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Teradata ODBC Driver for Presto

Installation and Configuration Guide

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About This Guide

Purpose

The *Teradata ODBC Driver for Presto Installation and Configuration Guide* explains how to install and configure the Teradata Presto ODBC Driver with SQL Connector. The guide also provides details related to features of the driver.

Audience

The guide is intended for end users of the Teradata Presto ODBC Driver, as well as administrators and developers integrating the driver.

Knowledge Prerequisites

To use the Teradata Presto ODBC Driver, the following knowledge is helpful:

- Familiarity with the platform on which you are using the Teradata Presto ODBC Driver
- Ability to use the data source to which the Teradata Presto ODBC Driver is connecting
- An understanding of the role of ODBC technologies and driver managers in connecting to a data source
- Experience creating and configuring ODBC connections
- Exposure to SQL

Document Conventions

Italics are used when referring to book and document titles.

Bold is used in procedures for graphical user interface elements that a user clicks and text that a user types.

Monospace font indicates commands, source code, or contents of text files.

Note:

This text box indicates a short note appended to a paragraph.

Important:

This text box indicates an important comment related to the preceding paragraph.

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About the Teradata Presto ODBC Driver

About Presto

Presto is a low latency distributed query engine capable of querying large datasets from multiple data sources using SQL. Presto is designed for short, interactive queries useful for data exploration.

The data sources that Presto supports include MySQL and PostgreSQL. Presto also integrates seamlessly with the Hive metastore to complement existing Hive environments with low latency queries. Unlike traditional RDBMS or SQL-on-Hadoop solutions that require centralized schema definitions, Presto can query self-describing data as well as complex or multi-structured data that is commonly seen in big data systems. Moreover, Presto does not require a fully structured schema and can support semi-structured or nested data types such as JSON.

Presto processes the data in record batches and discovers the schema during the processing of each record batch. Thus, Presto has the capability to support changing schemas over the lifetime of a query. Presto reconfigures its operators and handles these situations to ensure that data is not lost.

Note:

For information about connecting Presto to data sources, see the Presto documentation: <https://prestodb.io/docs/current/>.

About the Driver

The Teradata Presto ODBC Driver lets organizations connect their BI tools to Presto. Presto provides an ANSI SQL query layer and also exposes the metadata information through an ANSI SQL standard metadata database called INFORMATION_SCHEMA. The Teradata Presto ODBC Driver leverages INFORMATION_SCHEMA to expose Presto's metadata to BI tools as needed.

The driver complies with the ODBC 3.80 data standard, including important functionality such as Unicode and 32- and 64-bit support for high-performance computing environments on all platforms.

ODBC is one the most established and widely supported APIs for connecting to and working with databases. At the heart of the technology is the ODBC driver, which connects an application to the database. For more information about ODBC, see the *Data Access Standards Glossary*: <http://www.simba.com/resources/data-access-standards-library>. For complete information about the ODBC specification, see the *ODBC API Reference*: [http://msdn.microsoft.com/en-us/library/windows/desktop/ms714562\(v=vs.85\).aspx](http://msdn.microsoft.com/en-us/library/windows/desktop/ms714562(v=vs.85).aspx).

The Teradata Presto ODBC Driver is available for Microsoft® Windows®, Linux, and Mac OS X platforms.

The *Teradata ODBC Driver for Presto Installation and Configuration Guide* is suitable for users who are looking to access data residing within Presto from their desktop environment. Application developers may also find the information helpful. Refer to your application for details on connecting via ODBC.

Windows Driver

Windows System Requirements

Install the driver on client machines where the application is installed. Each machine that you install the driver on must meet the following minimum system requirements:

- One of the following operating systems:
 - Windows Vista, 7, 8, or 10
 - Windows Server 2008 or later
- 75 MB of available disk space
- Visual C++ Redistributable for Visual Studio 2013 installed (both 32- and 64-bit). You can download the installation packages at <https://www.microsoft.com/en-ca/download/details.aspx?id=40784>.

To install the driver, you must have Administrator privileges on the machine.

