDiagField	Core
SQLGetDiagRec	Core
SQLGetEnvAttr	Core
SQLGetFunctions	Core
SQLGetInfo	Core
SQLGetStmtAttr	Core
SQLGetTypeInfo	Core
SQLMoreResults	Level 1
SQLNativeSql	Core
SQLNumParams	Core
SQLNumResultCols	Core
SQLParamData	Core
SQLPrepare	Core
SQLPrimaryKeys	Level 1
SQLProcedureColumns	Level 1

CONFORMANCE

ODBC and SQL conformance

Function	ODBC Conformance
SQLProcedures	Level 1
SQLPutData	Core
SQLRowCount	Core
SQLSetConnectAttr	Core
SQLSetCursorName	Core
SQLSetDescField	Core
SQLSetDescRec	Core
SQLSetEnvAttr	Core
SQLSetPos	Level 1
SQLSetStmtAttr	Core
SQLSpecialColumns	Core
SQLStatistics	Core
SQLTablePrivileges	Level 2
SQLTables	Core

Figure 10: API Entry points

The following functions are provided by the ODBC Driver Manager:

Function	ODBC Conformance
SQLDataSources	Core
SQLDrivers	Core
SQLAllocConnect	Core
SQLAllocEnv	Core
SQLError	Core
SQLGetConnectOption	Core

Function	ODBC Conformance
SQLSetParam	Core

Figure 11: ODBC Driver Manager functions

The following functions are provided by the Setup DLL:

Function	ODBC Conformance
SQLConfigDriver	Core
SQLConfigDSN	Core

Figure 12: Setup DLL functions

The following functions are currently not supported:

Function	ODBC Conformance
SQLBulkOperations	Level 1

Figure 13: Unsupported functions

STATEMENT TYPES

The Easysoft SQL-Sage Tetra CS/3 Driver supports the following statements:

ALTER TABLE

COMMIT

CREATE INDEX

CREATE TABLE

CREATE VIEW

DELETE STATEMENT (positioned)

CONFORMANCE

ODBC and SQL conformance

DELETE STATEMENT (searched)

DROP INDEX

DROP TABLE

DROP VIEW

GRANT

INSERT

REVOKE

ROLLBACK

SELECT

SELECT FOR UPDATE

UPDATE (positioned)

UPDATE (searched)

UNIONS

The Easysoft SQL-Sage Tetra CS/3 Driver supports UNION and UNION ALL.

TABLE REFERENCE

The Table reference list in a select can contain all or any of:

Table name

Sub Query

Join

JOINS

The Easysoft SQL-Sage Tetra CS/3 Driver supports the following types of joins:

INNER

LEFT OUTER

RIGHT OUTER

FULL OUTER

NATURAL

The joining condition may be specified with the ON or USING clause. Both the left and right source can be a table name, sub query or another join. Joins can be nested with no restriction on depth.

Joins can be specified in both SQL92 and ODBC format:

SQL

```
SELECT * from x LEFT OUTER JOIN y ON x.a = y.a
```

ODBC

```
SELECT * from {oj x LEFT OUTER y ON x.a = y.a }
```

PREDICATES

The Easysoft SQL-Sage Tetra CS/3 Driver supports the following predicates:

Comparison (a = b)

BETWEEN (a BETWEEN b AND c)

LIKE (a LIKE '%green%')

NULL (a IS NOT NULL)

IN value_list (a IN (1, 2, 3))

IN sub_query (a IN (SELECT x FROM y))

Quantified comparison (a = ALL (SELECT x FROM y))

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Exists (EXISTS(SELECT x from y))

The sub queries in predicates can be correlated or non correlated:

Correlated

```
SELECT a FROM b WHERE c = ALL ( SELECT x FROM y
    WHERE z = a )
```

Non-correlated

```
SELECT a FROM b WHERE c = ALL ( SELECT x FROM y
    WHERE z = 12 )
```

SCALAR FUNCTIONS

The Easysoft SQL-Sage Tetra CS/3 Driver provides all the functions required by ODBC and also functions from SQL92. Functions can be specified in SQL92 or ODBC format:

SQL

```
SELECT CURRENT_DATE, EXTRACT( YEAR
    FROM Employee.data_of_birth ) FROM Employee
```

ODBC

```
SELECT {fn CURRENT_DATE()}, {fn EXTRACT( YEAR
    FROM Employee.data_of_birth )} FROM Employee
```

The following is a complete set of supported functions:

