Client Installation Guide

Version 2.3.0

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Revision History

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Chapter 1. About This Document

This manual describes how to install and configure client applications that enable you to connect to and use a Trafodion database.

1.1. Intended Audience

This manual is intended for users who want to connect to and use a Trafodion database.

1.2. New and Changed Information

This manual shows updated versions for Trafodion Release 2.3.0.

1.3. Notation Conventions

This list summarizes the notation conventions for syntax presentation in this manual.

- UPPERCASE LETTERS

  Uppercase letters indicate keywords and reserved words. Type these items exactly as shown. Items not enclosed in brackets are required.

  ```
  SELECT
  ```

- lowercase letters

  Lowercase letters, regardless of font, indicate variable items that you supply. Items not enclosed in brackets are required.

  ```
  file-name
  ```

- [ ] Brackets

  Brackets enclose optional syntax items.

  ```
  DATETIME [start-field TO] end-field
  ```

  A group of items enclosed in brackets is a list from which you can choose one item or none.

  The items in the list can be arranged either vertically, with aligned brackets on each side of the list, or horizontally, enclosed in a pair of brackets and separated by vertical lines.

  For example:

  ```
  DROP SCHEMA schema [CASCADE]
  DROP SCHEMA schema [ CASCADE | RESTRICT ]
  ```

- { } Braces

  Braces enclose required syntax items.

  ```
  FROM { grantee [, grantee ] ... }
  ```

  A group of items enclosed in braces is a list from which you are required to choose one item.

  The items in the list can be arranged either vertically, with aligned braces on each side of the list, or horizontally, enclosed in a pair of braces and separated by vertical lines.

  For example:

  ```
  INTERVAL { start-field TO end-field }
  { single-field }
  INTERVAL { start-field TO end-field | single-field }
  ```

- | Vertical Line

  A vertical line separates alternatives in a horizontal list that is enclosed in brackets or braces.

  ```
  {expression | NULL}
  ```

- … Ellipsis

  An ellipsis immediately following a pair of brackets or braces indicates that you can repeat the enclosed sequence of syntax items any number of times.

  ```
  ATTRIBUTE[S] attribute [, attribute] ...
  {, sql-expression } ...
  ```

  An ellipsis immediately following a single syntax item indicates that you can repeat that syntax item any number of times.

  For example:

  ```
  expression-n ...
  ```

- Punctuation

  Parentheses, commas, semicolons, and other symbols not previously described must be typed as shown.

  ```
  DAY (datetime-expression)
  @script-file
  ```

  Quotation marks around a symbol such as a bracket or brace indicate the symbol is a required character that you must type as shown.

  For example:

  ```
  "{" module-name [, module-name] ... "}"
  ```

- Item Spacing

  Spaces shown between items are required unless one of the items is a punctuation symbol such as a parenthesis or a comma.

  ```
  DAY (datetime-expression) DAY(datetime-expression)
  ```

  If there is no space between two items, spaces are not permitted. In this example, no spaces are permitted between the period and any other items:

  ```
  myfile.sh
  ```

- Line Spacing

  If the syntax of a command is too long to fit on a single line, each continuation line is indented three spaces and is separated from the preceding line by a blank line.

  This spacing distinguishes items in a continuation line from items in a vertical list of selections.

  ```
  match-value [NOT] LIKE _pattern
     [ESCAPE esc-char-expression]
  ```

1.4. Comments Encouraged

We encourage your comments concerning this document. We are committed to providing documentation that meets your needs. Send any errors found, suggestions for improvement, or compliments to user@trafodion.apache.org.

Include the document title and any comment, error found, or suggestion for improvement you have concerning this document.

Chapter 2. Introduction

This manual describes how to install and configure the following client applications, which enable you to connect to and use a Trafodion database.

2.1. Client Summary

2.1.1. JDBC-Based Clients

The following table lists JDBC-based clients supported by Trafodion.

Client Name	Description
Trafodion JDBC Type 4 Driver	A driver that enables Java applications that run on a client workstation to connect to a Trafodion database. **NOTE:** The Trafodion Command Interface (trafci), DBVisualizer, and SQuirreL SQL Client require this driver to be installed on the client workstation.
Trafodion Command Interface (trafci)	A command-line interface that allows you to connect to a Trafodion database and run SQL statements and other commands interactively or from script files. For more information, see the Trafodion Command Interface Guide.
DBVisualizer	A third-party database tool that allows you to connect to a Trafodion database. For more information, see the DbVisualizer website.
SQuirreL SQL Client	A third-party database tool that allows you to connect to a Trafodion database. For more information, see the SQuirreL SQL Client website.

2.1.2. ODBC-Based Clients

The following table lists ODBC-based clients supported by Trafodion.

Client Name	Description
Trafodion ODBC Driver for Linux	A driver that enables applications, which were developed for the Microsoft ODBC API and run on a Linux workstation, to connect to a Trafodion database.
Trafodion ODBC Driver for Windows	**[Not included in this release]**[1] A driver that enables applications, which were developed for the Microsoft Open Database Connectivity (ODBC) application programming interface (API) and which run on a Windows workstation, to connect to a Trafodion database.
Trafodion odb tool	A multi-threaded, ODBC-based command-line tool for parallel data loading and extracting. For more information, see the Trafodion odb User Guide.
Tableau	An interactive data visualization products focused on business intelligence For more information, see the Tableau Software website.

[1] License issues prevent us from including the ODBC Driver for Windows in this release. Contact

user@trafodion.apache.org for help obtaining the driver.

Chapter 3. Preparation

Trafodion provides JDBC and ODBC drivers plus clients that use those drivers. In addition, you can configure third-party JDBC- and ODBC-based tools to work with Trafodion.

Typically, you install and configure the client software in the following order:

1. JDBC and/or ODBC drivers. (Depending on what clients you plan to use.)

2. Trafodion clients. For example, trafci and odb.

3. Third-party clients. For example, DBVisualizer, SQuirell, and/or Tableau.

If you don't plan to use JDBC-based clients, then please skip ahead to Download Client Software.

3.1. Java Setup

The Trafodion JDBC Type 4 Driver requires Java 1.7 or higher. You need to set the Java path to the correct location.

Depending on your planned usage, you install the Java Development Kit (JDK, if you plan to develop Java-based applications) or the Java Runtime Environment (JRE, if you plan to use packaged JDBC-based products only).

3.1.1. Verify Java Version

To display the Java version of the client workstation on the screen, enter:

```
java -version
```

Example 1: Java Installed and PATH Variable Set Correctly

```
C:\> java -version

java version "1.7.0_45" # This is the version you need to check
Java(TM) SE Runtime Environment (build 1.7.0_45-b18)
Java HotSpot(TM) Client VM (build 24.45-b08, mixed mode, sharing)
C:\>
```

If the version is not 1.7 or higher, then please upgrade you Java installation See Install Java.

If the version is 1.7 or higher, then skip ahead to Download Client Software.

Example 2: Path Not Set

```
'java' is not recognized as an internal or external command, operable program or batch
file.`
```

If you have installed Java, then this message indicates that you've not included the Java directory in your search path. See
Set Up PATH Variable.

3.1.2. Install Java

Refer to: http://www.java.com/en/download.

Once installed, follow the instruction in Set Up PATH Variable to ensure that your Java environment has been set up
properly.

3.2. Download Client Software

The Trafodion client software is available from the Trafodion Download page. There is one `Trafodion Clients` package
per release listed under **<version> Binaries**.

The `Trafodion Clients` package consists of a zipped tar file that contains the Trafodion Clients tar file. The Trafodion
Client binaries are in the `clients` folder, which contains the following files:

File	Usage
JDBCT4.zip	Trafodion JDBC Type 4 Driver.
DISCLAIMER	Apache disclaimer.
LICENCE	Apache license.
NOTICE	Apache notice.
odbc64_linux.tar.gz	Trafodion odb tool.
TRAF_ODBC_Linux_Driver_64.tar.gz	Trafodion ODBC driver for Linux.
TRAFODB-2.2.0.exe	Trafodion odb tool for windows.
trafci.zip	The Trafodion command interpreter `trafci`.
TFODBC64-*.exe	**[Not included in this release]**[1] Trafodion ODBC Driver for Windows.

[1] License issues prevent us from including the ODBC Driver for Windows in this release. Contact

user@trafodion.apache.org for help obtaining the driver.

3.2.1. Windows Download

Do the following:

1. Create a download folder on the client workstation. For example, `c:\trafodion`.

2. Open a Web browser and navigate to the Trafodion downloads site http://http://trafodion.apache.org/download.html.

3. Orient yourself to the binaries for the release you're installing. Click on the `Trafodion Clients` link to start downloading the Trafodion clients tar file to your workstation.

4. Place the `apache-trafodion-clients-*.tar.gz` file into the download folder.

   • Unpack the `apache-trafodion-clients-*.tar.gz` file using an unzip program of your choice. This creates an `apache-trafodion-clients-*.tar` file.

   • Unpack the `apache-trafodion-clients-*.tar` file using an unzip program of your choice.

5. Verify content of the `clients` directory:

```
JDBCT4.zip LICENSE NOTICE odb64_linux.tar.gz trafci.zip
TRAF_ODBC_Linux_Driver_64.tar.gz
```

You use these files to install the different Trafodion clients.

3.2.2. Linux Download

Do the following:

1. Create a download directory on the client workstation. For example, `$HOME/trafodion`.

2. Open a Web browser and navigate to the Trafodion downloads site http://http://trafodion.apache.org/download.html.

3. Orient yourself to the binaries for the release you're installing. Right-click on the `Trafodion Clients` link and select **Copy link address**.

4. Go to the download directory on the client workstation and use `wget` to download the client package using the URL you copied in step 3 above.

5. Unpack the `apache-trafodion-clients-*.tar.gz` using `tar`.

   Example

   ```
   $ mkdir $HOME/trafodion
   $ cd $HOME/trafodion
   $ wget <link to package>
   $ tar -xzvf apache-trafodion_clients-*.tar.gz
   $ cd clients
   $ ls
   LICENSE  odb64_linux.tar.gz  TRAF_ODBC_Linux_Driver_64.tar.gz
   JDBCT4.zip  NOTICE    trafci.zip
   $
   ```

You use these files to install the different Trafodion clients.

3.3. Unpack Client Software

The client packages are located on the `client` subdirectory where you unpacked the Trafodion distribution file. For example, `c:\trafodion\clients` (Windows) or `$HOME/trafodion/clients` (Linux).

Unpack the client software and its dependencies you intend to use as follows.

3.3.1. Unpack JDBC-Based Client Software

File	Description	Recommended Target Directory
JDBCT4.zip	JDBC Type 4 Driver	* **Windows:** `c:\trafodion\jdbct4` + * **Linux:** `$HOME/trafodion/jdbct4`
trafci.zip	Command Interface	* **Windows:** `c:\trafodion\trafci` + * **Linux:** `$HOME/trafodion/trafci`

Windows

Use your favorite compress/uncompress utility to unpack the file to the target directory defined in the table above.

Linux

Unpack the `.zip` file using the `unzip <file> -d <target-directory>` command:

```
$ cd $HOME/trafodion/clients
$ unzip JDBCT4.zip -d $HOME/trafodion/jdbct4
.
.
.
$ unzip trafci.zip -d $HOME/trafodion/trafci
.
.
.
$ cd ..
$ ls
apache-trafodion_clients-2.2.0.tar.gz  clients  jdbct4  trafci
$
```

Once complete, a fully-installed `c:\trafodion` (Windows) or `$HOME/trafodion` directory should contain the following directories:

- `clients`: The compressed client software.

- `jdbct4`: The Trafodion JDBC Type 4 driver installation directory.

- `trafci`: The Trafodion Command Interpreter installation directory.

3.3.2. Unpack ODBC-Based Client Software

File	Description	Recommended Target Directory
`TRAF_ODBC_Linux_Driver_64.tar.gz`	Linux ODBC Driver	`$HOME/trafodion/odbc`
`odb64_linux.tar.gz`	Linux odb Utility	`$HOME/trafodion/odb`

Linux

Unpack the `.tar.gz` file using the `tar -xzvf <file> -C <target-directory>` command.

```
$ cd $HOME/trafodion/clients
$ mkdir $HOME/trafodion/odbc
$ tar -xzvf TRAF_ODBC_Linux_Driver_64.tar.gz -C $HOME/trafodion/odbc
.
.
.
$ mkdir $HOME/trafodion/odb
$ tar -xzvf odb64_linux.tar.gz -C $HOME/trafodion/odb
.
.
.
$ cd ..
$ ls
apache-trafodion_clients-2.2.0.tar.gz  clients  odb  odbc
```

Once complete, a fully-installed `c:\trafodion` (Windows) or `$HOME/trafodion` directory should contain:

- `clients`: The compressed client software.

- `odb`: The Trafodion odb utility installation directory.

- `odbc`: The Trafodion ODBC driver installation directory.

Chapter 4. Install JDBC Type-4 Driver

4.1. Prerequisites

If you have not done so already, please ensure that you have setup your Java environment and unpackaged the Trafodion client software.

The examples in this chapter assumes that you have unpackaged the JDBC Type 4 driver installation files to `c:\trafodion\jdbct4` (Windows) or `$HOME/trafodion/jdbct4` (Linux).

4.2. Validate Install Directory

The content of the `jdbct4` installation directory is as follows:

Installation Folder	Files	Description
`/lib`	`jdbcT4.jar`	Product JAR file.
`/samples`	`t4jdbc.properties`	Properties file that you can configure for your application environment.
	`README`	Readme file that explains how to use the common sample set.
`/samples/common`	`sampleUtils.java`	Sample source code for creating, populating, and dropping sample tables.
`/samples/DBMetaSample`	`DBMetaSample.java`	Sample source code for getting metadata about the sample tables.
	`README`	Readme file that explains how to use this sample set.
`/samples/PreparedStatementSample`	`PreparedStatementSample.java`	Sample code for simple or parameterized SELECT statements that are prepared.
	`README`	Readme file that explains how to use this sample set.
`/samples/ResultSetSample`	`README`	Readme file that explains how to use this sample set.
	`ResultSetSample.java`	Sample source code for fetching rows from a result set.
`/samples/StatementSample`	`README`	Readme file that explains how to use this sample set.
	`StatementSample.java`	Sample source code for fetching rows from a simple SELECT statement.

4.3. Set Up Client Environment

4.3.1. Java Development

If you plan to write and run Java applications that use the Trafodion JDBC Type 4 Driver to connect to a Trafodion database, then set these environment variables on the client workstation, replacing `jdk-directory` with the location of your Java Development Kit and replacing `jdbc-installation-directory` with the name of the directory where you downloaded the JDBC Type 4 driver:

Environment Variable	On Windows	On Linux
JAVA_HOME	set JAVA_HOME="*jdk-directory*"[1]	export JAVA_HOME=*jdk-directory*
PATH	set PATH=%PATH%;%JAVA_HOME%\bin	export PATH=$PATH:$JAVA_HOME/bin
CLASSPATH	set CLASSPATH=%CLASSPATH%;_jdbc-installation-directory_\lib\jdbcT4.jar;	export CLASSPATH=$CLASSPATH:_jdbc-installation-directory_/lib/jdbcT4.jar:

[1] Enclose the *jdk-directory* in quotes to ensure that Windows can find the directory correctly. You can use the `set <variable>` command to verify the setting.

4.3.2. Configure Applications

Edit the `t4jdbc.properties` file in the `samples` folder. Refer to the `README` file in the `samples` folder for instructions.

Set these values for your environment:

- `catalog`: Specify a catalog that exists in the database.

- `schema`: Specify a schema that exists in the database.

- `user`: Specify the name of a user who will be accessing the database.

- `password`: Specify the password of a user who will be accessing the database.

- `url`: Specify this string: `jdbc:t4jdbc://<host-name>:<port-number>/:`

`<host-name>` is the IP address or host name of the database platform.

`<port-number>` is the location where the Trafodion Database Connectivity Service (DCS) is running. (Default: **23400**).

See the Trafodion Database Connectivity Services Reference Guide for information about how to configure the DCS port.

Example

In this example, Trafodion authentication has not been enabled. Therefore, you can use a dummy user and password. If authentication is enabled, then use your user and password information.

```
catalog = TRAFODION
schema = SEABASE
user = usr
password = pwd

url = jdbc:t4jdbc://trafodion.host.com:23400/:
```

> The driver's class name is `org.trafodion.jdbc.t4.T4Driver`.

4.4. Test Programs

ℹ️ You must use JDK and set up the environmental variables as documented in Java Development to build the test programs.

The `README` file in the `samples` folder provide information for how you build and run sample Java programs. You can use these programs to verify the setup of the Trafodion JDBC Type-4 driver.

See the Validate Install Directory section above for information on the different sample programs that are included with the Trafodion JDBC Type-4 driver.

Windows Example

Build and run the StatementSample test program to verify the JDBC Type-4 driver installation.

```
C:\trafodion\jdbct4\samples> cd StatementSample

C:\trafodion\jdbct4\samples\StatementSample> %JAVA_HOME%\bin\javac -classpath
..\..\lib\jdbcT4.jar *.java ..\common\*.java

Note: ..\common\sampleUtils.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.

C:\trafodion\jdbct4\samples\StatementSample> %JAVA_HOME%\bin\java -classpath
..\..\lib\jdbcT4.jar;..;. -Dt4jdbc.properties=..\t4jdbc.properties StatementSample

Mar 16, 2016 9:36:54 PM common.sampleUtils getPropertiesConnection
INFO: DriverManager.getConnection(url, props) passed

Inserting TimeStamp

Simple Select

Printing ResultSetMetaData ...
No. of Columns 12
Column 1 Data Type: CHAR Name: C1
Column 2 Data Type: SMALLINT Name: C2
Column 3 Data Type: INTEGER Name: C3
Column 4 Data Type: BIGINT Name: C4
Column 5 Data Type: VARCHAR Name: C5
Column 6 Data Type: NUMERIC Name: C6
Column 7 Data Type: DECIMAL Name: C7
Column 8 Data Type: DATE Name: C8
Column 9 Data Type: TIME Name: C9
Column 10 Data Type: TIMESTAMP Name: C10
Column 11 Data Type: REAL Name: C11
Column 12 Data Type: DOUBLE PRECISION Name: C12
```

```
Fetching rows...

Printing Row 1 using getString(), getObject()
Column 1 - Row1                    ,Row1
Column 2 - 100,100
Column 3 - 12345678,12345678
Column 4 - 123456789012,123456789012
Column 5 - Selva,Selva
Column 6 - 100.12,100.12
Column 7 - 100.12,100.12
Column 8 - 2000-05-06,2000-05-06
Column 9 - 10:11:12,10:11:12
Column 10 - 2000-05-06 10:11:12.000000,2000-05-06 10:11:12.0
Column 11 - 100.12,100.12
Column 12 - 100.12,100.12

Printing Row 2 using getString(), getObject()
Column 1 - Row2                    ,Row2
Column 2 - -100,-100
Column 3 - -12345678,-12345678
Column 4 - -123456789012,-123456789012
Column 5 - Selva,Selva
Column 6 - -100.12,-100.12
Column 7 - -100.12,-100.12
Column 8 - 2000-05-16,2000-05-16
Column 9 - 10:11:12,10:11:12
Column 10 - 2000-05-06 10:11:12.000000,2000-05-06 10:11:12.0
Column 11 - -100.12,-100.12
Column 12 - -100.12,-100.12

Printing Row 3 using getString(), getObject()
Column 1 - TimeStamp              ,TimeStamp
Column 2 - -100,-100
Column 3 - -12345678,-12345678
Column 4 - -123456789012,-123456789012
Column 5 - Selva,Selva
Column 6 - -100.12,-100.12
Column 7 - -100.12,-100.12
Column 8 - 2016-03-16,2016-03-16
Column 9 - 21:37:03,21:37:03
Column 10 - 2016-03-16 21:37:03.053,2016-03-16 21:37:03.053
Column 11 - -100.12,-100.12
Column 12 - -100.12,-100.12

End of Data

C:\trafodion\jdbct4\samples\StatementSample>
```