Installing the Driver on Windows

On 64-bit Windows operating systems, you can execute both 32- and 64-bit applications. However, 64-bit applications must use 64-bit drivers, and 32-bit applications must use 32-bit drivers. Make sure that you use the version of the driver that matches the bitness of the client application:

- `TeradataPrestoODBC32.msi` for 32-bit applications
- `TeradataPrestoODBC64.msi` for 64-bit applications

You can install both versions of the driver on the same machine.

To install the Teradata Presto ODBC Driver:

1. Depending on the bitness of your client application, double-click to run **TeradataPrestoODBC32.msi** or **TeradataPrestoODBC64.msi**.
2. Click **Next**.
3. Select the check box to accept the terms of the License Agreement if you agree, and then click **Next**.

4. To change the installation location, click **Change**, then browse to the desired folder, and then click **OK**. To accept the installation location, click **Next**.
5. Click **Install**.
6. When the installation completes, click **Finish**.

Creating a Data Source Name

Typically, after installing the Teradata Presto ODBC Driver, you need to create a Data Source Name (DSN).

Alternatively, for information about DSN-less connections, see [Using a Connection String](#) on page 33.

To create a Data Source Name:

1. Open the ODBC Administrator:
 - If you are using Windows 7 or earlier, click **Start** > **All Programs** > **Teradata Presto ODBC Driver 1.1** > **ODBC Administrator**.
 - Or, if you are using Windows 8 or later, on the Start screen, type **ODBC administrator**, and then click the **ODBC Administrator** search result.

Note:

Make sure to select the ODBC Data Source Administrator that has the same bitness as the client application that you are using to connect to Presto.

2. In the ODBC Data Source Administrator, click the **Drivers** tab, and then scroll down as needed to confirm that the Teradata Presto ODBC Driver appears in the alphabetical list of ODBC drivers that are installed on your system.
3. Choose one:
 - To create a DSN that only the user currently logged into Windows can use, click the **User DSN** tab.
 - Or, to create a DSN that all users who log into Windows can use, click the **System DSN** tab.

Note:

It is recommended that you create a System DSN instead of a User DSN. Some applications, such as Sisense, load the data using a different user account, and might not be able to detect User DSNs that are created under another user account.

4. Click **Add**.

5. In the Create New Data Source dialog box, select **Teradata Presto ODBC Driver** and then click **Finish**. The Teradata Presto ODBC Driver DSN Setup dialog box opens.
6. In the **Data Source Name** field, type a name for your DSN.
7. Optionally, in the **Description** field, type relevant details about the DSN.
8. Optionally, choose an authentication method:
 - To configure the driver to use Kerberos authentication, from the **Authentication Type** drop-down list, select **Kerberos Authentication**. For more instructions on configuring Kerberos authentication, see [Configuring Kerberos Authentication](#) on page 12.
 - Or, to configure the driver to use LDAP authentication, from the **Authentication Type** drop-down list, select **LDAP Authentication**.

Note:

If either Kerberos Authentication or LDAP Authentication are specified, the driver automatically uses SSL to communicate with the Presto server.

9. In the **User** field, type an appropriate user name to access the data source.
10. If you selected **LDAP Authentication**, then in the **Password** field, type the password for the LDAP user that you specified in the **User** field.
11. If you selected **LDAP Authentication**, then to save the password in the Windows registry, select **Save Password (Encrypted)**.
12. In the **Host** field, type the IP address or host name of the Presto server.
13. In the **Port** field, type the number of the TCP port that the Presto server uses to listen for client connections.

Note:

The default port number used by Presto is 8080.

14. In the **Catalog** field, type the name of the synthetic catalog under which all of the schemas/databases are organized.
15. In the **Schema** field, type the name of the the schema for the driver to use.
16. Optionally, in the **Time Zone ID** field, type the name of the time zone for the driver to use, in tz database format. For a list of time zones in tz database format, see https://en.wikipedia.org/wiki/List_of_tz_database_time_zones.

If a time zone is not specified, the driver uses the system time zone.

17. To configure client-server verification over SSL, click **SSL Options**. For more information, see [Configuring SSL Verification](#) on page 14.
18. To configure advanced driver options, click **Advanced Options**. For more information, see [Configuring Advanced Options](#) on page 12.

19. To configure logging behavior for the driver, click **Logging Options**. For more information, see [Configuring Logging Options](#) on page 14.
20. To test the connection, click **Test**. Review the results as needed, and then click **OK**.