Pseudo Variable Functions

CURRENT_DATE

CURRENT_TIME

CURRENT_TIMESTAMP

CURRENT_USER

USER

SQL92 Functions

BIT_LENGTH

CHAR_LENGTH

CHARACTER_LENGTH

OCTET_LENGTH

POSITION

SUBSTRING

TRIM

ODBC Functions

ASCII

CHAR

CONCAT

DIFFERENCE

INSERT

LCASE

LEFT

LENGTH

LOCATE

LTRIM

REPEAT

REPLACE

RIGHT
RTRIM
SOUNDEX
SPACE
UCASE
ABS
ACOS
ASIN
ATAN
ATAN2
CEILING
COS
COT
DEGREES
EXP
FLOOR
LOG
LOG10
MOD
PI
POWER
RADIANS
RAND

ROUND
SIGN
SIN
SQRT
TAN
TRUNCATE
CURDATE
CURTIME
DAYNAME
DAYOFMONTH
DAYOFWEEK
DAYOFYEAR
EXTRACT
HOUR
MINUTE
MONTH
MONTHNAME
NOW
QUARTER
SECOND
TIMESTAMPADD
TIMESTAMPDIFF
WEEK

YEAR

DATABASE

IFNULL

AGGREGATE FUNCTIONS

The Easysoft SQL-Sage Tetra CS/3 Driver supports the following aggregate functions:

COUNT(* | ALL | DISTINCT)

AVG(ALL | DISTINCT)

MIN(ALL | DISTINCT)

MAX(ALL | DISTINCT)

SUM(ALL | DISTINCT)

CONVERSION FUNCTIONS

The Easysoft SQL-Sage Tetra CS/3 Driver supports both the SQL92 CAST function and the ODBC CONVERT FUNCTION for conversion between compatible data types.

CONDITIONAL FUNCTIONS

The Easysoft SQL-Sage Tetra CS/3 Driver supports CASE statements and the shorthand forms NULLIF and COALESCE.

LITERALS

All SQL92 and ODBC32 literals are supported and can be specified in either form:

SQL92

DATE '1999-01-02', INTERVAL '10-2' YEAR TO MONTH

ODBC

```
{d '1999-01-02'}, {INTERVAL '10-2' YEAR TO MONTH}
```

OPTIMIZATION

The Easysoft SQL-Sage Tetra CS/3 Driver performs several optimizations to improve performance including the following:

Query optimization

The WHERE clause of a query will be rewritten into a form that allows more efficient processing of data. For example the query:

```
SELECT * FROM x WHERE ( a = 10 or b = 20 ) and c = 30
```

Will be changed into the equivalent:

```
SELECT * FROM x WHERE a = 10 and c = 30
```

```
UNION
```

```
SELECT * FROM x WHERE b = 20 and c = 30 and a <> 10
```

Table Optimization

In cases where indexes are present on tables the Easysoft SQL-Sage Tetra CS/3 Driver will if necessary rearrange the order that tables are processed to enable the index to be used. This can lead to huge increases in performance. For example, consider the following query where tables a, b and c each have 800 rows and an index on catalog_number.

```
SELECT * FROM a, b, c  
WHERE a.catalog_number = c.catalog_number  
AND b.catalog_number = a.catalog_number
```

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```
AND a."desc" = b."desc"  
AND c.retail = a.retail  
AND a.catalog_number = b.catalog_number
```

When run with the table order specified the query takes about 350 seconds on a given test configuration. If table optimization is enabled then, on the same machine, the query takes under 2 seconds. The effect of this optimization is most noticeable on some of the queries that comprise the TPC-D benchmark set. Without this optimization some of the queries can be considered to never end (still running after a day), with optimization the same query will return in under 10 seconds.

INFORMATIONAL SCHEMA

The Easysoft SQL-Sage Tetra CS/3 Driver provides an informational schema view of the tables supplied by the target data sources. The following tables are available