Linux Example

Build and run the StatementSample test program to verify the JDBC Type-4 driver installation.

```
$ cd $HOME/trafodion/jdbct4/samples/StatementSample

$ $JAVA_HOME/bin/javac -classpath ../../lib/jdbcT4.jar *.java ../common/*.java

Note: ..\common\sampleUtils.java uses or overrides a deprecated API.
Note: Recompile with -Xlint:deprecation for details.

$ $JAVA_HOME/bin/java -classpath ../../lib/jdbcT4.jar:..:.
-Dt4jdbc.properties=../t4jdbc.properties StatementSample

Mar 16, 2016 9:36:54 PM common.sampleUtils getPropertiesConnection
INFO: DriverManager.getConnection(url, props) passed

Inserting TimeStamp

Simple Select

Printing ResultSetMetaData ...
No. of Columns 12
Column 1 Data Type: CHAR Name: C1
Column 2 Data Type: SMALLINT Name: C2
Column 3 Data Type: INTEGER Name: C3
Column 4 Data Type: BIGINT Name: C4
Column 5 Data Type: VARCHAR Name: C5
Column 6 Data Type: NUMERIC Name: C6
Column 7 Data Type: DECIMAL Name: C7
Column 8 Data Type: DATE Name: C8
Column 9 Data Type: TIME Name: C9
Column 10 Data Type: TIMESTAMP Name: C10
Column 11 Data Type: REAL Name: C11
Column 12 Data Type: DOUBLE PRECISION Name: C12

Fetching rows...

Printing Row 1 using getString(), getObject()
Column 1 - Row1                    ,Row1
Column 2 - 100,100
Column 3 - 12345678,12345678
Column 4 - 123456789012,123456789012
Column 5 - Selva,Selva
Column 6 - 100.12,100.12
Column 7 - 100.12,100.12
Column 8 - 2000-05-06,2000-05-06
Column 9 - 10:11:12,10:11:12
Column 10 - 2000-05-06 10:11:12.000000,2000-05-06 10:11:12.0
Column 11 - 100.12,100.12
Column 12 - 100.12,100.12
```

```
Printing Row 2 using getString(), getObject()
Column 1 - Row2                    ,Row2
Column 2 - -100,-100
Column 3 - -12345678,-12345678
Column 4 - -123456789012,-123456789012
Column 5 - Selva,Selva
Column 6 - -100.12,-100.12
Column 7 - -100.12,-100.12
Column 8 - 2000-05-16,2000-05-16
Column 9 - 10:11:12,10:11:12
Column 10 - 2000-05-06 10:11:12.000000,2000-05-06 10:11:12.0
Column 11 - -100.12,-100.12
Column 12 - -100.12,-100.12

Printing Row 3 using getString(), getObject()
Column 1 - TimeStamp           ,TimeStamp
Column 2 - -100,-100
Column 3 - -12345678,-12345678
Column 4 - -123456789012,-123456789012
Column 5 - Selva,Selva
Column 6 - -100.12,-100.12
Column 7 - -100.12,-100.12
Column 8 - 2016-03-16,2016-03-16
Column 9 - 21:37:03,21:37:03
Column 10 - 2016-03-16 21:37:03.053,2016-03-16 21:37:03.053
Column 11 - -100.12,-100.12
Column 12 - -100.12,-100.12

End of Data

$
```

4.5. Uninstall JDBC Type-4 Driver

Run one of these sets of commands to remove the Trafodion JDBC Type 4 Driver:

- On Windows:

```
rmdir /s /q <jdbc-installation-directory>
```

Example

```
rmdir /s /q c:\trafodion\jdbct4
```

- On Linux:

```
rm -rf <jdbc-installation-directory>
```

Example

```
rm -rf $HOME/trafodion/jdbct4
```

> Remember to update/remove environmental variables if you've created them in th Java Development.

Chapter 5. Install trafci

5.1. Prerequisites

If you have not done so already, please ensure that you have setup your Java environment, unpackaged the Trafodion client software, and installed the JDBC Type-4 Driver. .

The examples in this chapter assumes that you have unpackaged the trafci installation file to `c:\trafodion\trafci` (Windows) or `$HOME/trafodion/trafci` (Linux).

5.2. Install Perl or Python

If you plan to use Perl or Python scripts with trafci, verify that you have Perl or Python installed on the client workstation. trafci supports these versions of Perl and Python:

- Perl version 5.8.8

- Python version 2.3.4

If you do not have Perl or Python, download it from any open-source software provider. You can perform this installation procedure anytime before or after installing trafci.

If you plan to run the sample scripts provided with trafci, verify that you have the Perl JavaServer and Jython (Java implementation of Python) installed on your client workstation. Use the trafci Installation Wizard to automatically download and install both the Perl JavaServer and Jython open source extensions. To download them manually, see the `README` in the samples directory.

5.3. Verify Installation

Verify that `c:\trafodion\trafci` (Windows) or `$HOME/trafodion/trafci` (Linux) contains the following files:

- `README`

- `trafciInstaller.jar`

5.4. Run trafci Installer

`trafciInstaller.jar` is used to install trafci.

Two modes are supported:

- GUI Wizard Install

- Command-Line Install

5.4.1. GUI Wizard Install

You must have the X Window system installed on your Linux client workstation to run the trafci Installer Wizard. If you do not, then use the Command-Line Install instructions below. <<< ==== Launch the Installer Wizard

1. Move to the trafci install directory.

   - **Windows:** `c:\trafodion\trafci`

   - **Linux:** `$HOME/trafodion/trafci`

2. Double-click on `trafciInstaller.jar`

If the trafci Installer Wizard does not start, then do the following from a command prompt:

1. Change director to the trafci install directory.

   - **Windows:** `cd c:\trafodion\trafci`

   - **Linux:** `cd $HOME/trafodion/trafci`

2. Launch the trafci Installer Wizard: `java -jar trafciInstaller.jar`

Using the Installer Wizard

When you execute `trafciInstaller.jar`, the Installer Wizard appears:
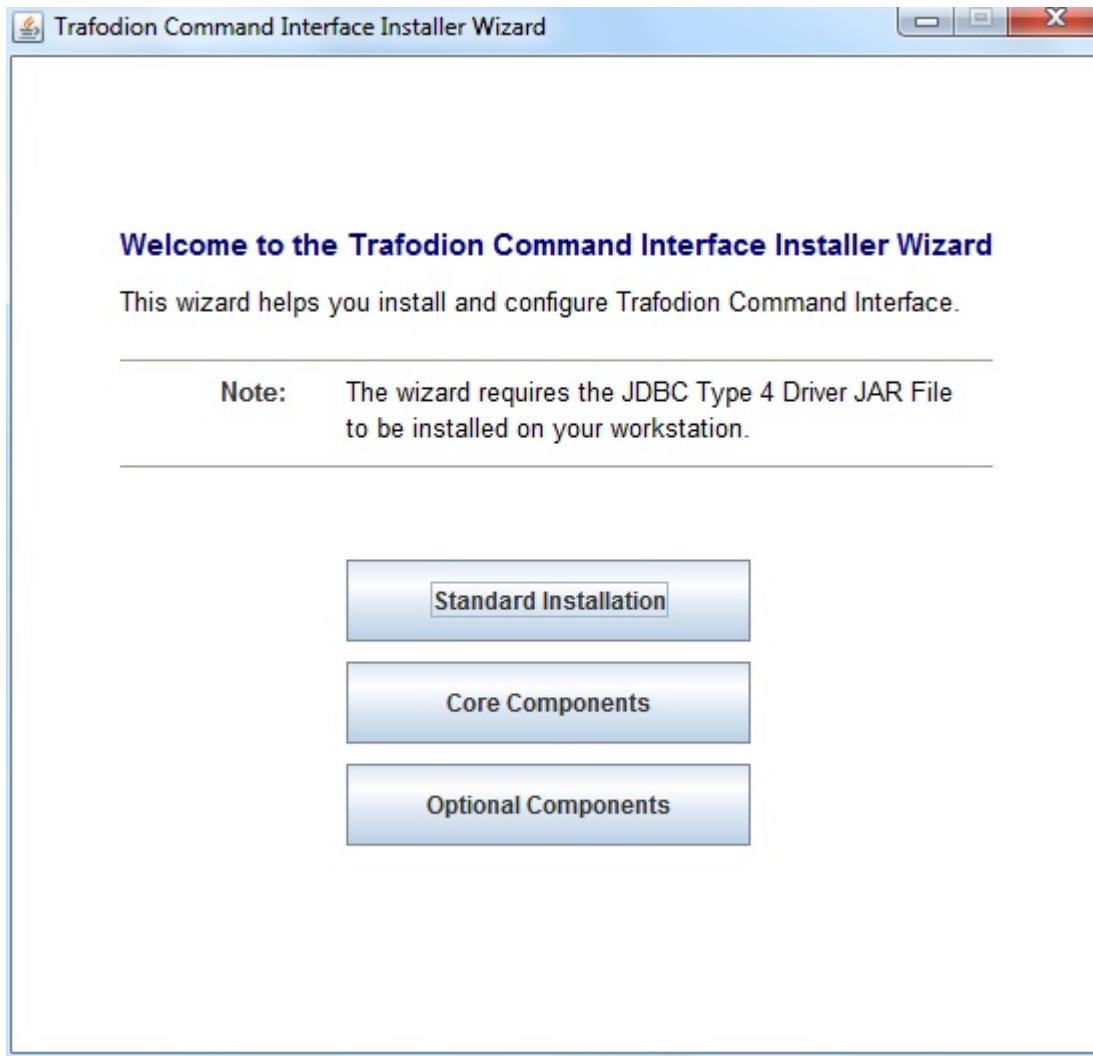
1. Click one of the buttons for the type of installation that you would like to perform:

   - **Standard Installation** to start the Installer Wizard. Guides you through installing both the core trafci components and the optional open source extensions.

   - **Core Components** for a quick installation of the core trafci files.

   - **Optional Components** if you have already installed the core trafci files but want to install only the optional open source extensions.

2. After you have selected the components you wish to install, browse and select the JDBC JAR file and then specify an installation directory where you will install trafci.
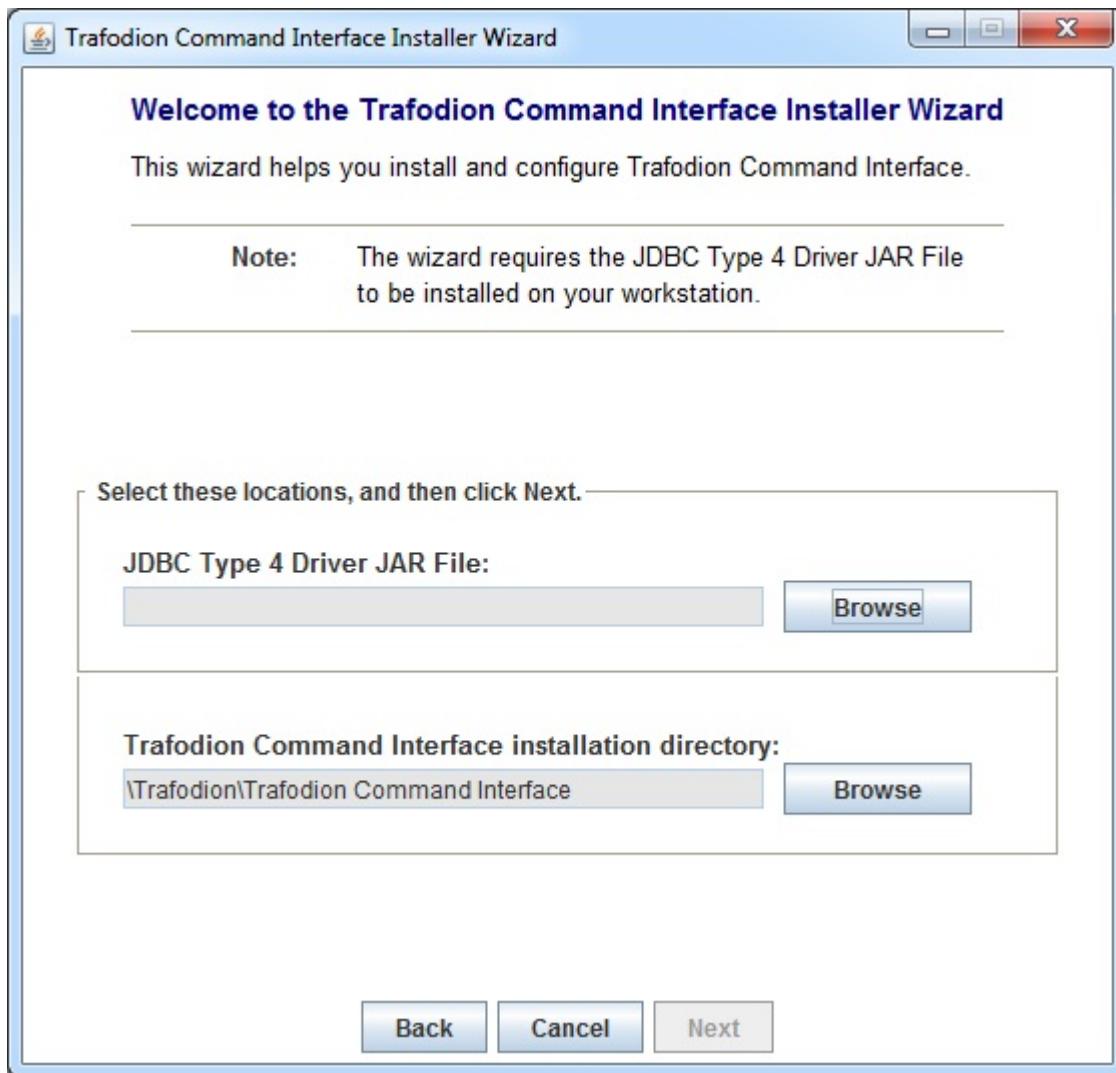
3. To locate the **JDBC Type 4 Driver JAR file**, click **Browse** next to the **JDBC Type 4 Driver JAR File**.

    Navigate to the lib folder of the Trafodion JDBC driver and select the `jdbcT4.jar` file
    (`c:\trafodion\jdbct4\lib\jdbcT4.jar` on Windows, `$HOME/trafodion/jdbct4/lib/jdbcT4.jar` on
    Linux), and then click **Select**.

    The Installer Wizard now displays the path of the JDBC driver JAR file for **JDBC Type 4 Driver JAR File**.

4. To select the **Trafodion Command Interface installation directory**, click **Browse** next to the **Trafodion Command
    Interface installation directory**

    Navicate to `c:\trafodion` (Windows) or `$HOME/trafodion` (Linux)and click on **Select**.

    The Installer Wizard now displays the path of the installation directory for **Trafodion Command Interface installation
    directory**.
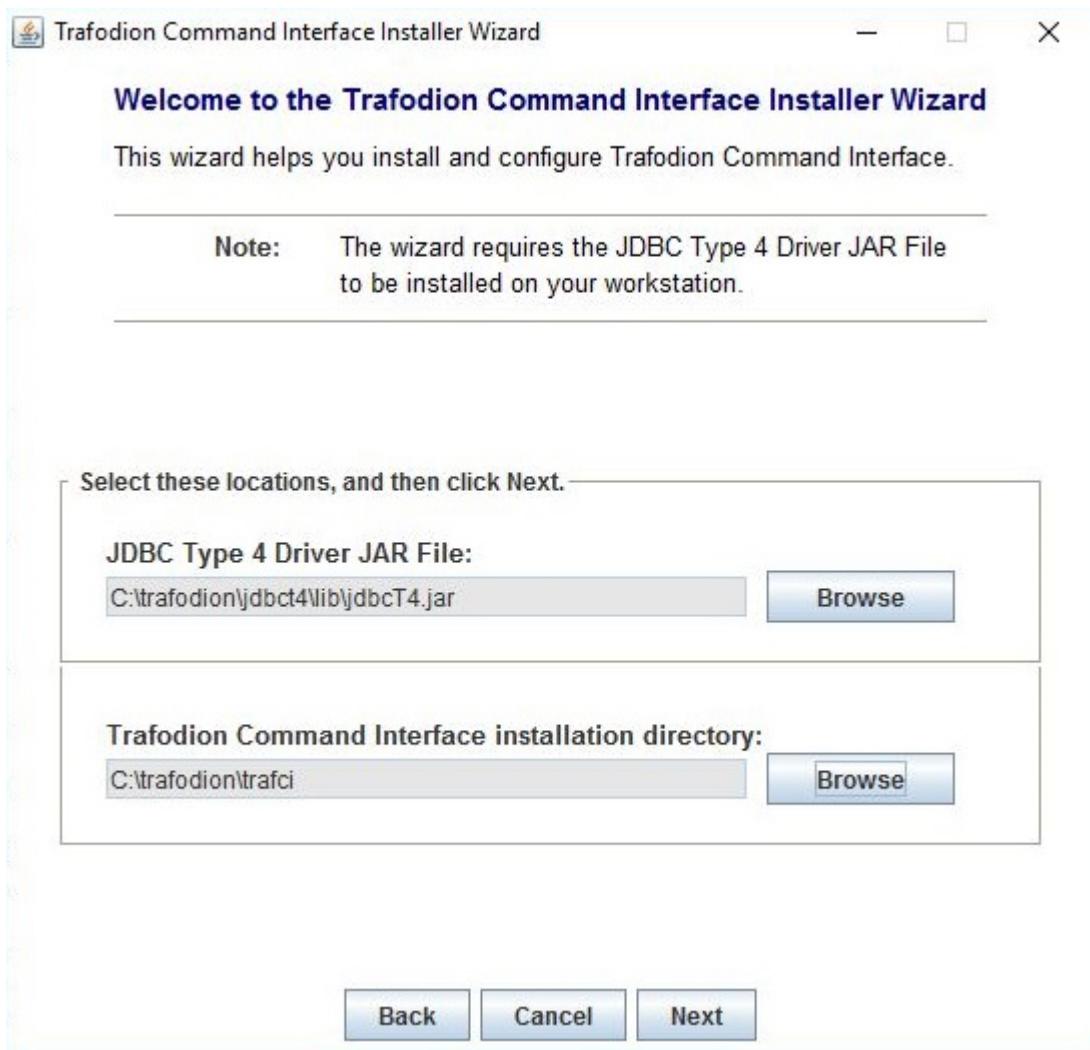
5. Click **Next** to review the open-source legal disclaimer.