Note:

If the connection fails, then confirm that the settings in the Teradata Presto ODBC Driver DSN Setup dialog box are correct. Contact your Presto server administrator as needed.

21. To save your settings and close the Teradata Presto ODBC Driver DSN Setup dialog box, click **OK**.
22. To close the ODBC Data Source Administrator, click **OK**.

Configuring Advanced Options

You can configure advanced options to modify the behavior of the driver.

To configure advanced options:

1. Open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click **Configure**, and then click **Advanced Options**.
2. To specify the version of the Presto server that the driver is connecting to, in the **Server Version** field, type the server version number.
3. To automatically test the connection, select **Connection Test**.
4. To automatically populate the metadata for parameters, select **Auto Populate Parameter Metadata**.
5. To save your settings and close the Advanced Options dialog box, click **OK**.

Configuring Kerberos Authentication

You can configure the driver to use the Kerberos protocol to authenticate the connection.

When you log in to Windows, the operating system automatically caches your credentials. When the driver is run, it loads your Kerberos credentials from the Windows Kerberos cache.

Note:

If Kerberos authentication is enabled, the driver automatically uses SSL to communicate with the Presto server.

To configure the driver to use Kerberos authentication:

1. Open the ODBC Data Source Administrator where you created the DSN, select the DSN, and then click **Configure**.
2. From the **Authentication Type** drop-down list, select **Kerberos Authentication**.
3. To configure client-server verification over SSL, click **SSL Options**. For more information, see [Configuring SSL Verification](#) on page 14.
4. To save your settings and close the dialog box, click **OK**.

You can now use the driver to authenticate through Kerberos and connect to your Presto server.

Exporting a Data Source Name

After you configure a DSN, you can export it to be used on other machines. When you export a DSN, all of its configuration settings are saved in a `.sdc` file. You can then distribute the `.sdc` file to other users so that they can import your DSN configuration and use it on their machines.

To export a Data Source Name:

1. Open the ODBC Data Source Administrator where you created the DSN, select the DSN, click **Configure**, and then click **Logging Options**.
2. Click **Export Configuration**, specify a name and location for the exported DSN, and then click **Save**.

Your DSN is saved as a `.sdc` file in the location that you specified.

Importing a Data Source Name

You can import a DSN configuration from a `.sdc` file and then use those settings to connect to your data source.

To import a Data Source Name:

1. Open the ODBC Data Source Administrator where you created the DSN, select the DSN, click **Configure**, and then click **Logging Options**.
2. Click **Import Configuration**, browse to select the `.sdc` file that you want to import the DSN configuration from, and then click **Open**.
3. Click **OK** to close the Logging Options dialog box.

The Teradata Presto ODBC Driver DSN Setup dialog box loads the configuration settings from the selected `.sdc` file. You can now save this DSN and use it to connect to your data source.

Configuring SSL Verification

If you are connecting to a Presto server that has Secure Sockets Layer (SSL) enabled, you can configure verification between the client and the Presto server over SSL.

Note:

If Kerberos authentication is enabled, the driver automatically uses SSL to communicate with the Presto server.

To configure SSL verification:

1. To access SSL options, open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click **Configure**, and then click **SSL Options**.
2. Select the **Enable SSL** check box.
3. To allow self-signed certificates from the server, select the **Allow Self-signed Server Certificate** check box.
4. To allow the common name of a CA-issued SSL certificate to not match the host name of the Presto server, select the **Allow Common Name Host Name Mismatch** check box.
5. Choose one:
 - To configure the driver to load SSL certificates from a specific PEM file when verifying the server, specify the full path to the file in the **Trusted Certificates** field.
 - Or, to use the trusted CA certificates PEM file that is installed with the driver, leave the **Trusted Certificates** field empty.
6. To save your settings and close the SSL Options dialog box, click **OK**.

Configuring Logging Options

To help troubleshoot issues, you can enable logging. In addition to functionality provided in the Teradata Presto ODBC Driver, the ODBC Data Source Administrator provides tracing functionality.

Important:

Only enable logging or tracing long enough to capture an issue. Logging or tracing decreases performance and can consume a large quantity of disk space.

The driver allows you to set the amount of detail included in log files. The following table lists the logging levels provided by the Teradata Presto ODBC Driver, in order from least verbose to most verbose.