```
INFO_SCHEMA.CHARACTER_SETS  
INFO_SCHEMA.COLLATIONS  
INFO_SCHEMA.COLUMN_PRIVILEGES  
INFO_SCHEMA.COLUMNS  
INFO_SCHEMA.INDEXES  
INFO_SCHEMA.SCHEMATA  
INFO_SCHEMA.SERVER_INFO  
INFO_SCHEMA.SQL_LANGUAGES  
INFO_SCHEMA.TABLE_PRIVILEGES  
INFO_SCHEMA.TABLES
```


INFO_SCHEMA.USAGE_PRIVILEGES

INFO_SCHEMA.VIEWS

DATA TYPES

The following data types are supported:

SQL_CHAR

SQL_VARCHAR

SQL_LONGVARCHAR

SQL_NUMERIC

SQL_DECIMAL

SQL_SMALLINT

SQL_INTEGER

SQL_REAL

SQL_FLOAT

SQL_DOUBLE

SQL_BIT

SQL_TINYINT

SQL_BIGINT

SQL_BINARY

SQL_VARBINARY

SQL_LONGVARBINARY

SQL_TYPE_DATE

SQL_TYPE_TIME

SQL_TYPE_TIMESTAMP

SQL_INTERVALS (all types)

ODBC FEATURES

Cursors

The Easysoft SQL-Sage Tetra CS/3 Driver provides FORWARD ONLY, STATIC and KEYSET CURSORS and also provides the following additional ODBC features (reported via the SQLGetInfo API call).

SQL_ASYNC_MODE

Asynchronous operation is supported both at the statement and connection level (SQL_AM_STATEMENT)

SQL_COLUMN_ALIAS

The data source supports column alias using the optional AS clause

SQL_CORRELATION_NAME

Correlation names are supported and can be any valid user-defined-name

SQL_DATETIME_LITERALS

All SQL92 Datetime literals are supported

SQL_GETDATA_EXTENSIONS

SQLGetData can be called for any column, bound or unbound

SQL_GROUPBY

The columns in the GROUP BY clause and the select list are not related (SQL_GB_NO_RELATION)

SQL_INDEX_KEYWORDS

All keywords are supported

Sage Tetra CS/3 data types

This section lists the Sage Tetra CS/3 data types and the SQL data types to which data is converted:

Sage Tetra CS/3 data type	SQL data type
1 CHARACTER STRING	SQL_VARCHAR
2 YESNO FIELD	SQL_BIT
3 LONG INTEGER	SQL_INTEGER
4 NUMERIC STRING	SQL_INTEGER
5 DOUBLE	SQL_DOUBLE
6 MONEY	SQL_DOUBLE
7 DATE LONG	SQL_TYPE_DATE
8 DATE STRING	SQL_TYPE_DATE
9 TIME OF DAY	SQL_TYPE_TIME
10 TIME AS STRING	SQL_TYPE_TIME
11 DURATION	SQL_INTEGER
12 DOUBLE WITH UNIT	SQL_DOUBLE
50 STRING YES/NO	SQL_VARCHAR
51 SHORT_INTEGER	SQL_SMALLINT
52 INTEGER	SQL_INTEGER
53 DATE DD/MM/YY	SQL_TYPE_DATE
54 1970 LONG DATE	SQL_TYPE_DATE
55 1970 STRING DATE	SQL_TYPE_DATE
56 1800 LONG DATE	SQL_TYPE_DATE
57 1800 STRING DATE	SQL_TYPE_DATE

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Sage Tetra CS/3 data type	SQL data type
58 DURATION MINUTES	SQL_INTEGER
59 TIME MINUTES	SQL_TYPE_TIME
60 FLOAT	SQL_DOUBLE

Figure 14: Sage Tetra CS/3 data types

GLOSSARY

C

Terms and definitions

API (Application Programmer Interface)

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

Application

A program that applies a computer to solving a real-world problem. In ODBC terms, it is the program connecting to a data source.

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.

Client

A process performing tasks local to the current user, such as formatting and displaying a report from data retrieved from a server.

Client server

The architecture whereby one process (the server) keeps track of global data, and another task (the client) is responsible for formatting and presenting the data. The client connects to the server and requests queries or actions be performed on its behalf. Often these processes run on different hosts across a local-area network.

Column

The vertical dimension of a table. Columns are named and have a domain (or type).

Database

A collection of data files.

Data source

In ODBC terms, a data source is a database or other data repository coupled with an ODBC Driver, which has been given a Data Source Name (see "**DSN**" on page 79) to identify it to the ODBC Driver Manager.

Data type

The specification of permitted values. A data type limits the values which are allowed to be used.

DBMS

Database Management System. Software that handles access to a database.

Download

To retrieve data from a remote machine (or the internet) to your local machine. Mechanisms for achieving this include FTP and the World Wide Web.

Driver

See "**ODBC driver**" on page 80.

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. In 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.

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.

FTP

File Transfer Protocol. A standard method of transferring files between different machines.

Host

A computer visible on the network.

HTTP

HyperText Transfer Protocol. The means of transferring web pages.

Middleware

Software that is placed between the client and the server to improve or expand functionality.

License key

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

ODBC

Open Data Base 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.

Row

The horizontal dimension of a table. At its most basic, a row equates to a record within a file.

Schema

A specification of the structure of a database, including the tables, their column headings and keys.

Server

A computer, or host, on the network, designed for power and robustness rather than user-friendliness and convenience. Servers typically run around-the-clock and carry central corporate data.

– OR –

A process performing the centralized component of some task, for example, extracting information from a corporate database.

SQL

Structured Query Language. An international standard text language for querying and manipulating databases.

System data source

In the context of ODBC under Microsoft Windows, a data source which can be accessed by any user on a given system. See also **"User data source" on page 81**.

Table

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

TCP/IP

Transmission Control Protocol/Internet Protocol. A standard method of accessing data on different machines.

User data source

In the context of ODBC under Microsoft Windows, a data source which can only be accessed by a specific user on a given system. See also **"System data source" on page 81**.

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