6. If you agree to the terms and conditions, select the check box, and click **Next**.

   The Installer Wizard dialog box shows which components are available for you to download and install.
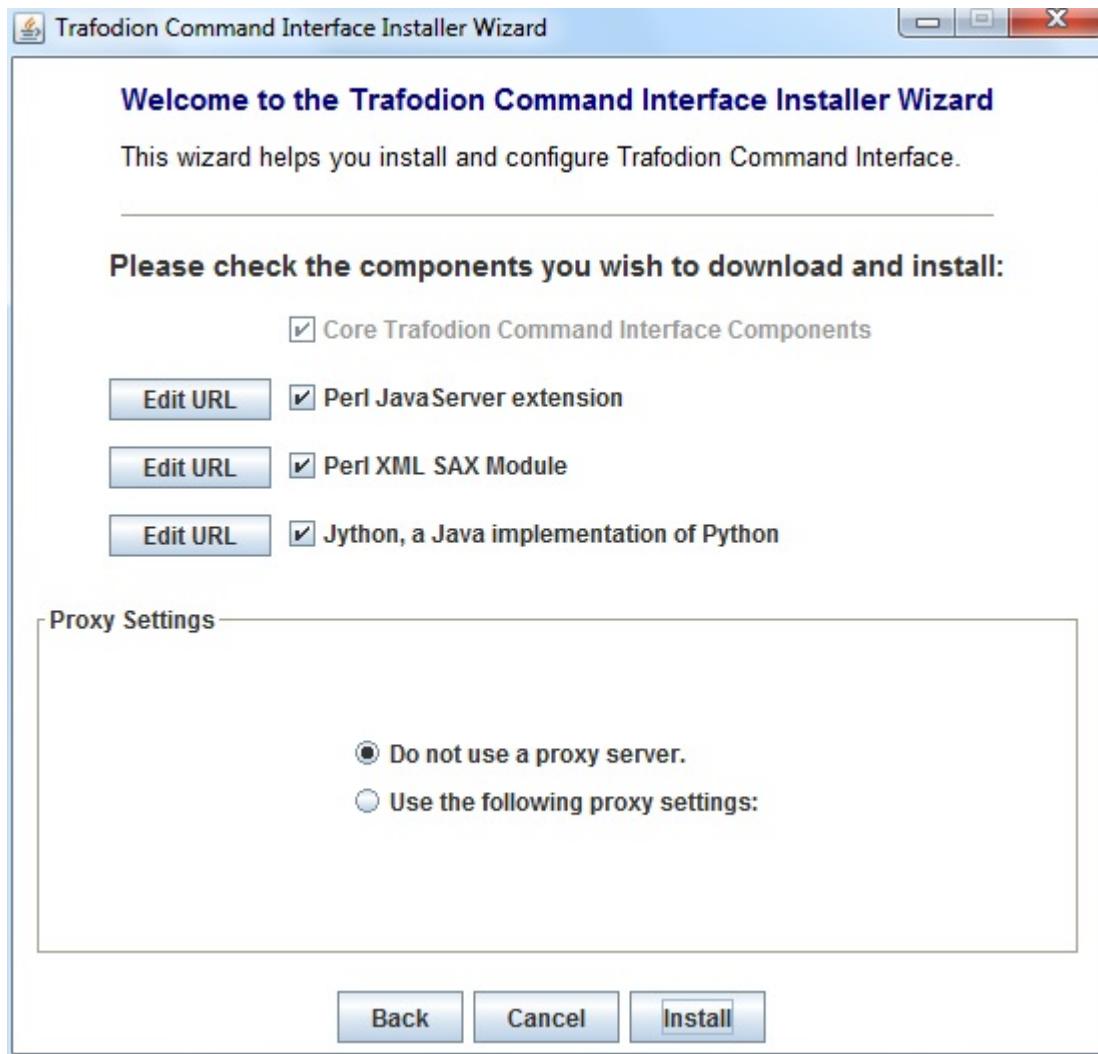
7. Select the optional components to be downloaded and installed. Each optional component is installed if the component box is checked.

If you want to change the download URL for the extensions, click **Edit URL**, and this dialog box appears:
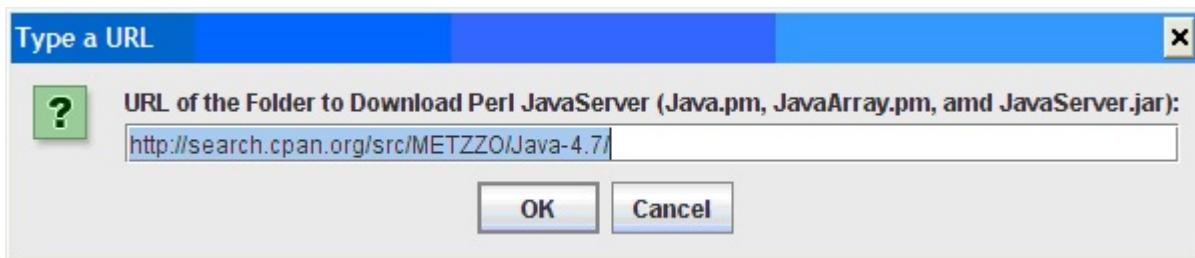
Type a new path, and click **OK**.

> Perl and Python must be installed for the respective extensions to work.

8. If you do not require a proxy server, proceed to Step 12.

9. If you require a proxy server, select **Use the following proxy settings** and enter the proxy server and port for downloading the open source extensions.

```
┌─Proxy Settings────────────────────────────────────────────────┐
│                                                                │
│              ○ Do not use a proxy server.                      │
│              ◉ Use the following proxy settings:               │
│                                                                │
│        Proxy Server:      [_____]                   │
│        Proxy Port:        [_____]                       │
│            [ Detect Proxy Server(s) ]                          │
│                                                                │
└────────────────────────────────────────────────────────────────┘
```

10. Click **Detect Proxy Server(s)** to try to auto-detect your proxy settings. If trafci detects one or more proxy servers, it displays them in a drop-down menu next to the **Detect Proxy Server(s)** button.

11. Click **Install** to start the installation.

12. After the core trafci files are installed, the **Installation Status** dialog box appears indicating how many files were extracted to the installation directory:

```
┌─────────────────────────────────────────────────────────────────────────────┐
│ Trafodion Command Interface Installation Status                           ✕  │
├─────────────────────────────────────────────────────────────────────────────┤
│  ⓘ   Extracted 18 files from the                                             │
│      C:\trafodion\trafci\trafciInstaller.jar                                 │
│      archive into the                                                        │
│      C:\trafodion\trafci                                                     │
│      directory.                                                              │
│                                                                              │
│      Core TRAFCI files installed. Installation will now attempt to download  │
│      and install open source extensions.                                     │
│                              [ OK ]                                          │
└─────────────────────────────────────────────────────────────────────────────┘
```
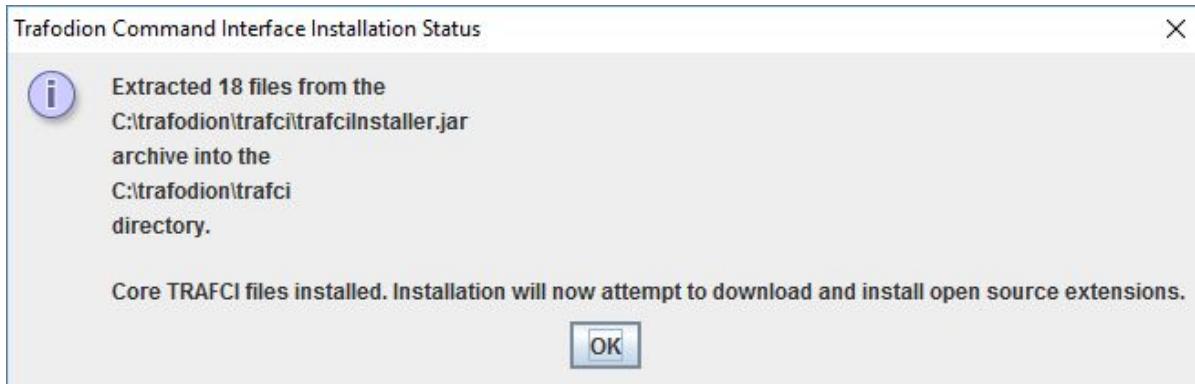
Click **OK** to continue the installation.

13. If you chose to install the optional components, the installer attempts to download and install them. The progress bar indicates the download progress of each file. In addition, an installation log provides details about the status of the download and installation of the components.
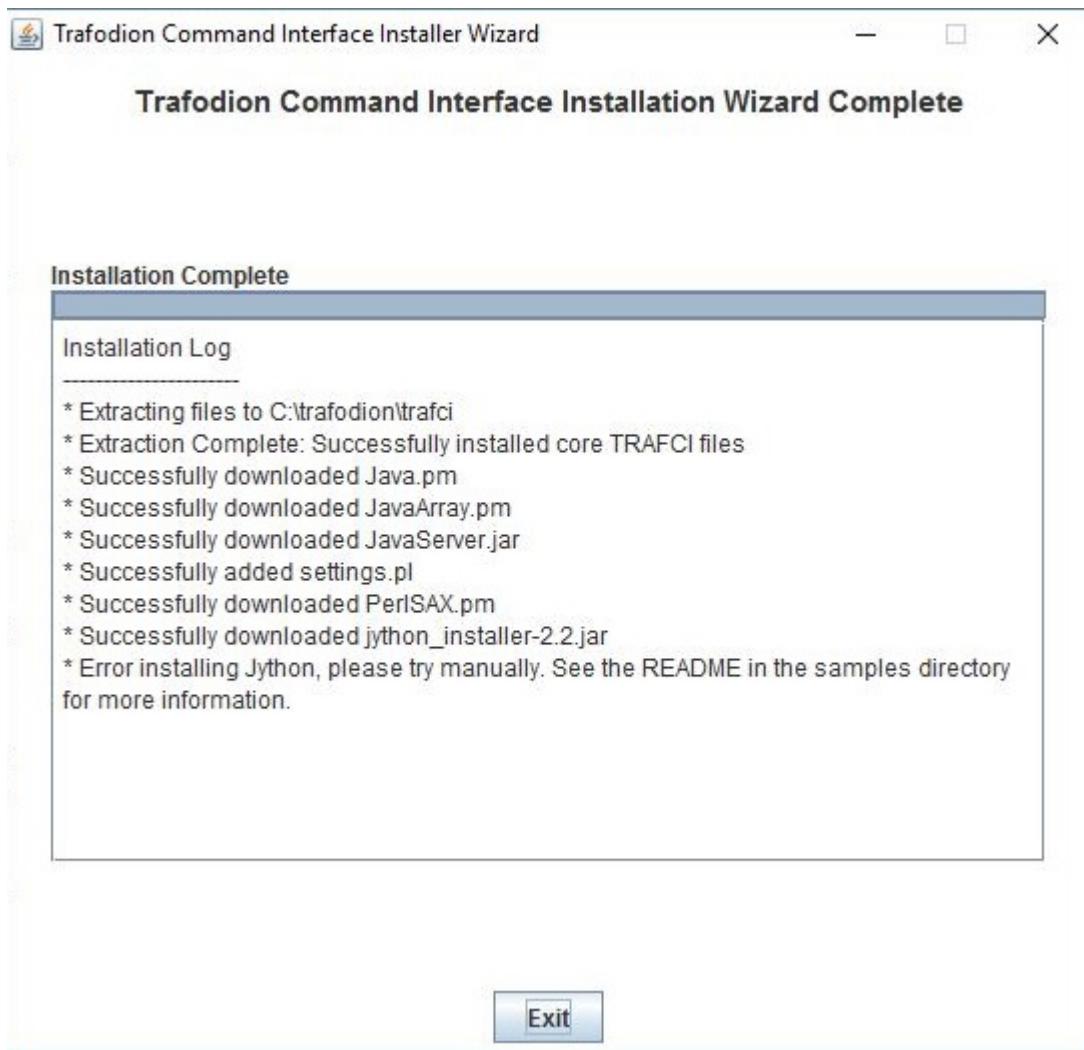
14. After all trafci files are installed, the Installer Wizard completes.

15. Click **Exit**.

5.4.2. Command-Line Installation Steps

1. At a command prompt, change to the directory where you extracted the contents of the distribution (.zip) file:

   Windows

   ```
   c:\> cd c:\trafodion\trafci
   c:\trafodion\trafci> dir
   README   trafciInstaller.jar
   ```

   Linux

   ```
   $ cd $HOME/trafodion/trafci
   $ ls
   README   trafciInstaller.jar
   ```

2. Before launching the command-line installer, see the command options below:

   ```
   java -jar trafciInstaller.jar -help
   Usage: java -jar <installer jar> [ -help] | <-cm|-silent>
       [-jdbcFile <jdbc filename>] [-installDir <install dir>] ]
   ```

   The -silent option installs the client without prompting you for options.

   Windows

   ```
   java -jar trafciInstaller.jar -silent -jdbcFile "C:\trafodion\jdbct4\lib\jdbcT4.jar"
   -installDir C:\trafodion\trafci
   ```

   Linux

   ```
   java -jar trafciInstaller.jar -silent -jdbcFile "$HOME/jdbct4/lib/jdbcT4.jar"
   -installDir $HOME/trafodion/trafci
   ```

   -jdbcFile and *-installDir* are optional parameters. If you do not specify those parameters, you will be prompted to enter them during installation.

3. Launch the command-line installer by entering this command:

```
java -jar trafciInstaller.jar -cm
```

The command-line installer starts and prompts you to enter the type of installation:

Windows

```
c:\> cd c:\trafodion\trafci
c:\trafodion\trafci> java -jar trafciInstaller.jar -cm
**********************************************************************
****                                                              **
**** Welcome to Trafodion Command Interface Installer             **
****                                                              **
**** NOTE: The installer requires a the JDBC Type 4               **
****       Driver to be installed a on your workstation.          **
**********************************************************************
Type Y for a standard installation, or N for optional components only.

Standard Installation [Y]:
```

Linux

```
$ cd $HOME/trafodion/trafci
$ java -jar trafciInstaller.jar -cm
**********************************************************************
****                                                              **
**** Welcome to Trafodion Command Interface Installer             **
****                                                              **
**** NOTE: The installer requires a the JDBC Type 4               **
****       Driver to be installed a on your workstation.          **
**********************************************************************
Type Y for a standard installation, or N for optional components only.

Standard Installation [Y]:
```

- For a standard installation, type **Y** and press **Enter**.

- To install the optional components only, type **N**, press **Enter**, and proceed to Step 7.

> All items in square brackets are default values. Press Enter to accept the default value.

4. Enter the full directory path and file name of the JDBC driver JAR file, `jdbcT4.jar`, which is located in the JDBC driver lib directory:

```
JDBC Type 4 Driver JAR File
-------------------------------
Enter the location and file name:
```

- **Windows**: `c:\trafodion\jdbct4\lib\jdbcT4.jar`

- **Linux**: `/opt/user/trafodion/lib/jdbcT4.jar`

> Don't use environmental variables on Linux (such as `$HOME`). Instead, specify the full path to the `jdbcT4.jar` file.

5. Enter an existing directory where you would like to install trafci:

```
Trafodion Command Interface
-------------------------------
Enter the installation directory:
```

- **Windows**: `c:\trafodion\trafci`

- **Linux**: `/opt/user/trafodion/trafci`

  The installation status appears, indicating how many files are installed in the installation directory:

```
Extracted 18 files from the
/opt/user/trafodion/trafci/trafciInstaller.jar archive into the
/opt/user/trafodion/trafci directory.
Core TRAFCI files installed.
Do you want to install the optional components? [Y]:
```

> Don't use environmental variables on Linux (such as `$HOME`). Instead, specify the full path to the `jdbcT4.jar` file.

6. If you do not wish to download and install the optional components, type **N** at the prompt and press Enter, and your installation is complete. Otherwise, type **Y**, press **Enter**, and proceed through the remainder of the installation.

7. Type **Y** and press **Enter** if you agree to the terms. If you are doing an optional install only, you are prompted to enter a valid trafci installation directory:

```
Do you agree to these terms? (Y or N): Y

Enter your installation directory:
```

8. If you do not require a proxy server, type **N**, press **Enter**, and proceed to Step 10. Otherwise, type **Y**, press **Enter**, and proceed to Step 9.

```
Use a proxy server? [N]:
```

9. When prompted to auto-detect proxy servers, type **Y** and press **Enter** to direct trafci to detect your proxy settings. If trafci finds proxy servers, it displays them. If you type **N** and press **Enter**, trafci prompts you to enter the proxy server and port:

```
Use a proxy server? [Y]: Y
Attempt to auto-detect proxy server(s)? [Y]: N
Enter the proxy server (do not include the port): myproxyserver.com
Enter the proxy port: 8080
```

10. You are prompted to select which optional components you wish to download and install. You can also change the download URL.

```
Install Perl JavaServer extensions? [Y]: Y

Perl JavaServer requires 3 files: Java.pm, JavaArray.pm, and JavaServer.jar
http://search.cpan.org/src/METZZO/Java-4.7/[URL of the folder which contains these
files [http://search.cpan.org/src/METZZO/Java-4.7/]:]

Install Perl XML SAX Module? [Y]: Y

Perl SAX XML Module URL (PerlSAX.pm)

Install Jython, a Java implementation of Python? [Y]: Y

Jython URL (jython_installer-2.2.jar)
```

11. The setup proceeds to download and install the optional open-source components. As each component is retrieved, dots (.) are printed to indicate the progress of the download.

```
Downloading Perl JavaServer [1 of 3] - Java.pm
........................ 100%
Downloading Perl JavaServer [2 of 3] - JavaArray.pm1
........................ 100%
Downloading Perl JavaServer [3 of 3] - JavaServer.jar
........................ 100%
Successfully added settings.pl
Downloading Perl XML SAX Module [1 of 1] - PerlSAX.pm
........................ 100%
Downloading Jython [1 of 1] - jython_installer-2.2.jar
........................ 100%
Successfully Installed Jython. Successfully added settings.py
Trafodion Command Interface Installation Complete.
$
```

5.5. Verify Installed Software Files

After downloading and running the installer file, verify that the trafci software files are installed in the correct locations.

`c:\trafodion\trafci` (Windows) or `$HOME/trafodion/trafci` (Linux).

Folder	Files	Description
bin	trafci	
	trafci.cmd	Windows launch file.
	trafci.pl	Perl wrapper script. *trafci-perl.pl* is renamed *trafci.pl*. To run this script, see the *Trafodion Command Interface Guide*.
	trafci.py	Python wrapper script. trafci-python.py is renamed as trafci.py. To run this script, see the *Trafodion Command Interface Guide*.
	trafci.sh	Linux launch file.
	trafci-perl.pl	Perl wrapper script. This script has been modified to invoke trafci.pl. This script is retained for backward compatibility.
	trafci-python.py	Python wrapper script. This script has been modified to invoke trafci.py. This script is retained for backward compatibility.
lib	trafci.jar	Product JAR file.
lib/perl	Session.pm	Product file.
lib/python	Session.py	Product file.
samples	README	Readme file that describes how to use the sample scripts.
	arrayDML.pl	Sample Perl program that executes DML statements and returns results in an array format.
	sample.pl	Sample Perl program that supports multiple sessions in one script.
	sample.sql	Sample SQL script.
	sampleDDL.py	Sample Python file that uses Jython to execute DDL statements.
	sampleDML.py	Sample Python file that uses Jython to execute DML statements.
	sampleTables.pl	Sample Perl file that lists all tables and respective row counts. The file accepts a wild-card argument on the command line.
	sampleTables.py	Sample Python file that lists all tables and respective row counts. The file accepts a wild-card argument on the command line.

5.6. Modify PATH variable

Modify the PATH variable:

- **Windows:** `c:\trafodion\trafci\bin\`

- **Linux:** `$HOME/trafodion/trafci/bin`

See Set Up Path Variable for further instructions.

5.7. Test Launching trafci

For information about setting up and using trafci, such as choosing the look and feel of the interface or presetting launch parameters, see the Trafodion Command Interface Guide.

5.7.1. Windows Example

On Windows, do the following:

1. Go to the directory where you installed trafci. For example, `c:\trafodion\trafci`

2. Go to the `bin` directory

3. Invoke the `trafci.cmd` file.

4. Answer prompts.

```
cd "c:\trafodion\trafci\bin"
trafci.cmd
<screen is cleared>

Welcome to Apache Trafodion Command Interface
Copyright (c) 2015 Apache Software Foundation

Host Name/IP Address: trafodion.host.com:23400
User Name: usr
Password:


Connected to Trafodion

SQL> show schemas ;

SCHEMA NAMES
----------------------------------------------------------------------------
SEABASE    _MD_      _REPOS_    _LIBMGR_

SQL>
```

5.7.2. Linux Example

On Linux, do the following:

1. Go to the directory where you installed trafci. For example, `$HOME/trafodion/trafci`

2. Go to the `bin` directory

3. Invoke the `trafci.sh` file.

4. Answer prompts.

```
$ cd $HOME/trafodion/trafci/bin
$ . ./trafci.sh -h trafodion.home.com:23400 -u usr -p pwd

Welcome to Apache Trafodion Command Interface
Copyright (c) 2015 Apache Software Foundation

Connected to Trafodion

SQL>show schemas;

SCHEMA NAMES
--------------------------------------------------------------------------------
SEABASE    _MD_       _REPOS_    _LIBMGR_

SQL>
```

5.8. Uninstall trafci

If you used the executable JAR file, `trafciInstaller.jar`, to install trafci, delete the entire folder/directory when you installed trafci.