Logging Level	Description
OFF	Disables all logging.
FATAL	Logs severe error events that lead the driver to abort.
ERROR	Logs error events that might allow the driver to continue running.
WARNING	Logs events that might result in an error if action is not taken.
INFO	Logs general information that describes the progress of the driver.
DEBUG	Logs detailed information that is useful for debugging the driver.
TRACE	Logs all driver activity.

To enable driver logging:

1. To access logging options, open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click **Configure**, and then click **Logging Options**.
2. From the **Log Level** drop-down list, select the desired level of information to include in log files.
3. In the **Log Path** field, specify the full path to the folder where you want to save log files.
4. In the **Max Number Files** field, type the maximum number of log files to keep.

Note:

After the maximum number of log files is reached, each time an additional file is created, the driver deletes the oldest log file.

5. In the **Max File Size** field, type the maximum size of each log file in megabytes (MB).

Note:

After the maximum file size is reached, the driver creates a new file and continues logging.

6. Click **OK**.
7. Restart your ODBC application to make sure that the new settings take effect.

The Teradata Presto ODBC Driver produces a log file named `driver.log` at the location that you specify in the Log Path field.

To disable driver logging:

1. Open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click **Configure**, and then click **Logging Options**.
2. From the **Log Level** drop-down list, select **LOG_OFF**.
3. Click **OK**.

To start tracing using the ODBC Data Source Administrator:

1. In the ODBC Data Source Administrator, click the **Tracing** tab.
2. In the **Log File Path** area, click **Browse**. In the Select ODBC Log File dialog box, browse to the location where you want to save the log file, then type a descriptive file name in the **File Name** field, and then click **Save**.
3. On the Tracing tab, click **Start Tracing Now**.

To stop ODBC Data Source Administrator tracing:

1. On the Tracing tab in the ODBC Data Source Administrator, click **Stop Tracing Now**.

For more information about tracing using the ODBC Data Source Administrator, see "How to Generate an ODBC Trace with ODBC Data Source Administrator" on the Microsoft Support website: <http://support.microsoft.com/kb/274551>.

Verifying the Version Number

If you need to verify the version of the Teradata Presto ODBC Driver that is installed on your Windows machine, you can find the version number in the ODBC Data Source Administrator.

To verify the version number:

1. Open the ODBC Administrator:

- If you are using Windows 7 or earlier, click **Start** > **All Programs** > **Teradata Presto ODBC Driver 1.1** > **ODBC Administrator**.
- Or, if you are using Windows 8 or later, on the Start screen, type **ODBC administrator**, and then click the **ODBC Administrator** search result.

Note:

Make sure to select the ODBC Data Source Administrator that has the same bitness as the client application that you are using to connect to Presto.

2. Click the **Drivers** tab and then find the Teradata Presto ODBC Driver in the list of ODBC drivers that are installed on your system. The version number is displayed in the **Version** column.

Linux Driver

Linux System Requirements

Install the driver on client machines where the application is installed. Each machine that you install the driver on must meet the following minimum system requirements:

- One of the following distributions:
 - Red Hat® Enterprise Linux® (RHEL) 5, 6, or 7
 - CentOS 5, 6, or 7
 - SUSE Linux Enterprise Server (SLES) 11 or 12
 - Debian 7 or 8
 - Ubuntu 12.04, 14.04, or 16.04
- 90 MB of available disk space
- One of the following ODBC driver managers installed:
 - iODBC 3.52.7 or later
 - unixODBC 2.3.0 or later
- The `krb5-libs` library that matches the bitness of the driver must be installed.

Note:

If the package manager in your Linux distribution cannot resolve the dependency automatically when installing the driver, then download and manually install the package.

To install the driver, you must have root access on the machine.

Installing the Driver

On 64-bit editions of Linux, you can execute both 32- and 64-bit applications. However, 64-bit applications must use 64-bit drivers, and 32-bit applications must use 32-bit drivers. Make sure that you use the version of the driver that matches the bitness of the client application:

- `TeradataPrestoODBC-32bit-[Version]-[Release].rpm` for the 32-bit driver
- `TeradataPrestoODBC-64bit-[Version]-[Release].rpm` for the 64-bit driver

[Version] is the version number of the driver, and *[Release]* is the release number for this version of the driver.

You can install both versions of the driver on the same machine.

The Teradata Presto ODBC Driver files are installed in the following directories:

- `/opt/teradata/prestodbc` contains the release notes and the *Teradata ODBC Driver for Presto Installation and Configuration Guide*.
- `/opt/teradata/prestodbc/ErrorMessage`s contains error message files required by the driver.
- `/opt/teradata/prestodbc/Setup` contains sample configuration files named `odbc.ini` and `odbcinst.ini`.
- `/opt/teradata/prestodbc/lib/32` contains the 32-bit shared libraries and the `teradata.prestodbc.ini` configuration file.
- `/opt/teradata/prestodbc/lib/64` contains the 64-bit shared libraries and the `teradata.prestodbc.ini` configuration file.

To install the Teradata Presto ODBC Driver:

1. Log in as the root user, and then navigate to the folder containing the RPM package for the driver.
2. Depending on the Linux distribution that you are using, run one of the following commands from the command line, where *[RPMFileName]* is the file name of the RPM package:

- If you are using Red Hat Enterprise Linux or CentOS, run the following command:

```
yum --nogpgcheck localinstall [RPMFileName]
```

- Or, if you are using SUSE Linux Enterprise Server, run the following command:

```
zypper install [RPMFileName]
```

If the package manager in your Linux distribution cannot resolve the `krb5-libs` dependency automatically when installing the driver, then download and manually install the package.

Setting the LD_LIBRARY_PATH Environment Variable

The LD_LIBRARY_PATH environment variable must include the paths to the installed ODBC driver manager libraries, as well as the installed Teradata Presto ODBC Driver shared libraries.

Important:

While you can have both 32- and 64-bit versions of the driver installed at the same time on the same machine, do not include the paths to both 32- and 64-bit shared libraries in LD_LIBRARY_PATH at the same time. Only include the path to the shared libraries corresponding to the driver matching the bitness of the client application used.

For example, if you are using a 64-bit client application and ODBC driver manager libraries are installed in /usr/local/lib, then set LD_LIBRARY_PATH as follows:

```
export LD_LIBRARY_PATH=/usr/local/lib
```

For information about how to set environment variables permanently, refer to your Linux shell documentation.

For information about creating ODBC connections using the Teradata Presto ODBC Driver, see [Configuring ODBC Connections for Non-Windows Platforms](#) on page 23.

Verifying the Version Number

If you need to verify the version of the Teradata Presto ODBC Driver that is installed on your Linux machine, you can query the version number through the command-line interface if the driver was installed using an RPM file.

To verify the version number:

1. Depending on your package manager, at the command prompt, run one of the following commands:
 - `yum list | grep TeradataPrestoODBC`
 - `rpm -qa | grep TeradataPrestoODBC`

The command returns information about the Teradata Presto ODBC Driver that is installed on your machine, including the version number.

Mac OS X Driver

Mac OS X System Requirements

Install the driver on client machines where the application is installed. Each machine that you install the driver on must meet the following minimum system requirements:

- Mac OS X version 10.9, 10.10, or 10.11
- 150 MB of available disk space
- iODBC 3.52.7 or later

Installing the Driver on Mac OS X

The Teradata Presto ODBC Driver supports both 32- and 64-bit client applications.

The driver files are installed in the following directories:

- `/Library/teradata/prestoodbc` contains release notes and the *Teradata ODBC Driver for Presto Installation and Configuration Guide*.
- `/Library/teradata/prestoodbc/ErrorMessage`s contains error message files required by the driver.
- `/Library/teradata/prestoodbc/Setup` contains sample configuration files named `odbc.ini` and `odbcinst.ini`.
- `/Library/teradata/prestoodbc/lib` contains the driver binaries and the `teradata.prestoodbc.ini` configuration file.

To install the Teradata Presto ODBC Driver:

1. Double-click **TeradataPrestoODBC.dmg** to mount the disk image.
2. Double-click **TeradataPrestoODBC.pkg** to run the installer.
3. In the installer, click **Continue**.
4. On the Software License Agreement screen, click **Continue**, and when the prompt appears, click **Agree** if you agree to the terms of the License Agreement.
5. Optionally, to change the installation location, click **Change Install Location**, then select the desired location, and then click **Continue**.