- On Windows:

```
rmdir /s /q <trafci-installation-directory>
```

Example

```
rmdir /s /q c:\trafodion\trafci
```

- On Linux:

```
rm -rf <jdbc-installation-directory>
```

Example

```
rm -rf $HOME/trafodion/trafci
```

> Remember to remove the trafci reference in the PATH variable.

Chapter 6. Configure DBVisualizer

6.1. Prerequisites

If you have not done so already, please ensure that you have setup your Java environment, unpackaged the Trafodion client software, and installed the JDBC Type-4 Driver.

You also need DBVisualizer 9.x.x. See the *DbVisualizer website*. In addition, see DBVisualizer's FAQ "How to" page: *How do I change the Java version that DBVisualizer uses?*

The examples in this chapter assumes that you have unpackaged the trafci installation file to `c:\trafodion\trafci` (Windows) or `$HOME/trafodion/trafci` (Linux).

6.2. Configuration Instructions

6.2.1. Register JDBC Type-4 Driver

1. Select **Tools>Driver Manager**.

2. Click on the green plus sign to add a new driver.
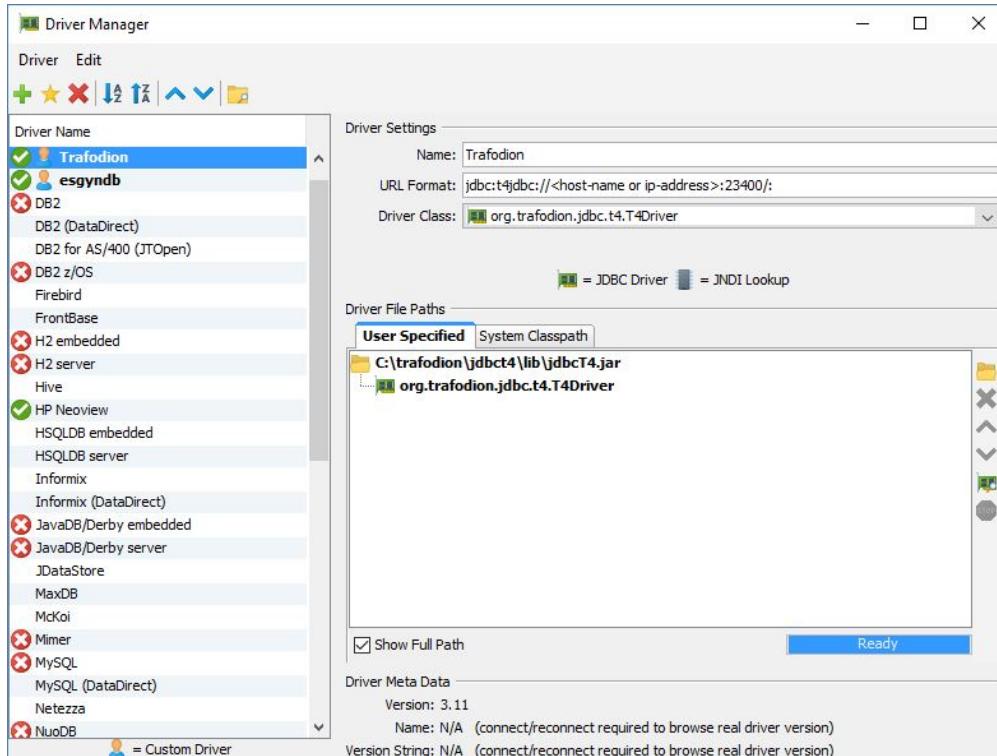
- Use the Open File icon and locate the Trafodion JDBC Type-4 Driver.

  `c:\trafodion\jdbct4\lib\jdbcT4.jar` (Windows) or `$HOME/trafodion/jdbct4/lib/jdbcT4.jar`
  (Linux).

- Use the JDBC URL format (literary, do not replace the placeholders):

```
jdbc:t4jdbc://<host-name or ip-address>:23400/:
```

3. Close the dialog box to save the settings.

6.2.2. Create Database Connection

1. Select **Database>Create Database Connection**.

2. Click on the **Driver (JDBC)** field. This presents you with a drop-down list of drivers.

3. Select the driver you created in the step above. (`Trafodion`)

4. Right-click the **Database URL** field. Select the URL format that pops up.

   The field should be populated with: `jdbc:t4jdbc://<host-name or ip-address>:23400/:`

5. Edit (double-click the field) the database URL to match your target host name and port number.

   Example

```
jdbc:t4jdbc://node01.host.com:23400/:
```

6. Add your **Database Userid**.

7. Add your **Database Password**.
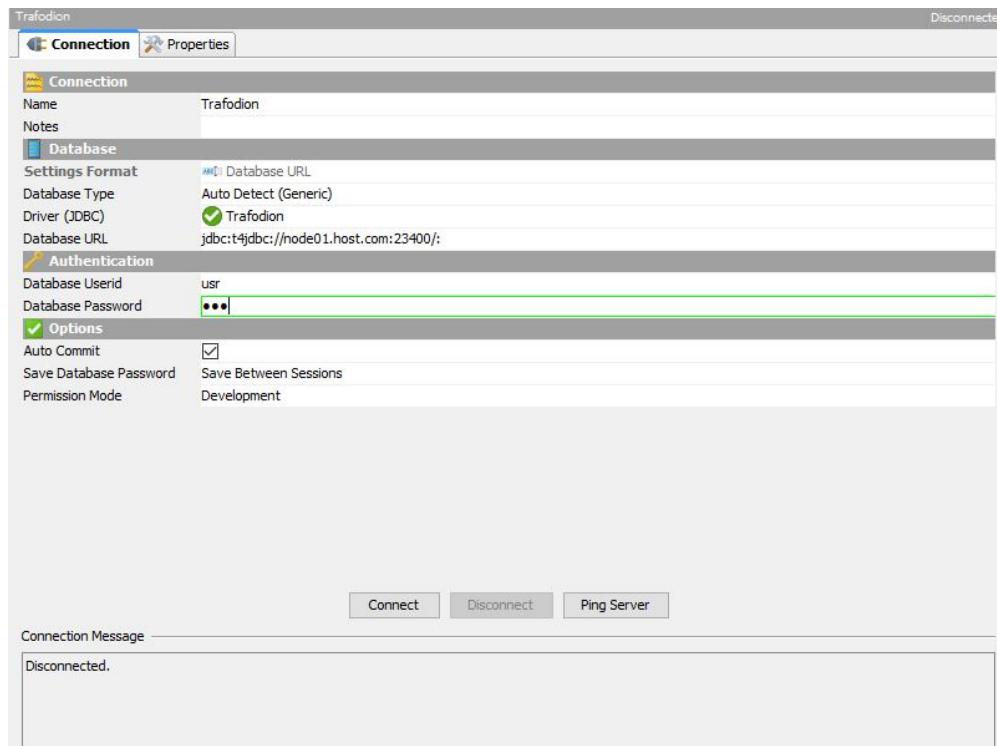
6.2.3. Disable Connection Validation Select Option

DBVisualizer 9.2 (or a later version)

Set the **Physical Connection** property to keep your connections alive. Follow these steps:

1. Open the database connection you created earlier if it's not open.

2. Select the **Properties** tab.

3. In the left navigation tree, expand the **Generic** connection properties, and select **Physical Connection**.

4. Under **Validation SQL**, enter `values(current_timestamp)` and click **Apply**.
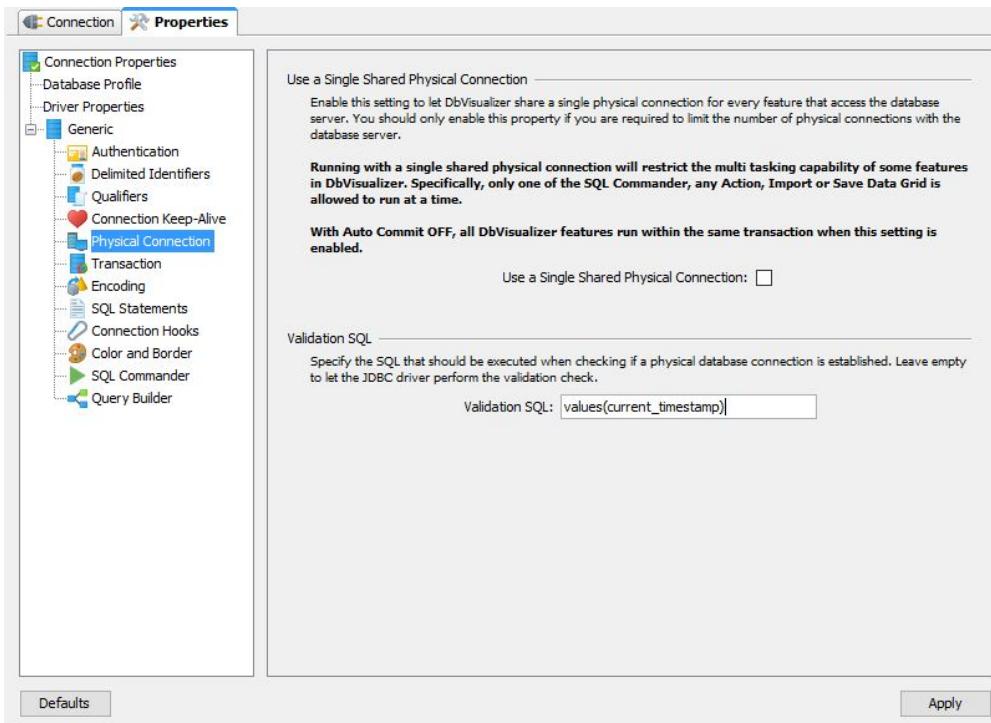
DBVisualizer 9.1 (or an earlier version)

Edit the *DBVisualizer-Install-Dir*\resources\dbvis-custom.prefs file and disable the ConnectionValidationSelect option as shown below:

```
dbvis.generic.-ConnectionValidationSelect=disabled
```

6.2.4. Connect to Trafodion

1. Right click on the database connection.

2. Select **Connect**.

Once connected:

1. Select **SQL Commander>New SQL Commander**. (CTRL+T)

2. Browse the tree structure in the left pane under **Connections**.

3. Try a query.

# Chapter 7. Configure SQuirreL Client

7.1. Prerequisites

If you have not done so already, please ensure that you have setup your Java environment, unpackaged the Trafodion client software, and installed the JDBC Type-4 Driver.

You also need SQuirreL SQL Client 3.7.0 or later. See the *SQuirreL SQL Client website*.

7.2. Configuration Instructions

7.2.1. Register JDBC Type-4 Driver

1. Start SQuirreL SQL Client

2. Click in the rectangle box in the upper left of the window that has "Drivers" printed sideways.

3. Select the "+ New Driver. . ." under "Drivers" from the top menu.
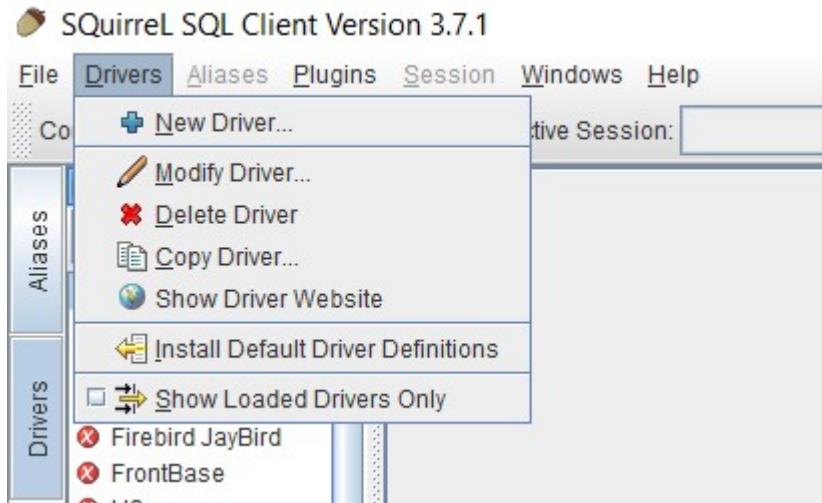
4. In the **Add Driver** dialog box:

   a. Enter `Trafodion` in the **Name** field.

   b. Enter `jdbc:t4jdbc://<host-name or ip-address:23400/:` in the **Example URL** field.

   The default port number is 23400. If you have configured JDBC server on Trafodion with a different port number, then you will need to change the 23400 value to match.

c. Select the **Extra Class Path** tab and then click the **Add** button.

Use the file browser to navigate to the directory where you installed the drivers and select the driver. (`jdbct4\lib\jdbcT4.jar`)

d. Enter `org.trafodion.jdbc.t4.T4Driver` in the Class Name field at the bottom of the dialog box and then click on **OK**.

e. If configured correctly, you will see a message stating "Driver class org.trafodion.jdbc.t4.T4Driver successfully registered for driver definition: Trafodion" in the text box at the bottom of the SQuirreL SQL window.
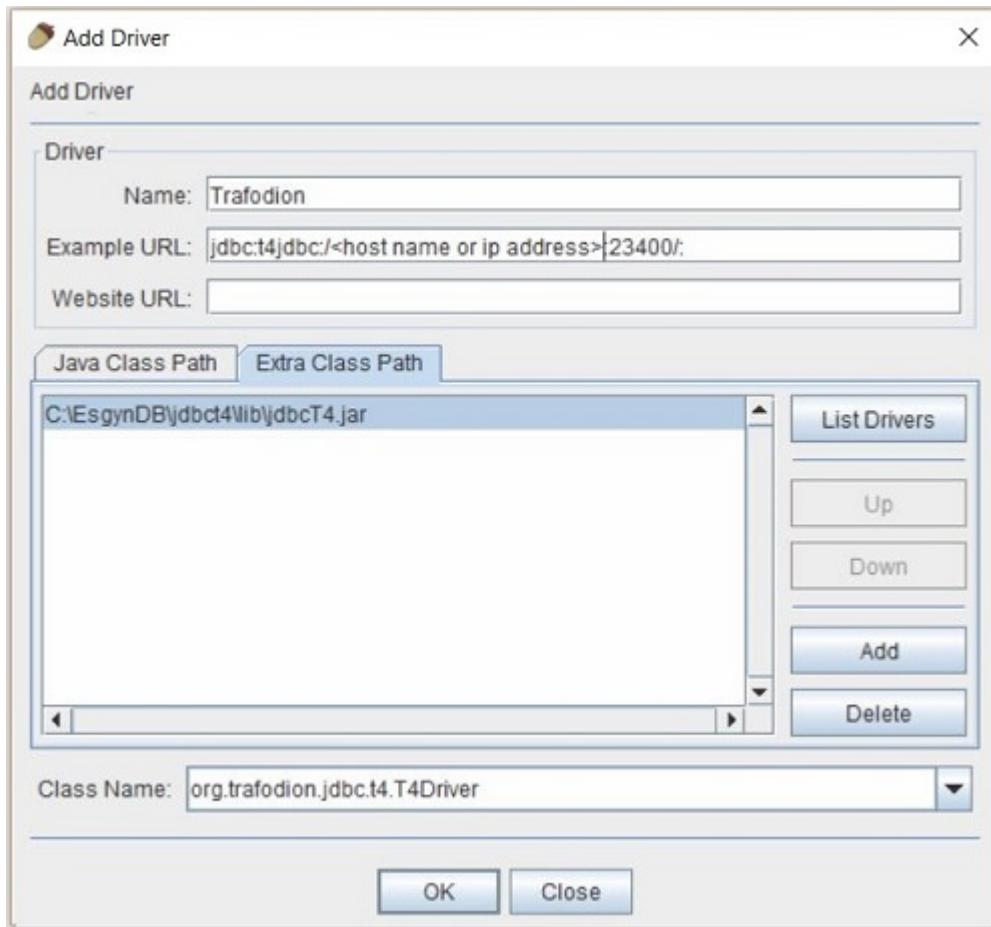
5. Click in the rectangle box in the upper left of the window that has "Drivers" printed sideways.

7.2.2. Connect to Trafodion

Use the Add Alias dialog box and create an alias for your Trafodion System.

1. Select the "+ New Alias. . ." under **Aliases** from the top menu.

2. In the **Add Alias** dialog box:

   a. Enter `Trafodion Cluster` or however you want to identify the cluster in the Name field.

   b. Select **Trafodion** from the Driver select menu.

   c. Enter <your user name> in the User Name field.

   d. Enter <your password> in the Password field.

   e. Click on the **Properties** button. In the Schema tab, select the **Load all and cache all Schemas** radio button.

   f. Click on the **OK** button to close the Properties dialog and then click on the **OK** button to close the **Add Aliases** window.
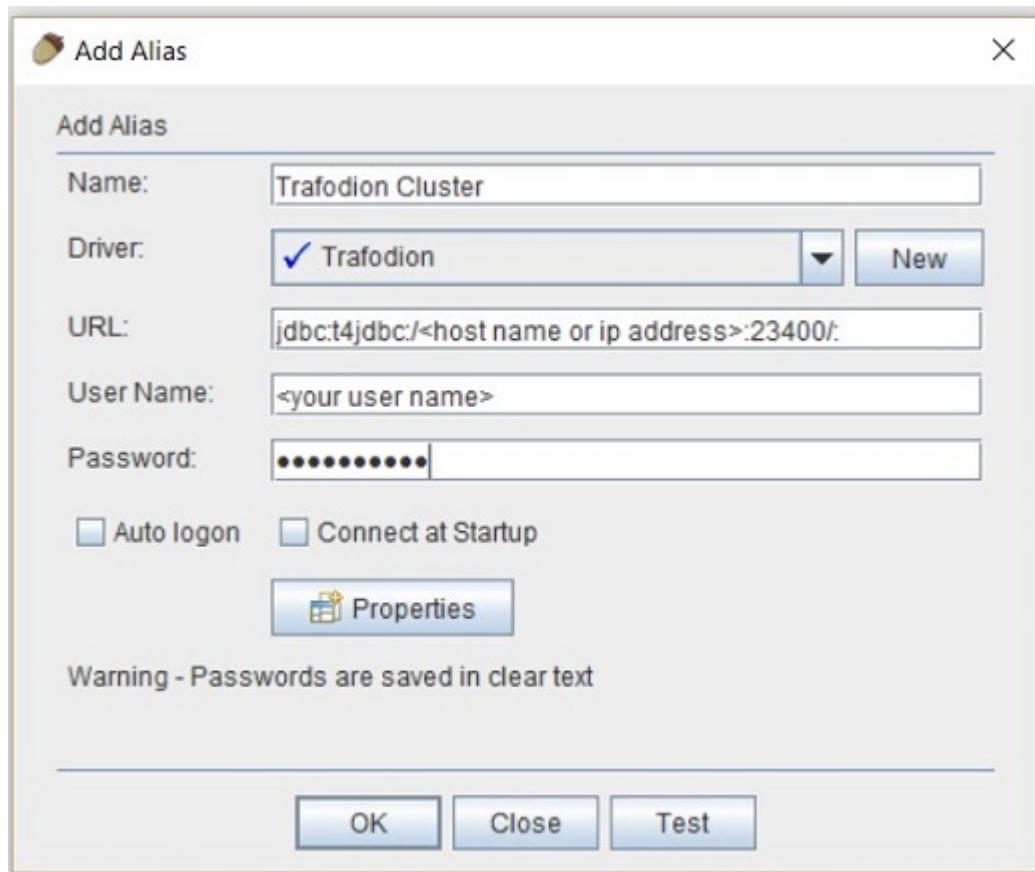
3. You will now be presented with a dialog to connect. Click on the **Connect** button and then issue a query to test the connection.