6. To accept the installation location and begin the installation, click **Install**.
7. When the installation completes, click **Close**.

Setting the DYLD_LIBRARY_PATH Environment Variable

The DYLD_LIBRARY_PATH environment variable must include the paths to the installed ODBC driver manager libraries.

For example, if ODBC driver manager libraries are installed in `/usr/local/lib`, then set DYLD_LIBRARY_PATH as follows:

```
export DYLD_LIBRARY_PATH=$DYLD_LIBRARY_PATH:/usr/local/lib
```

For information about how to set environment variables permanently, refer to your Mac OS X shell documentation.

For information about creating ODBC connections using the Teradata Presto ODBC Driver, see [Configuring ODBC Connections for Non-Windows Platforms](#) on page 23.

Verifying the Version Number

If you need to verify the version of the Teradata Presto ODBC Driver that is installed on your Mac OS X machine, you can query the version number through the Terminal.

To verify the version number:

1. At the Terminal, run the following command:

```
pkgutil --info com.teradata.prestoodbc
```

The command returns information about the Teradata Presto ODBC Driver that is installed on your machine, including the version number.

Configuring ODBC Connections for Non-Windows Platforms

The following sections describe how to configure ODBC connections when using the Teradata Presto ODBC Driver with non-Windows platforms:

- [Configuration Files](#) on page 23
- [Sample Configuration Files](#) on page 24
- [Configuring the Environment](#) on page 24
- [Defining DSNs in `odbc.ini`](#) on page 25
- [Specifying ODBC Drivers in `odbcinst.ini`](#) on page 26
- [Configuring Driver Settings in `teradata.prestoodbc.ini`](#) on page 27
- [Configuring Kerberos Authentication](#) on page 28
- [Configuring Logging Options](#) on page 29
- [Testing the Connection](#) on page 31

Configuration Files

ODBC driver managers use configuration files to define and configure ODBC data sources and drivers. By default, the following configuration files are used:

- `.odbc.ini` is used to define ODBC data sources, and it is required for DSNs.
- `.odbcinst.ini` is used to define ODBC drivers, and it is optional.

These files are located in the user's home directory.

Also, by default the Teradata Presto ODBC Driver is configured using the `teradata.prestoodbc.ini` file, which is required. This file is located in one of the following directories depending on the version of the driver that you are using:

- `/opt/teradata/prestoodbc/lib/32` for the 32-bit driver on Linux.
- `/opt/teradata/prestoodbc/lib/64` for the 64-bit driver on Linux.
- `/Library/teradata/prestoodbc/lib` for the driver on Mac OS X.

Also, the installer for the Mac OS X version of the driver creates a sample User DSN in the following two files:

- `~/Library/ODBC/odbc.ini`
- `~/odbc.ini`

For information about the configuration options available for controlling the behavior of DSNs that are using the Teradata Presto ODBC Driver, see [Driver Configuration Options](#) on page 37.

Sample Configuration Files

The driver installation contains the following sample configuration files in the `Setup` directory:

- `odbc.ini`
- `odbcinst.ini`

These sample configuration files provide preset values for settings related to the Teradata Presto ODBC Driver.

The names of the sample configuration files do not begin with a period (.) so that they appear in directory listings by default. A file name beginning with a period (.) is hidden. For `odbc.ini` and `odbcinst.ini`, if the default location is used, then the file names must begin with a period (.).

If the configuration files do not exist in the home directory, then you can copy the sample configuration files to the home directory, and then rename the files. If the configuration files already exist in the home directory, then use the sample configuration files as a guide to modify the existing configuration files.

Configuring the Environment

Optionally, you can use three environment variables, `ODBCINI`, `ODBCSYSINI`, and `TERADATAPRESTOINI`, to specify different locations for the `odbc.ini`, `odbcinst.ini`, and `teradata.presto_odbc.ini` configuration files by doing the following:

- Set `ODBCINI` to point to your `odbc.ini` file.
- Set `ODBCSYSINI` to point to the directory containing the `odbcinst.ini` file.
- Set `TERADATAPRESTOINI` to point to your `teradata.presto_odbc.ini` file.