Chapter 8. Install Linux ODBC Driver

8.1. Installation Requirements

If you have not done so already, please ensure that you have unpackaged the Trafodion client software.

In addition, the ODBC driver for Linux requires `libgcc 3.4.3` and `libstd++ 6.0`.

If you are building ODBC applications, please use the preferred build platform, RedHat 6.x or CentOS 6.x.

The examples in this chapter assumes that you have unpackaged the JDBC Type for installation files to `$HOME/trafodion/odbc`.

8.2. Validate Install Directory

`$HOME/trafodion/odbc/PkgTmp` should contain:

```
connect_test.cpp
install.sh
libicudataNv44.so.44
libicuucNv44.so.44
libtrafodbc_l64.so
libtrafodbc_l64_drvr.so
LICENSE
license.txt
MD5SUM
TRAFDSN
```

By default, a new version of the Trafodion ODBC driver is installed in the following directories unless you specify a different directory during installation:

- `/usr/lib64`

- `/etc/odbc`

> The following header files are not packaged with the Trafodion ODBC driver:
>
> - `sql.h`
>
> - `sqlext.h`
>
> - `sqltypes.h`
>
> - `sqlucode.h`
>
> To install those header files, Set Up Client Environment below.

8.3. Install/Reinstall Linux ODBC Driver

> **ℹ** You must have root (`sudo`) access to install the Trafodion ODBC Driver for Linux at the default system location. If you don't have such access, the install the ODBC driver to an alternate location; for example: `$HOME/trafodion/odbc`.

1. Install the product by entering these commands:

   With `sudo` Access

   ```
   cd $HOME/trafodion/odbc/PkgTmp
   sudo ./install.sh
   ```

   Without `sudo` Access

   ```
   cd $HOME/trafodion/odbc/PkgTmp
   ./install.sh
   ```

   Except for the sample file, the `install.sh` script saves a copy (`.SAV`) of your previous installation files if they exist.

2. Accept the terms of the license agreement by entering **yes**.

   > **ℹ** Don't use environmental variables when specifying alternative location. Instead, use the full path. For example, specify `/opt/user/trafodion/odbc` instead of `$HOME/trafodion/odbc`.

3. Enter a directory for the library files, or press Enter to use the default directory (`/usr/lib64`).

4. Enter a directory for the data-source template file, or press **Enter** to use the default directory (`/etc/odbc`).

5. Enter a directory for the sample program, or press **Enter** to use the default directory (`/etc/odbc`).

6. If you installed the library files, data-source template file, and the sample program in an alternative location, then verify the directory content:

8.3.1. Set Up Client Environment

If you selected default options during installation, ensure that:

- The libraries are located in the `/usr/lib64` directory.

- A `TRAFDSN` file is in the `/etc/odbc` directory.

If you select non-default locations during installation, ensure that the files are installed in the directories that you specified during installation:

```
$ cd $HOME/trafodion/odbc
$ ls
connect_test.cpp   libicuuc.so        libtrafodbc_drvr64.so      libtrafodbc_l64.so
PkgTmp
libicudata.so      libicuuc.so.44     libtrafodbc_l64_drvr.so    libtrafodbc_l64.so.1
TRAFDSN
libicudata.so.44   libtrafodbc64.so   libtrafodbc_l64_drvr.so.1  MD5SUM


$
```

The driver expects the `TRAFDSN` file to be present in either the default location (`/etc/odbc`) or the current working direct or (`CWD`) of the application. As a best practice, copy the `TRAFDSN` file to the application directory.

Edit the `TRAFDSN` file. Make changes to the `Default_DataSource` section. At a minimum, change the value for `Server` to the address of the host you are connecting to.

Before

```
[Default_DataSource]
Description                 = Default Data Source
Catalog                     = TRAFODION
Schema                      = SEABASE
DataLang                    = 0
FetchBufferSize             = SYSTEM_DEFAULT
Server                      = TCP:1.2.3.4:23400
SQL_ATTR_CONNECTION_TIMEOUT = SYSTEM_DEFAULT
SQL_LOGIN_TIMEOUT           = SYSTEM_DEFAULT
SQL_QUERY_TIMEOUT           = NO_TIMEOUT
```

After

```
[Default_DataSource]
Description                   = Default Data Source
Catalog                      = TRAFODION
Schema                       = SEABASE
DataLang                     = 0
FetchBufferSize              = SYSTEM_DEFAULT
Server                       = TCP:node01.host.com:23400
SQL_ATTR_CONNECTION_TIMEOUT  = SYSTEM_DEFAULT
SQL_LOGIN_TIMEOUT            = SYSTEM_DEFAULT
SQL_QUERY_TIMEOUT            = NO_TIMEOUT
```

If you are building ODBC applications, you need to install these header files in your build environment:

- `sql.h`

- `sqlext.h`

- `sqltypes.h`

- `sqlucode.h`

To install those header files from the latest packages, run this `yum` command:

```
sudo yum -y install libiodbc libiodbc-devel
```

The `yum` command automatically installs the header files in the `/usr/include` and `/usr/include/libiodbc`
directories.

8.3.2. Enable Compression

When compression is enabled in the ODBC driver, the ODBC driver can send and receive large volumes of data quickly and efficiently to and from the Trafodion Database Connectivity Services (DCS) server over a TCP/IP network. By default, compression is disabled.

To enable compression in the ODBC driver or to change the compression setting, follow these steps:

- If you are using the Trafodion ODBC driver manager, add

```
Compression = compression-level
```

to the `DSN` section of `TRAFDSN` file.

- If you are using a third-party driver manager, such as unixODBC, add

```
Compression = compression-level
```

to the `DSN` section of the `odbc.ini` file.

The `compression-level` is one of these values:

- `SYSTEM_DEFAULT`, which is the same as no compression
- `no compression`
- `best speed`
- `best compression`
- `balance`
- An integer from `0` to `9`, with `0` being `no compression` and `9` being the `maximum available compression`

Example

```
[Default_DataSource]
Description                   = Default Data Source
Catalog                      = TRAFODION
Schema                       = SEABASE
DataLang                     = 0
FetchBufferSize              = SYSTEM_DEFAULT
Server                       = TCP:node01.host.com:23400
SQL_ATTR_CONNECTION_TIMEOUT  = SYSTEM_DEFAULT
SQL_LOGIN_TIMEOUT            = SYSTEM_DEFAULT
SQL_QUERY_TIMEOUT            = NO_TIMEOUT
Compression                  = Best Compression
```

8.4. Use Third-Party Driver Manager

> ℹ️ For better performance, we recommend that you use at least version `2.3.x` of unixODBC.

- If you are using an external driver manager, then you must point to `libtrafodbc_drvr64.so` and not to `libtrafodbc64.so`.

- The driver, `libtrafodbc_l64_drvr.so`, has been verified with iODBC and unixODBC driver managers.

- These driver managers, as well as documentation, can be found at these Web sites:

    - http://www.iodbc.org/

    - http://www.unixodbc.org/

- For information on the necessary data-source configuration options, you will need to add to the respective configuration files (for example, to `odbc.ini`).

8.5. Run Sample Program (`connect_test`)

ℹ️ The examples after each step assume that you have default installation directories.

If you have a previous version of the Trafodion ODBC driver installed, you need to re-link your existing application to ensure that you pick up the correct version of the driver. If you are unsure of the version, check the version of your application with this command:

```
ldd object-file
```

1. Move to the directory where you installed the sample program:

```
cd /etc/odbc
```

2. Set the environment variable `LD_LIBRARY_PATH`:

```
export LD_LIBRARY_PATH=<path-to-odbc-library-files or /usr/lib64>
```

   Example

```
export LD_LIBRARY_PATH=/usr/lib64
```

3. In the `/etc/odbc/TRAFDSN` file, add the correct IP address to the `Server` parameter for the `Default_DataSource`.

   Example (connecting to `node01.host.com:23400`)

```
[Default_DataSource]
Description                 = Default Data Source
Catalog                    = TRAFODION
Schema                     = SEABASE
DataLang                   = 0
FetchBufferSize            = SYSTEM_DEFAULT
Server                     = TCP:node01.host.com:23400
SQL_ATTR_CONNECTION_TIMEOUT = SYSTEM_DEFAULT
SQL_LOGIN_TIMEOUT          = SYSTEM_DEFAULT
SQL_QUERY_TIMEOUT          = NO_TIMEOUT
Compression                = Best Compression
```

4. Compile the sample program.

   Default Installation

   ```
   g++ -g connect_test.cpp -L/usr/lib64 -I/usr/include/odbc -ltrafodbc64 -o
   connect_test
   ```

   Alterntiave Installation

   ```
   g++ -g connect_test.cpp -L$HOME/trafodion/odbc -I/usr/include/odbc -ltrafodbc64 -o
   connect_test
   ```

5. Run the sample program:

   ```
   ./connect_test -d Default_DataSource -u username -p password
   ```

If the sample program runs successfully, you should see output similar to the following:

```
Using Connect String: DSN=Default_DataSource;UID=username;PWD=****;
Connect Test Passed...
```

8.6. Run Sample Program (`basicsql`)

> ℹ️ The Basic SQL sample program is not currently bundled with the ODBC Linux driver. To obtain the source code for this program, see `basicsql` (Sample ODBC Program).

If you have a previous version of the Trafodion ODBC driver installed, you need to re-link your existing application to ensure that you pick up the correct version of the driver.

If you are unsure of the version, check the version of your application with this command:

```
ldd object-file
```

1. Move to the directory where you put the `basicsql.cpp` file.

2. Set the environment variable `LD_LIBRARY_PATH`:

   ```
   export LD_LIBRARY_PATH=<path-to-odbc-driver-dlls>
   ```

3. In the `/etc/odbc/TRAFDSN` file, add the correct IP address to the `Server` parameter for the `Default_DataSource`. For example:

   Example (connecting to `node01.host.com:23400`)

   ```
   [Default_DataSource]
   Description                    = Default Data Source
   Catalog                        = TRAFODION
   Schema                         = SEABASE
   DataLang                       = 0
   FetchBufferSize                = SYSTEM_DEFAULT
   Server                         = TCP:node01.host.com:23400
   SQL_ATTR_CONNECTION_TIMEOUT    = SYSTEM_DEFAULT
   SQL_LOGIN_TIMEOUT              = SYSTEM_DEFAULT
   SQL_QUERY_TIMEOUT              = NO_TIMEOUT
   Compression                    = Best Compression
   ```

4. Compile the sample program.

    Default Installation

    ```
    g++ -g basicsql.cpp -L/usr/lib64 -I/usr/include/odbc -ltrafodbc64 -o basicsql
    ```

    Alerntiave Installation

    ```
    g++ -g basicsql.cpp -L$HOME/trafodion/odbc -I/usr/include/odbc -ltrafodbc64 -o
    basicsql
    ```

5. Run the sample program:

    ```
    ./basicsql Default_DataSource <username> <password>
    ```

If the sample program runs successfully, you should see output similar to the following:

```
Using Connect String: DSN=Default_DataSource;UID=user1;PWD=pwd1;
Successfully connected using SQLDriverConnect.
Drop sample table if it exists... Creating sample table TASKS...
Table TASKS created using SQLExecDirect.
Inserting data using SQLBindParameter, SQLPrepare, SQLExecute Data
Data inserted.
Fetching data using SQLExecDirect, SQLFetch, SQLGetData
Data selected: 1000 CREATE REPORTS 2014-3-22
Basic SQL ODBC Test Passed!
```

Chapter 9. Install odb

If you have not done so already, please ensure that you have unpackaged the Trafodion client software and setup the Trafodion Linux ODBC Driver.

The examples in this chapter assumes that you have unpackaged the odb installation file to `$HOME/trafodion/odb`.

9.1. odb Requirements

odb requires:

- pthread libraries (Generally installed by default)

- unixODBC. See installation instructions below.

9.2. Install and Configure unixODBC

This section explains how to install and configure `unixODBC`. Refer to the unixODBC documentation for additional configuration information.

1. Obtain the source code tar ball from http://www.unixodbc.org/ Use version 2.3.*x* or later.

2. Unpack the tar ball:

```
$ tar -xzvf unixODBC-2.3.1.tar.gz
```

3. Configure unixODBC installation (root access required):

```
$ cd unixODBC-2.3.1
$ sudo ./configure --disable-gui --enable-threads --disable-drivers
```

unixODBC is installed under `/usr/local`.

If you don't have root privileges or you want to install unixODBC somewhere else then `add`

`--prefix=<installation_path>` to the `configure` command here above.

Example - Install unixODBC in Alternate Location

```
$ ./configure --prefix=$HOME/trafodion/unixodbc --disable-gui --enable-threads
--disable-drivers
```

4. Compile unixODBC sources:

```
$ make
```

5. Install unixODBC:

```
$ make install
```

9.2.1. Configure unixODBC

1. Define environment variables.

2. Define data sources.

Start with the environment variables (which you can add to your profile script):

1. Set the `ODBCHOME` variable to the unixODBC installation directory (the one configured via `--prefix` here above).

   Example

   ```
   $ export ODBCHOME=$HOME/trafodion/unixodbc
   ```

2. Configure the system data sources directory (the one containing `odbc.ini` and `odbcinst.ini`). Normally, the `etc/` directory under `$ODBCHOME`:

   ```
   $ export ODBCSYSINI=$ODBCHOME/etc
   ```

3. Configure the `ODBCINI` variable to the full path of the `odbc.ini` file:

   ```
   $ export ODBCINI=$ODBCSYSINI/odbc.ini
   ```

4. Add the unixODBC lib directory to your `LD_LIBRARY_PATH` (Linux) or `LIBPATH` (IBM AIX) or `SHLIB_PATH` (HP/UX):

   ```
   $ export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:$ODBCHOME/lib
   ```

9.2.2. Configure Data Sources

odbc.ini

```
[ODBC]
AppUnicodeType=utf16

[<DATA_SOURCE_NAME>]
Description = DSN Description
Driver = <odbcinst.ini corresponding section>
...
Other (Driver specific) parameters
...
```

odbcinst.ini

```
[<Driver name in odbc.ini>]
Description = Driver description
Driver = <ODBC driver>
FileUsage = 1
UsageCount = 1
```

Trafodion Example

```
$ cat odbc.ini

[ODBC]
AppUnicodeType=utf16

[traf]
Description = traf DSN
Driver = Trafodion
Catalog = TRAFODION
Schema = QA
DataLang = 0
FetchBufferSize = SYSTEM_DEFAULT
Server = TCP:<server-name>:<port-no>
SQL_ATTR_CONNECTION_TIMEOUT = SYSTEM_DEFAULT
SQL_LOGIN_TIMEOUT = SYSTEM_DEFAULT
SQL_QUERY_TIMEOUT = NO_TIMEOUT
ServiceName = TRAFODION_DEFAULT_SERVICE

$ cat odbcinst.ini

[Trafodion]
Description = {project-name} ODBC Stand Alone Driver
Driver = /<dir-name>/conn/clients/odbc/libtrafodbc_drvr64.so
FileUsage = 1
UsageCount = 1

[ODBC]
Threading = 1
Trace = Off
Tracefile = uodbc.trc
$
```

The `Threading` setting is defined as follows (extracted from unixODBC sources `DriverManager/handles.c`):

```
/*
 * ...
 * If compiled with thread support the DM allows four different
 * thread strategies
 *

 * Level 0 - Only the DM internal structures are protected
 * the driver is assumed to take care of it's self
 *

 * Level 1 - The driver is protected down to the statement level
 * each statement will be protected, and the same for the connect
 * level for connect functions, note that descriptors are considered
 * equal to statements when it comes to thread protection.
 *

 * Level 2 - The driver is protected at the connection level. only
 * one thread can be in a particular driver at one time
 *

 * Level 3 - The driver is protected at the env level, only one thing
 * at a time.
 *

 * By default the driver open connections with a lock level of 0,
 * drivers should be expected to be thread safe now.
 * this can be changed by adding the line
 *

 * Threading = N
 *
 * to the driver entry in odbcinst.ini, where N is the locking level
 *
 */
```

9.3. Verify odb Installation

`$HOME/trafodion/odb` should contain the following files.

- `README`

- `/bin/odb64luo` (the odb executable)

See the Trafodion odb User Guide for information how to use odb.

9.4. Uninstall odb

To uninstall odb, delete the `README` and `/bin/odb64luo` files from their installed location.

Example

```
rm -rf $HOME/trafodion/odb
```

Chapter 10. Install Windows ODBC Driver

License issues prevent us from including the ODBC Driver for Windows in this release. Contact the Trafodion user e-mail list (user@trafodion.apache.org) for help obtaining the driver.

If you have not done so already, please ensure that you have unpackaged the unpackaged the Trafodion client software.

The examples in this chapter assumes that you have unpackaged the installation files to `c:\trafodion\odbc`.

10.1. Installation Requirements

Item	Requirement
Computer	Windows compatible PC workstation
Memory	Recommended minimum 32 MB
Disk Space	Minimum 30 MB additional free space
Operating System	x64 Edition of Microsoft Windows 7, Windows 8, Windows 10, or Windows Server 2008
Network Software	TCP/IP

10.2. Installation Instructions

To install the driver on your PC, you must be logged on with a user ID that has administrator privileges.

The ODBC client installation file (`c:\trafodion\odbc\TFODBC64-*.exe`) installs or links to multiple client components:

This client component…	Does this…
Microsoft ODBC Driver Manager	Manages access to ODBC drivers for applications. The driver manager loads and unloads drivers and passes calls for ODBC functions to the correct driver.
Trafodion ODBC driver	Implements ODBC function calls to enable an ODBC client application to access the Trafodion database.
Microsoft ODBC Administrator	Adds, configures, and removes ODBC data sources on client workstations.