For example, if your `odbc.ini` and `teradata.prestoodbc.ini` files are located in `/etc` and your `odbcinst.ini` file is located in `/usr/local/odbc`, then set the environment variables as follows:

```
export ODBCINI=/etc/odbc.ini
export ODBCSYSINI=/usr/local/odbc
export TERADATAPRESTOINI=/etc/teradata.prestoodbc.ini
```

The following search order is used to locate the `teradata.prestoodbc.ini` file:

1. If the `TERADATAPRESTOINI` environment variable is defined, then the driver searches for the file specified by the environment variable.

Note:

`TERADATAPRESTOINI` must specify the full path, including the file name.

2. The directory containing the driver's binary is searched for a file named `teradata.prestoodbc.ini` (not beginning with a period).
3. The current working directory of the application is searched for a file named `teradata.prestoodbc.ini` (not beginning with a period).
4. The directory `~/`, that is, `$HOME`, is searched for a hidden file named `teradata.prestoodbc.ini` (beginning with a period).
5. The directory `/etc` is searched for a file named `teradata.prestoodbc.ini` (not beginning with a period).

Defining DSNs in `odbc.ini`

ODBC Data Source Names (DSNs) are defined in the `odbc.ini` configuration file. This file is divided into several sections:

- `[ODBC]` is optional. This section is used to control global ODBC configuration, such as ODBC tracing.
- `[ODBC Data Sources]` is required. This section lists the DSNs and associates them with a driver. The driver can be specified by the name given in `odbcinst.ini` or by the path to the driver shared object file.
- A section having the same name as the data source specified in the `[ODBC Data Sources]` section is required to configure the data source.

The following is an example of an `odbc.ini` configuration file for Linux:

```
[ODBC Data Sources]
Sample DSN=Teradata Presto ODBC Driver 32-bit
[Sample DSN]
```

```
Driver=/opt/teradata/prestodbc/lib/32/libprestodbc_sb32.so
```

The following is an example of an `odbc.ini` configuration file for Mac OS X:

```
[ODBC Data Sources]
Sample DSN=Teradata Presto ODBC Driver
[Sample DSN]
Driver=/Library/teradata/prestodbc/lib/libprestodbc_sbu.dylib
```

To create a Data Source Name:

1. In a text editor, open the `odbc.ini` configuration file.
2. In the `[ODBC Data Sources]` section, add a new entry by typing the Data Source Name (DSN), then an equal sign (=), and then the driver name as specified in `odbcinst.ini`.
3. Add a new section to the file, with a section name that matches the DSN you specified above, and then add configuration options to the section. Specify the configuration options as key-value pairs.
4. Save the `odbc.ini` configuration file.

For information about the configuration options available for controlling the behavior of DSNs that are using the Teradata Presto ODBC Driver, see [Driver Configuration Options](#) on page 37.

Specifying ODBC Drivers in `odbcinst.ini`

ODBC drivers are defined in the `odbcinst.ini` configuration file. This configuration file is optional because drivers can be specified directly in the `odbc.ini` configuration file, as described in [Defining DSNs in `odbc.ini`](#) on page 25.

The `odbcinst.ini` file is divided into the following sections:

- `[ODBC Drivers]` lists the names of all the installed ODBC drivers.
- For each driver, a section having the same name as the driver name specified in the `[ODBC Drivers]` section lists the driver attributes and values.

The following is an example of an `odbcinst.ini` configuration file for Linux:

```
[ODBC Drivers]
Teradata Presto ODBC Driver 32-bit=Installed
Teradata Presto ODBC Driver 64-bit=Installed
[Teradata Presto ODBC Driver 32-bit]
```

```
Description=Teradata Presto ODBC Driver (32-bit)
Driver=/opt/teradata/prestodbc/lib/32/libprestodbc_sb32.so
[Teradata Presto ODBC Driver 64-bit]
Description=Teradata Presto ODBC Driver (64-bit)
Driver=/opt/teradata/prestodbc/lib/64/libprestodbc_sb64.so
```

The following is an example of an `odbcinst.ini` configuration file for Mac OS X:

```
[ODBC Drivers]
Teradata Presto ODBC Driver=Installed
[Teradata Presto ODBC Driver]
Description=Teradata Presto ODBC Driver
Driver=/Library/teradata/prestodbc/lib/libprestodbc_sbu.dylib
```

To define a driver:

1. In a text editor, open the `odbcinst.ini` configuration file.
2. In the `[ODBC Drivers]` section, add a new entry by typing the driver name and then typing `=Installed`.