By default, a new version of the ODBC driver is installed in this directory and its folders unless you specify a different directory during installation:

Default Installation Directory	Client Operating System
C:\Program Files\Trafodion\TRAF	ODBC *version* Windows 64-bit

To install the Trafodion ODBC driver, do the following:

1. Double-click the `TFODBC64-*.exe` distribution file to start the InstallShield wizard.

2. On the **Welcome** page, click **Next**.

3. Read and select the **I accept the agreement** radio button. Click **Next**.
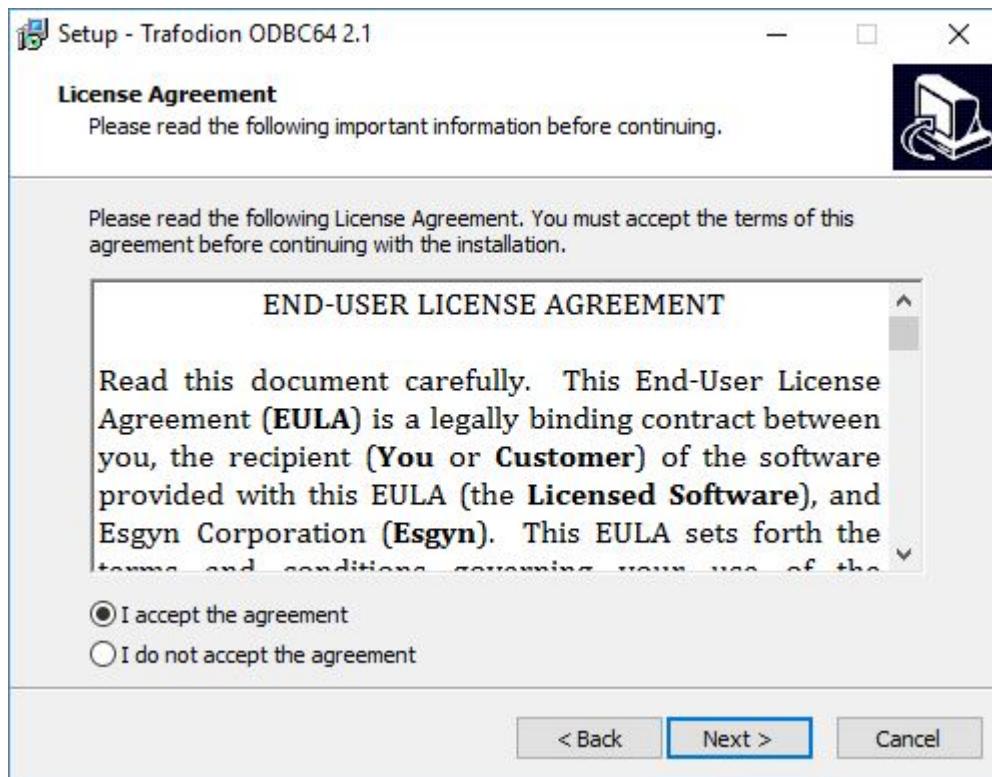
4. On the **Destination Folder** page, click **Install** to select the default location: `C:\Program Files\Trafodion\TRAF ODBC` *version*`\`
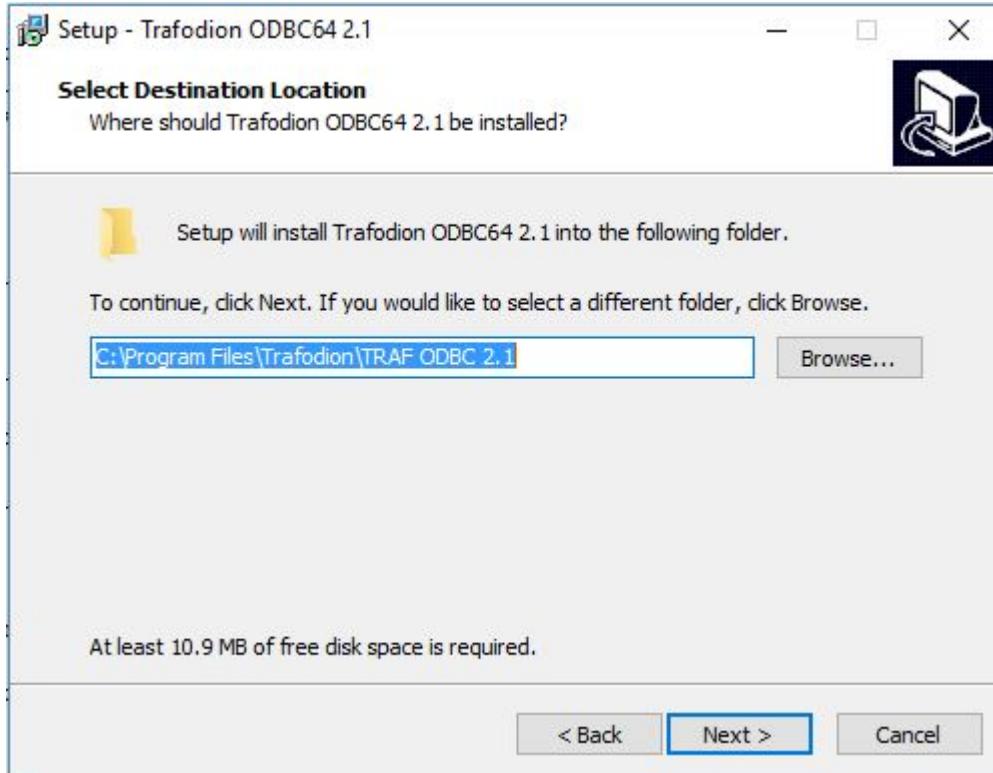

This location is the installation directory for ODBC header and help files. All other ODBC files are installed in `%SYSTEMROOT%\system32.`

5. Validate the Destination and click **Install**.
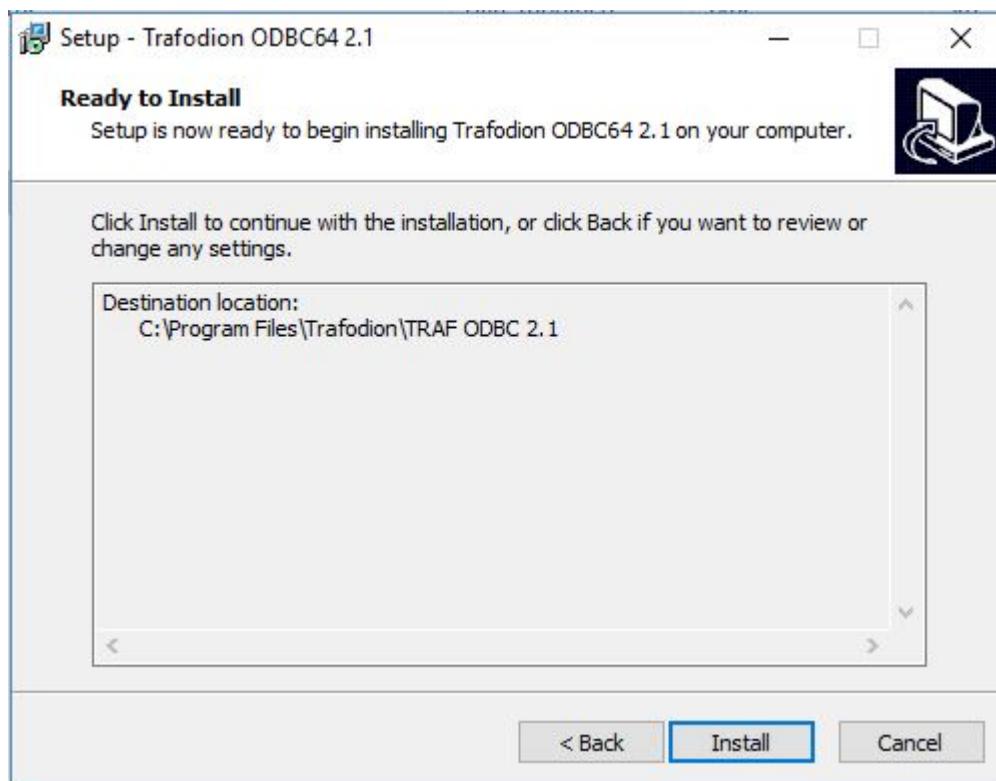
6. The Windows ODBC driver is installed. Click **Finish** to exit the installation wizard.

10.3. Set Up ODBC Data Source

1. Start the Microsoft ODBC Administrator:

    - On Windows 7: **Start > All Programs>Trafodion ODBC** *version* **> MS ODBC Administrator**

    - On Windows 8: **Start > Control Panel > System and Security > Administrative Tool > ODBC Data Sources (64-bit)**

    - On Windows 10: Click the Windows icon in the menu bar. Select **Control Panel**. Search for **Set up ODBC data sources (64-bit)**. Click on the found item.
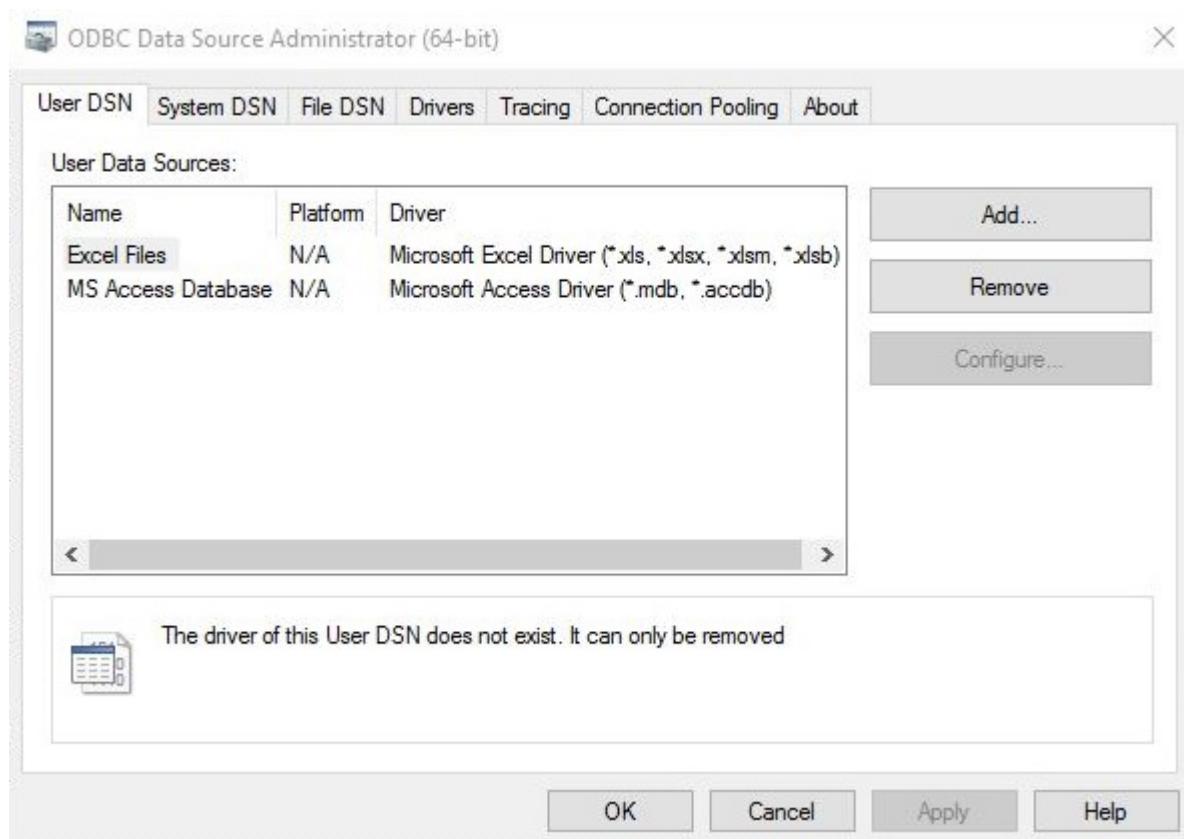
2. In the **ODBC Data Source Administrator** dialog box, click **Add**.
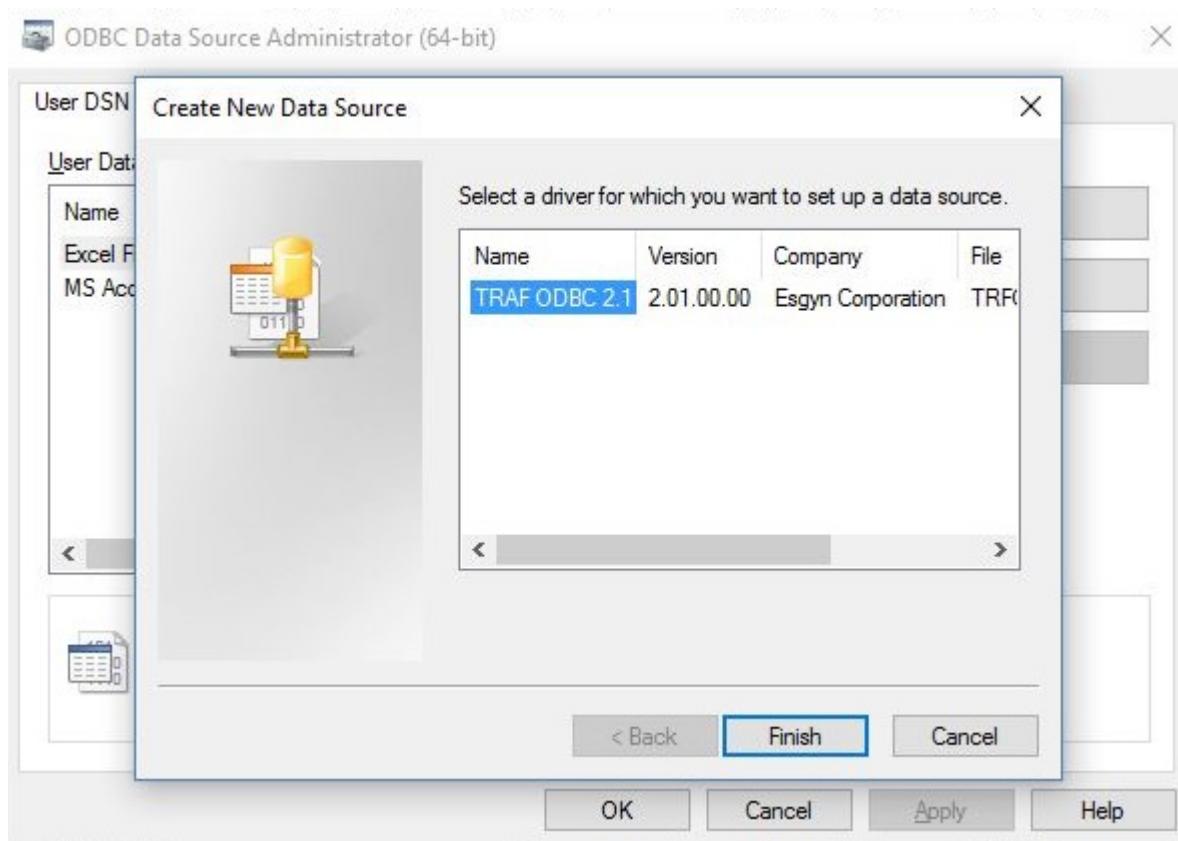
3. Select **TRAF ODBC** *version*, and then click **Finish** to start the **Create a New Trafodion ODBC Data Source** wizard.
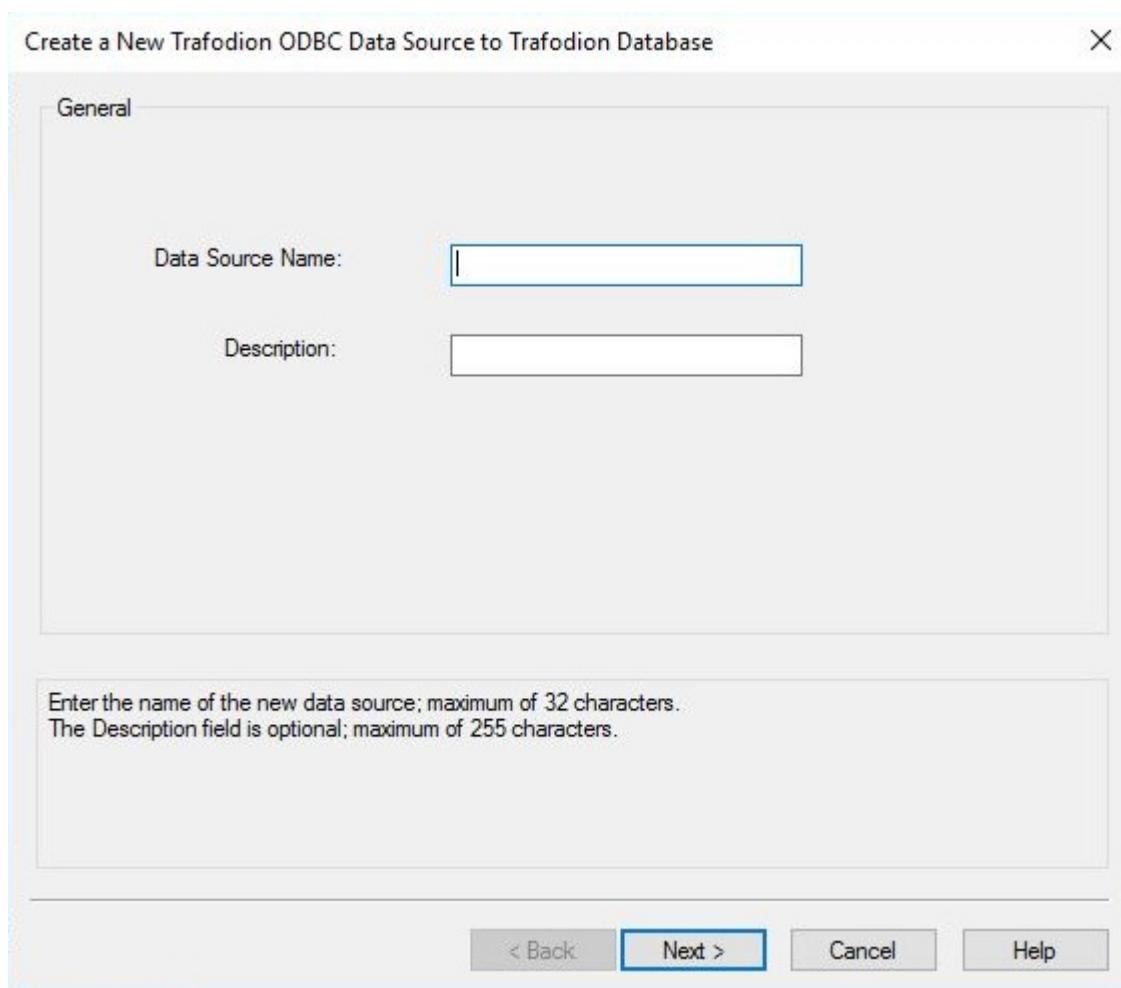
4. Enter the data source name (for example, `Default_DataSource_Schema1`) and an optional description, and click **Next**.
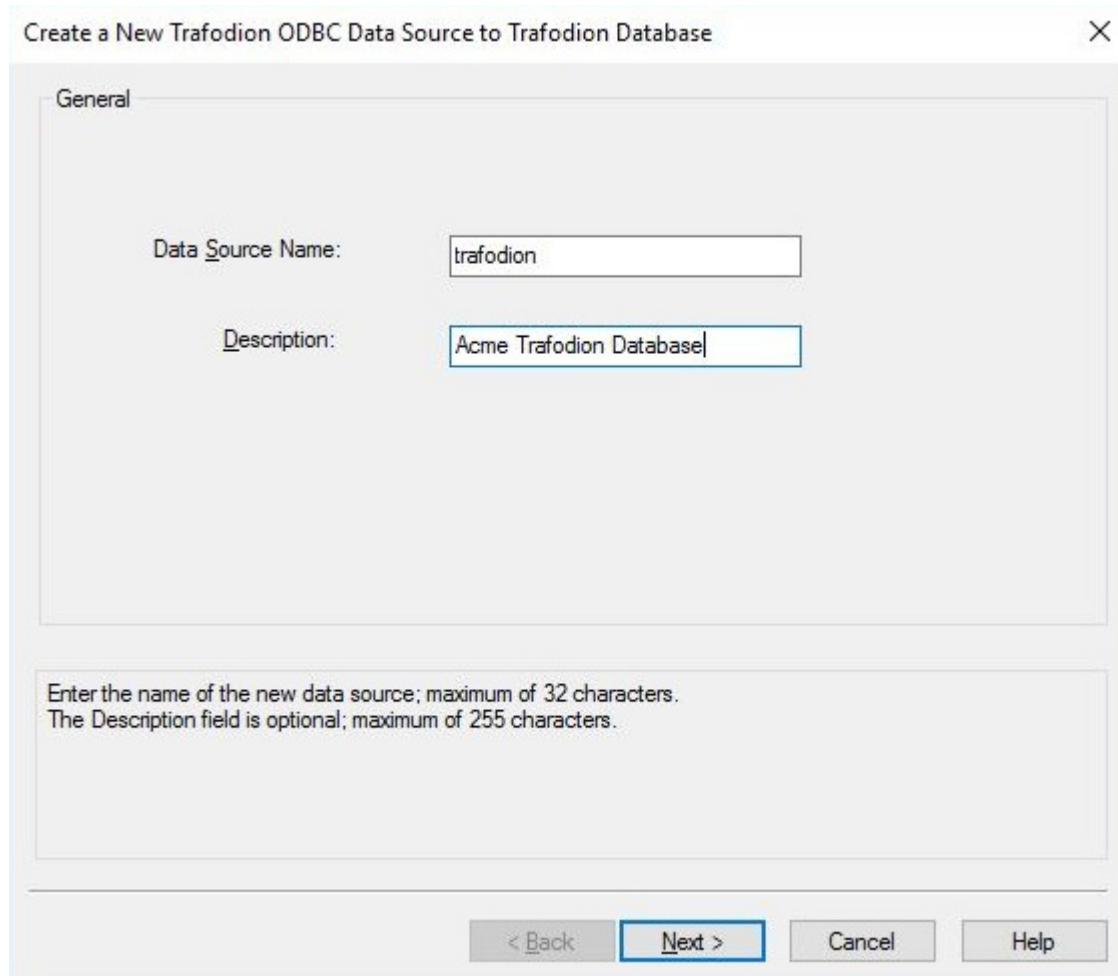
5. Enter the `IP address` or `host name` for the database platform. Enter the default port number as **23400**[1]. Leave the defaults as is, and click **Next**.
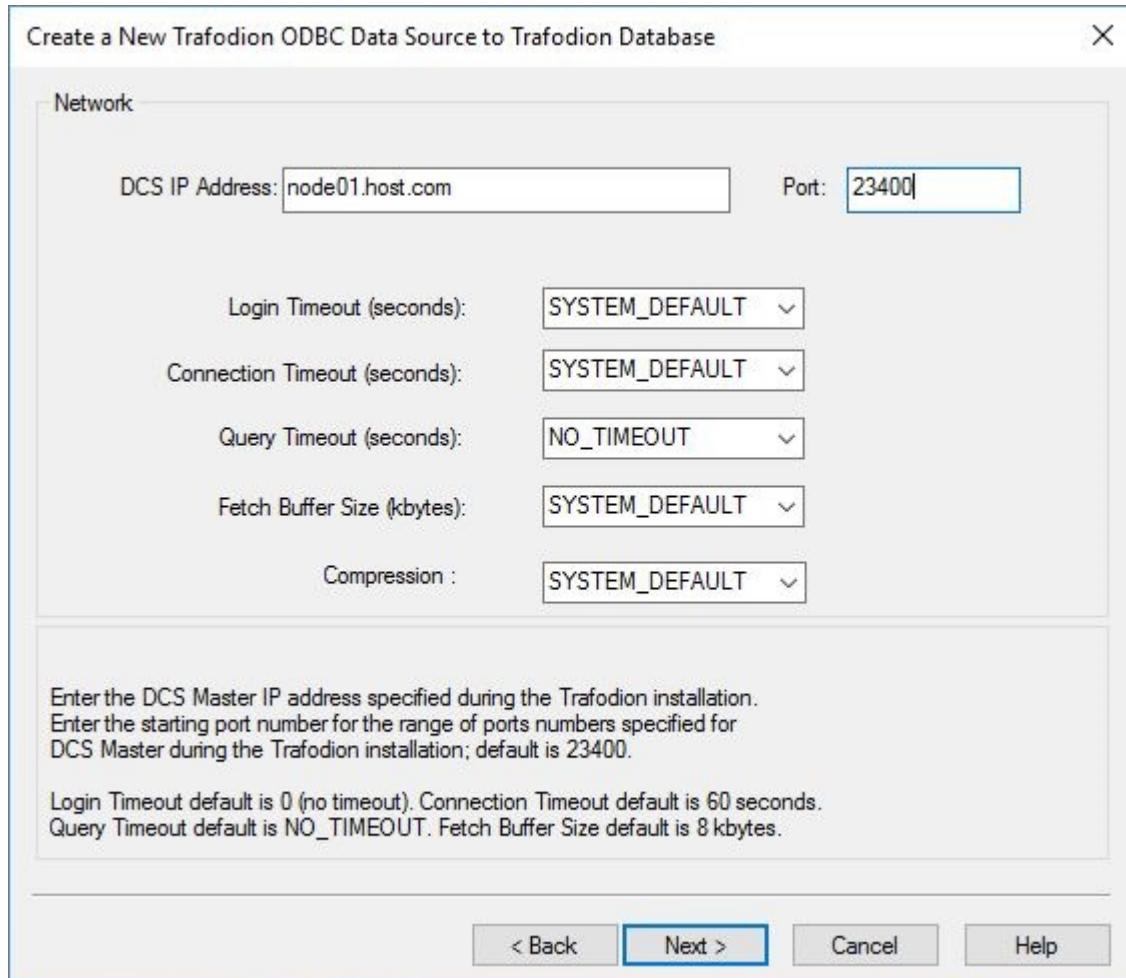
6. Enter the schema name. The default schema name is `SEABASE`. Click **Next**.
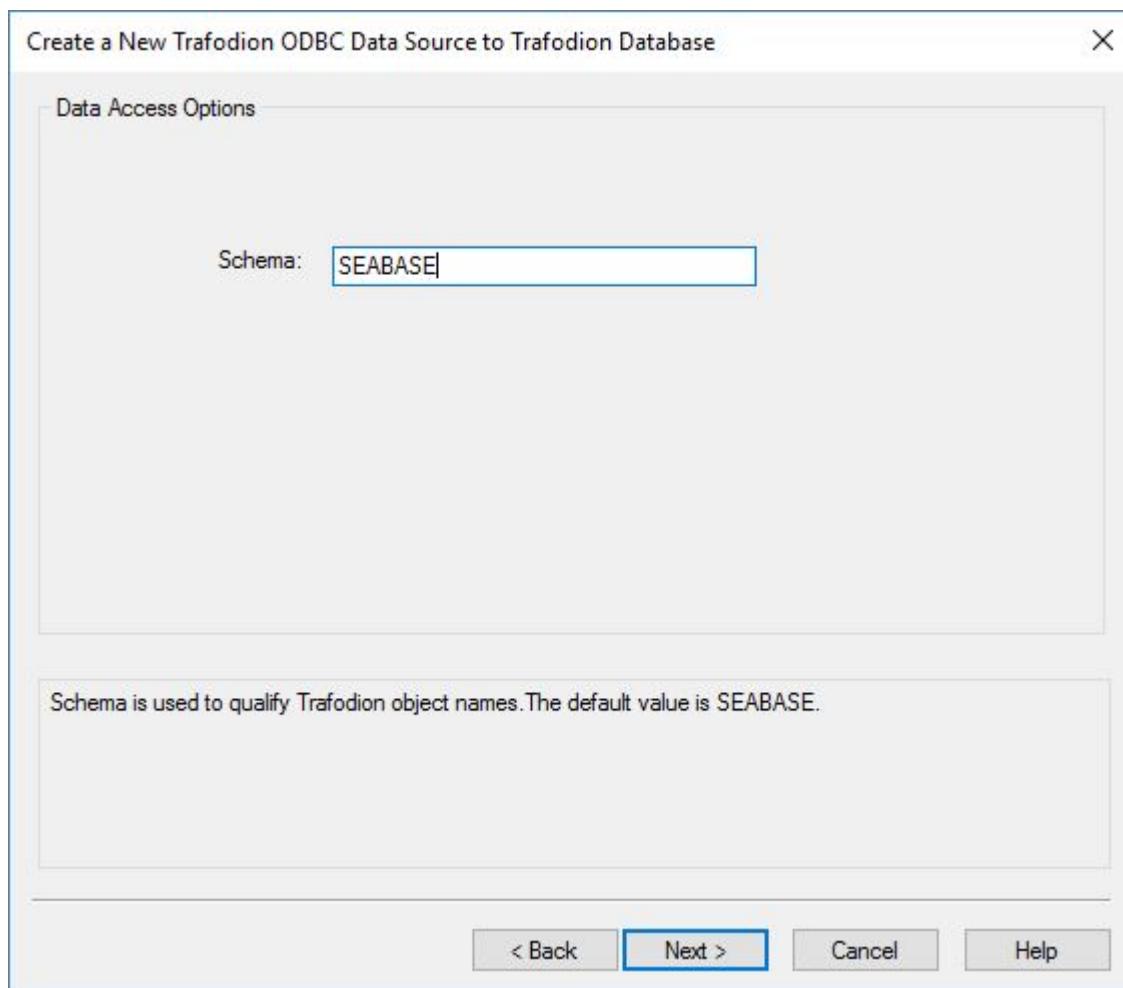
7. Enter the translate DLL name and its option, if you have one. If not, leave it blank. Leave the localization defaults as is.
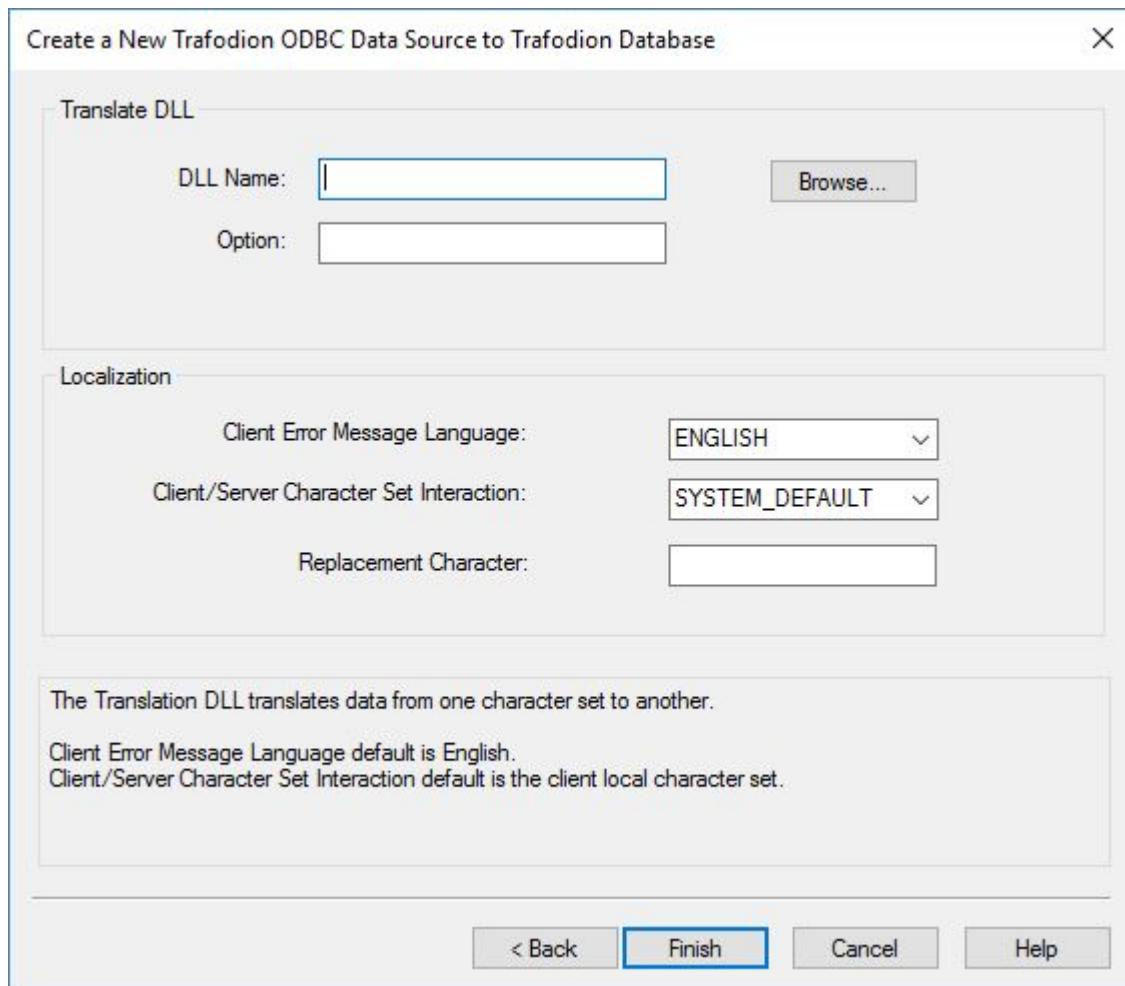
The Replacement Character replaces any character that is incompatible for translation when retrieving data. It is one character (one or two bytes long). The Replacement Character is assumed to be in the character set specified in the Client/Server Character Set Interaction. If it is not specified, ? is used as the default.

Click **Finish**.

8. The wizard gives you an opportunity to test the connection. Click **Test Connection** and click **OK**.

9. The server ID and schema are filled in for you. Enter a valid user name and password, and click **OK**.
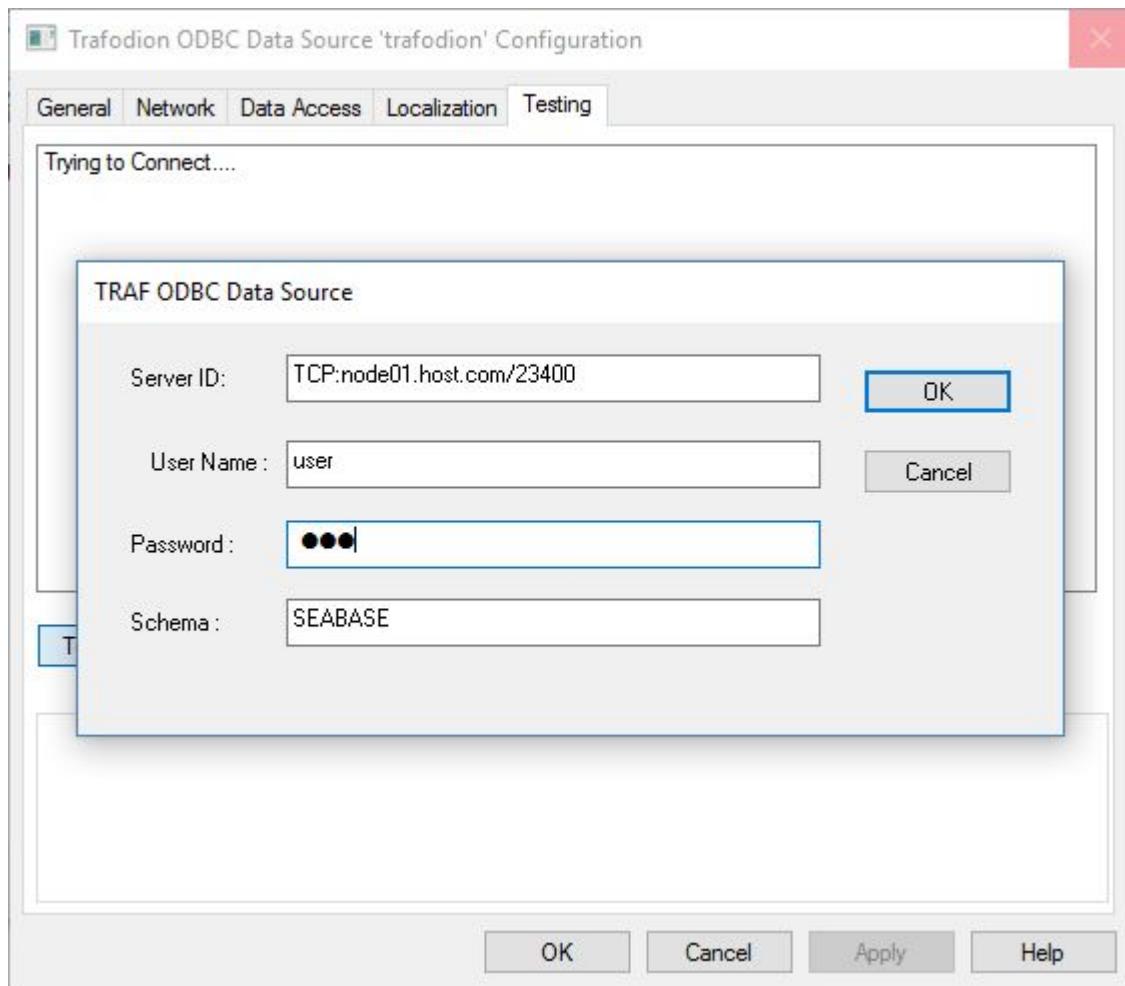
The wizard attempts to connect to the data source and displays a message stating whether it was successful or not.

10. Click **OK** to save the data source, or click **Cancel** *twice* to quit the **Create Data Source** wizard.

[1] Your specific installation may use a different port number. Check with your Trafodion administrator.

10.3.1. Enable Compression

When compression is enabled in the ODBC driver, the ODBC driver can send and receive large volumes of data quickly and efficiently to and from the Trafodion Database Connectivity Services (DCS) server over a TCP/IP network. By default, compression is disabled.

To enable compression in the ODBC driver or to change the compression setting, follow these steps:

1. Launch the MS ODBC Administrator.

   - On Windows 7: **Start > All Programs > Trafodion ODBC** *version* **> MS ODBC Administrator**

   - On Windows 8: **Start > Control Panel > System and Security > Administrative Tools > ODBC Data Sources (64-bit)**

   - On Windows 10: Right-click the Windows icon in the menu bar. Select **Control Panel**. Search for **Set up ODBC data sources (64-bit)**. Click on the found item.

2. In the **ODBC Data Source Administrator** dialog box, select the **User DSN** tab, select the name of your data source under **User Data Sources**, and click **Configure**. If you did not create a data source, please refer to Setting Up the Client Environment.

   A new dialog box appears, showing the configuration of your data source.

3. Select the **Network** tab, and then select one of these values for **Compression**:

   - `SYSTEM_DEFAULT`, which is the same as no compression

   - `no compression`

   - `best speed`

   - `best compression`

   - `balance`

   - An integer from 0 to 9, with 0 being no compression and 9 being the maximum available compression

4. Click **OK** to accept the change.

5. Click **OK** to exit the **ODBC Data Source Administrator** dialog box.

10.4. Run Sample Program (`basicsql`)

🛈 The Basic SQL sample program is not currently bundled with the ODBC Windows driver. To obtain the source code and the build and run files for this program, please refer to ODBC Sample Program.

To build and run the executable file, follow these steps:

1. Open a Visual Studio x64 Win64 Command Prompt. Make sure to select the x64 version of the command prompt. For example, on Windows 7, select **Start>All Programs>Microsoft Visual Studio 2010>Visual Studio Tools>Visual Studio x64 Win64 Command Prompt**.

2. At the command prompt, move to the directory where you put the `basicsql.cpp` and build files.

3. Run build at the command prompt. You will see `basicsql.exe` created in the same directory as the source file.

4. Before running the sample program, create a Trafodion data source named `Default_DataSource` on the client workstation using MS ODBC Administrator. For instructions, please refer to Set Up Client Environment.

5. From the command prompt, run the sample program by entering either run or this command:

```
basicsql DefaultDataSource <username> <password>
```

If the sample program executes successfully, you should see this output:

Example

```
Using Connect String: DSN=Default_DataSource;UID=user1;PWD=pwd1;
Successfully connected using SQLDriverConnect.
Drop sample table if it exists...
Creating sample table TASKS...
Table TASKS created using SQLExecDirect.
Inserting data using SQLBindParameter, SQLPrepare, SQLExecute
Data inserted.
Fetching data using SQLExecDirect, SQLFetch, SQLGetData
Data selected: 1000 CREATE REPORTS 2014-3-22
Basic SQL ODBC Test Passed!
```

10.5. Reinstall Windows ODBC Driver

To reinstall the driver, we recommend that you fully remove your ODBC driver and then install the new version. Please refer to Uninstalling the Trafodion ODBC Driver for Windows and then Installing the Trafodion ODBC Driver for Windows.

10.6. Uninstalling Windows ODBC Driver

1. Start to remove the ODBC driver:

   - On Windows 7: **Start > All Programs>Trafodion ODBC** *version* **> Remove TRAF ODBC** *version*

   - On Windows 8: **Start** > **Control Panel** > **Uninstall a program** > Locate **Trafodion ODBC64** *version* > **Uninstall Trafodion ODBC64** *version*

   - On Windows 10: Right-click the Windows icon in the menu bar. Select **Control Panel**. Click on **Apps and features**. Locate **Trafodion ODBC64** *version* and right-click it. Select **Uninstall**.

2. When the **Windows Installer** dialog box asks you if you want to uninstall this product, click **Yes**.

3. The **Trafodion ODBC** *version* dialog box displays the status and asks you to wait while `Windows configures Trafodion ODBC` *version* (that is, removes the Trafodion ODBC Driver from your Windows workstation).

   After this dialog box disappears, Trafodion ODBC *version* is no longer on your workstation.

   > Uninstalling the ODBC driver does not remove pre-existing data source definitions from the Windows registry.

Chapter 11. Configure Tableau Client

11.1. Prerequisite Software

Make sure that you have this software installed on your workstation:

- Trafodion Windows ODBC Driver. See Install Windows ODBC Driver.

- Tableau Software. See the *Tableau website*.

11.2. Tableau Datasource Configuration (.tdc) File

11.2.1. Create .tdc File

The Tableau Datasource Configuration (.tdc) file is used to customize and tune ODBC connections.

> You can download each sample documented herein by clicking the link provided with the sample name. For example, click on trafodion.tdc to download a .tdc file for Tableau 9.3 using Trafodion ODBC 2.1.
>
> You can access the complete source directory at:
> http://trafodion.apache.org/docs/client_install/resources/tableau/

The .tdc file contains version-specific settings that you need to modify.

<div align="center">Template: <code>trafodion.tdc.template</code></div>

```xml
<?xml version='1.0' encoding='utf-8' ?>
<connection-customization class='genericodbc' enabled='true' version='<tableau-version
>' dbname='TRAFODION' odbc-native-protocol='yes' odbc-use-connection-pooling='yes'>
  <vendor name='Trafodion' />
  <driver name='<trafodion-driver-name>' />
  <customizations>
    <customization name='CAP_ISOLATION_LEVEL_SERIALIZABLE' value='no'/>
    <customization name='CAP_ISOLATION_LEVEL_READ_UNCOMMITTED' value='yes' />
    <customization name='CAP_SET_ISOLATION_LEVEL_VIA_ODBC_API' value='no' />
    <customization name='CAP_CREATE_TEMP_TABLES' value='no' />
    <customization name='CAP_SUPPRESS_DISCOVERY_QUERIES' value='yes' />
    <customization name='CAP_ODBC_METADATA_SUPPRESS_PREPARED_QUERY' value='yes' />
    <customization name='CAP_ODBC_METADATA_SUPPRESS_SELECT_STAR' value='yes' />
    <customization name='CAP_ODBC_METADATA_SUPPRESS_EXECUTED_QUERY' value='yes' />
    <customization name='CAP_ODBC_METADATA_SUPRESS_SQLSTATISTICS_API' value='yes' />
  </customizations>
</connection-customization>
```

Save this file as `trafodion.tdc` and change the following placeholders:

- `<tableau-version>` - Change to the version of Tableau you're using. For example: `9.3`

- `<trafodion-driver-name>` - Change to the name of the Trafodion ODBC driver you're using. For example: `TRAF ODBC 2.1`

Once edited, your `trafodion.tdc` file should look similar to the example below.

<div align="center">Example: <code>trafodion.tdc</code></div>

```xml
<?xml version='1.0' encoding='utf-8' ?>
<connection-customization class='genericodbc' enabled='true' version='9.3' dbname=
'TRAFODION' odbc-native-protocol='yes' odbc-use-connection-pooling='yes'>
  <vendor name='Trafodion' />
  <driver name='TRAF ODBC 2.1' />
  <customizations>
    <customization name='CAP_ISOLATION_LEVEL_SERIALIZABLE' value='no'/>
    <customization name='CAP_ISOLATION_LEVEL_READ_UNCOMMITTED' value='yes' />
    <customization name='CAP_SET_ISOLATION_LEVEL_VIA_ODBC_API' value='no' />
    <customization name='CAP_CREATE_TEMP_TABLES' value='no' />
    <customization name='CAP_SUPPRESS_DISCOVERY_QUERIES' value='yes' />
    <customization name='CAP_ODBC_METADATA_SUPPRESS_PREPARED_QUERY' value='yes' />
    <customization name='CAP_ODBC_METADATA_SUPPRESS_SELECT_STAR' value='yes' />
    <customization name='CAP_ODBC_METADATA_SUPPRESS_EXECUTED_QUERY' value='yes' />
    <customization name='CAP_ODBC_METADATA_SUPRESS_SQLSTATISTICS_API' value='yes' />
  </customizations>
</connection-customization>
```

11.2.2. Install .tdc File

Copy the `trafodion.tdc` file to the `C:\Users\%USERNAME%\Documents\My Tableau Repository\Datasources` folder.

Restart Tableay if it's running to pick up the configuration change.

11.3. Connnect to Trafodion

1. Configure a ODBC data source using the MS ODBC Administrator. See Set Up ODBC Data Source.

2. Start Tableau.

3. Create a **New Database Connection** by selecting **Other Databases (ODBC)**.

4. Select your data source in the **DSN** dropdown.

5. Enter **Trafodion** in the **Database:** field.

6. Enter your **Username** and **Password**.

7. Click **OK** to connect to your Trafodion database.
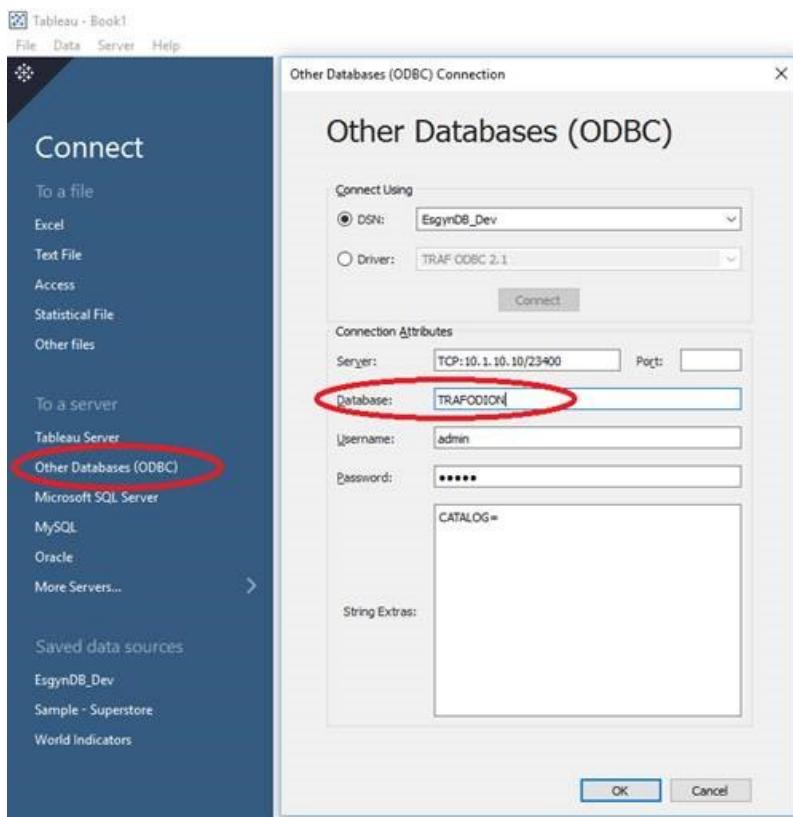
Chapter 12. How To

12.1. Set Up Path Variable

You need to update your PATH variable for Java and the Trafodion clients. The examples below show how to add Java to your PATH variable. The process is similar for the different Trafodion clients.

> You typically point the PATH variable to the `bin` directory, if it exists. Otherwise, you point the PATH variable to the directory containing the client executable. The examples below point to the Java `bin` directory.

12.1.1. Set PATH Variable on Windows

Windows 10

1. Right-click on the Windows icon on the menu bar. Select **System**.

2. Click on **Advanced System Settings**.

3. In the **System Properties** dialog box, click the **Advanced** tab.

4. Click the **Environment Variables** button.

5. Under **System** variables, select the variable named **Path**, and then click **Edit. . .**:

Edit environment variable   ✕

C:\ProgramData\Oracle\Java\javapath	New
C:\Program Files (x86)\Intel\iCLS Client\	Edit
C:\Program Files\Intel\iCLS Client\	
%SystemRoot%\system32	Browse...
%SystemRoot%	
%SystemRoot%\System32\Wbem	Delete
%SYSTEMROOT%\System32\WindowsPowerShell\v1.0\	
C:\Program Files\Hewlett-Packard\SimplePass\	
C:\Program Files\Google\Google Apps Sync\	
C:\Program Files (x86)\Windows Live\Shared	Move Up
C:\Program Files (x86)\Intel\Intel(R) Management Engine Component...	
C:\Program Files\Intel\Intel(R) Management Engine Components\DAL	Move Down
C:\Program Files (x86)\Intel\Intel(R) Management Engine Component...	
C:\Program Files\Intel\Intel(R) Management Engine Components\IPT	
C:\Program Files (x86)\Pandoc\	Edit text...

OK   Cancel
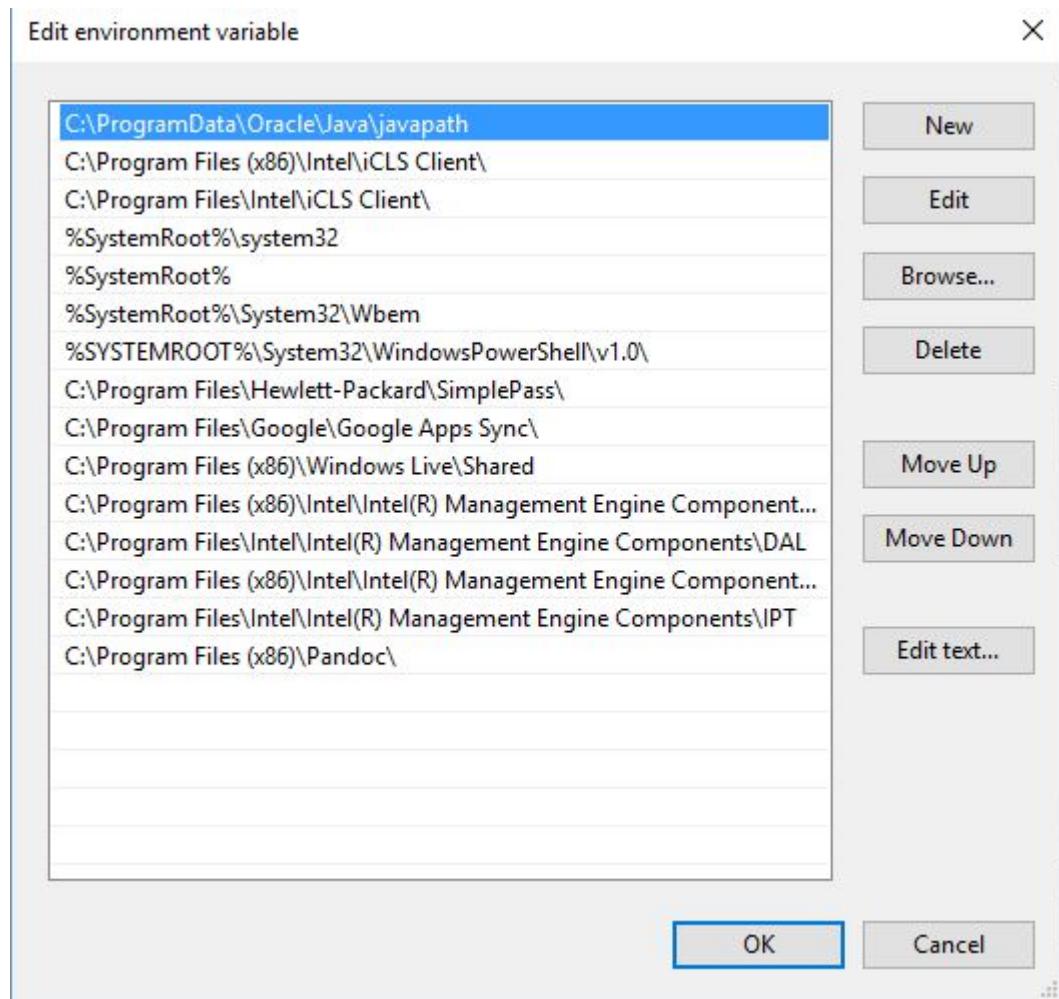
6. Click **Browse. . ..** Find the directory where you installed Java or the Trafodion client. Select the `bin` directory as applicable.
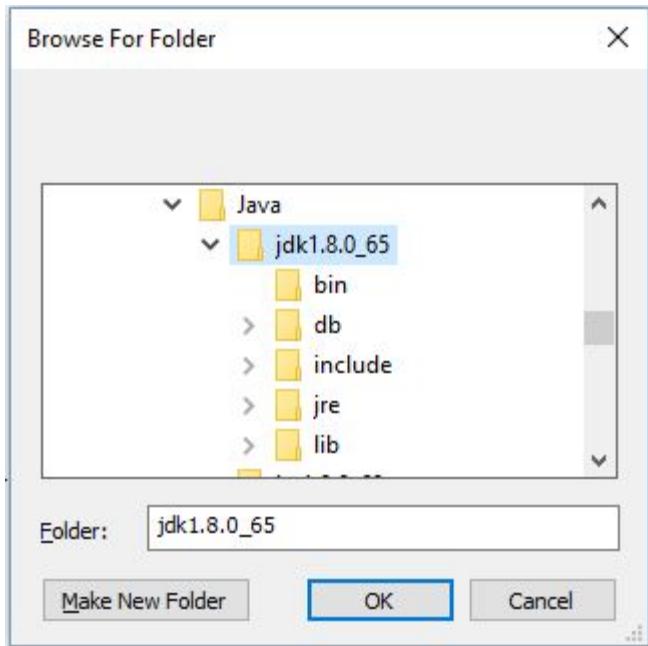

7. Click **OK** to close the browse window. Click **OK** to close the edit window.

8. Verify that the updated **Path** appears under **System** variables, and click **OK**.

9. In the **System Properties** dialog box, click **OK** to accept the changes.

Windows 8

1. Right-click the **Computer** icon on your desktop, and then select **Properties**. The **Control Panel > System and Security > System** window appears.

2. In the left navigation bar, click the **Advanced** system settings link.

3. In the **System Properties** dialog box, click the **Environment Variables** button.

4. Under **System** variables, select the variable named **Path**, and then click **Edit**:
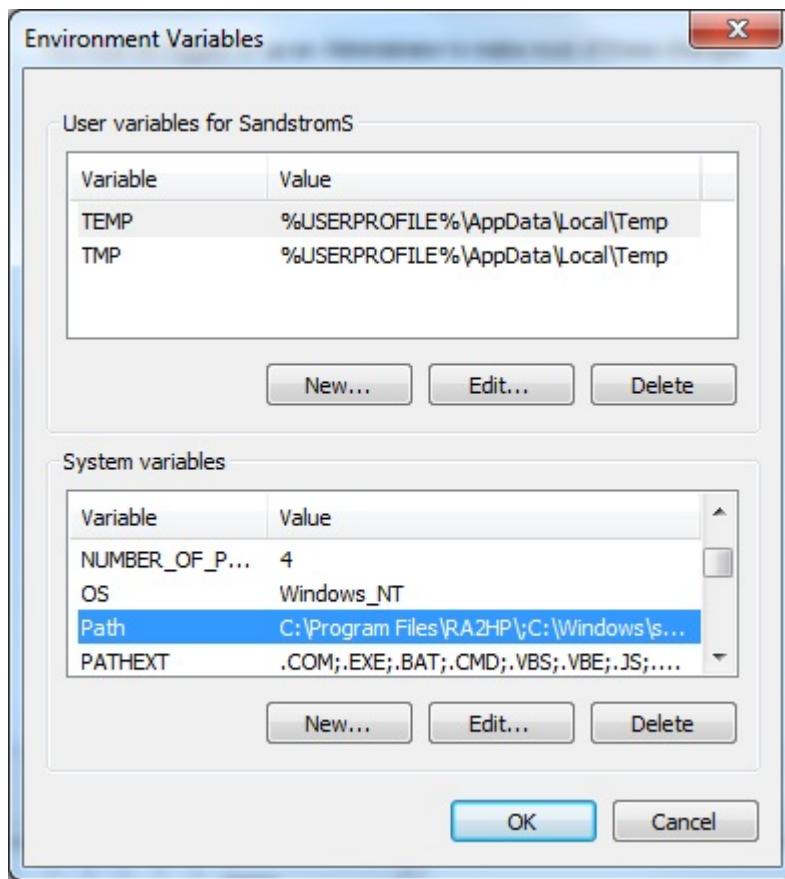
5. Place the cursor at the start of the **Variable** value field and enter the path of the Java or Trafodion client `bin` directory, ending with a semicolon (;):
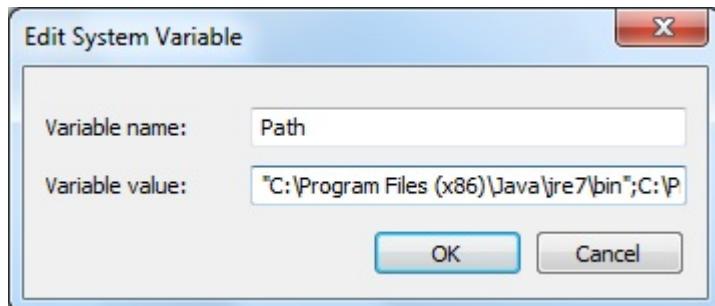
Example

```
"c:\Program Files (x86)\Java\jre7\bin";
```

> ℹ️ Check that no space exists after the semicolon (;) in the path. If there are spaces in the directory name, delimit the entire directory path in double quotes (") before the semicolon.

6. Click **OK**.

7. Verify that the updated **Path** appears under **System** variables, and click **OK**.

8. In the **System Properties** dialog box, click **OK** to accept the changes.

For a full installation, a sample PATH variable may contain:

```
SET PATH=%PATH%;C:\Program Files\Java\jre1.8.0_101\;C:\trafodion\trafci\bin\;
```

12.1.2. Set PATH Variable on Linux

1. Open the user profile (`.profile` or `.bash_profile` for the Bash shell) in the `$HOME` directory.

```
cd $HOME
vi .profile
```

2. In the user profile, set the `PATH` environment variable to include the path of the Java or Trafodion client `bin` directory.

```
export PATH=$PATH:/usr/lib/jvm/java-1.7.0/bin
```

> ℹ️ Place the path of the Java bin directory after `$PATH` separated by colon (`:`).

3. To activate the changes, either log out and log in again or source in the user profile.

```
source profile
```

For a full installation, a sample PATH variable may contain:

```
export PATH=$PATH:/usr/lib/jvm/java-1.7.0/bin:/opt/user/trafodion/trafci/bin
```

12.1.3. Verify PATH Variable

Ensure that you can access the Java or Trafodion client from the command line.

Examples

Display the Java version.

```
c:\trafodion> java -version

java version "1.7.0_45" # This is the version you need to check
Java(TM) SE Runtime Environment (build 1.7.0_45-b18)
Java HotSpot(TM) Client VM (build 24.45-b08, mixed mode, sharing)
c:\trafodion>
```

Display the trafci version.

```
c:\trafodion> trafci -version

Welcome to EsgynDB Enterprise Command Interface
Copyright (c) 2015-2016 Esgyn Corporation

JDBC Type 4 Driver Build ID : Traf_JDBC_Type4_Build_439d96b
Command Interface Build ID  : TrafCI_Build_439d96b

c:\trafodion>
```

If you cannot display the version information, then you need to check your PATH variable settings again.