Note:

Give the driver a symbolic name that you want to use to refer to the driver in connection strings or DSNs.

3. Add a new section to the file with a name that matches the driver name you typed above, and then add configuration options to the section based on the sample `odbcinst.ini` file provided in the Setup directory. Specify the configuration options as key-value pairs.
4. Save the `odbcinst.ini` configuration file.

Configuring Driver Settings in `teradata.prestodbc.ini`

The `teradata.prestodbc.ini` file contains configuration settings for the Teradata Presto ODBC Driver. Settings that you define in this file apply to all connections that use the driver.

You do not need to modify the settings in the `teradata.prestodbc.ini` file to use the driver and connect to your data source.

However, to help troubleshoot issues, you can configure the `teradata.prestodbc.ini` file to enable logging in the driver. For information about configuring logging, see [Configuring Logging Options](#) on page 29.

Configuring Kerberos Authentication

You can configure the driver to use the Kerberos protocol to authenticate the connection.

Kerberos must be installed and configured before you can use this authentication mechanism. For information about how to install and configure Kerberos, see the MIT Kerberos Documentation: <http://web.mit.edu/kerberos/krb5-latest/doc/>.

When you configure your Kerberos server, in the `/etc/presto/config.properties` file, set the following properties:

- `http.server.authentication.krb5.service-name=HTTP`
- `http.server.authentication.krb5.keytab=HTTP.keytab`

When you use Kerberos authentication, the driver loads the credentials from the Kerberos credential cache. Therefore, a Kerberos ticket must be generated before you run the driver. To generate a Kerberos ticket, run the `kinit` Kerberos command with the appropriate principal.

To configure Kerberos authentication:

1. Run the `kinit` command, using the following syntax, where *[Principal]* is the Kerberos user principal to use for authentication:

```
kinit -k [Principal]
```

2. In a text editor, open the `odbc.ini` configuration file.
3. Set the `AuthenticationType` property to `Kerberos Authentication`.
4. Configure the SSL settings as described in [Configuring SSL Verification](#) on page 28.
5. Save the `odbc.ini` configuration file.

You can now use the driver to authenticate through Kerberos and connect to your Presto server.

Configuring SSL Verification

If you are connecting to a Presto server that has Secure Sockets Layer (SSL) enabled, you can configure the driver to connect to an SSL-enabled socket.

To configure SSL verification:

1. Open the `odbc.ini` configuration file in a text editor.
2. To enable SSL connections, set the `SSL` attribute to 1.
3. To allow self-signed certificates from the server, set the `AllowSelfSignedServerCert` attribute to 1.
4. To allow the common name of a CA-issued SSL certificate to not match the host name of the Presto server, set the `AllowHostNameCNMismatch` attribute to 1.
5. Choose one:
 - To configure the driver to load SSL certificates from a specific PEM file when verifying the server, set the `TrustedCerts` attribute to the full path of the PEM file.
 - Or, to use the trusted CA certificates PEM file that is installed with the driver, do not specify a value for the `TrustedCerts` attribute.
6. Save the `odbc.ini` configuration file.

Configuring Logging Options

To help troubleshoot issues, you can enable logging in the driver.

Important:

Only enable logging long enough to capture an issue. Logging decreases performance and can consume a large quantity of disk space.

Use the `LogLevel` key to set the amount of detail included in log files. The following table lists the logging levels provided by the Teradata Presto ODBC Driver, in order from least verbose to most verbose.

LogLevel Value	Description
0	Disables all logging.
1	Logs severe error events that lead the driver to abort.
2	Logs error events that might allow the driver to continue running.
3	Logs events that might result in an error if action is not taken.
4	Logs general information that describes the progress of the driver.

LogLevel Value	Description
5	Logs detailed information that is useful for debugging the driver.
6	Logs all driver activity.

To enable logging:

1. Open the `teradata.prestoodbc.ini` configuration file in a text editor.
2. Set the `LogLevel` key to the desired level of information to include in log files. For example:

```
LogLevel=2
```

3. Set the `LogPath` key to the full path to the folder where you want to save log files. For example:

```
LogPath=/localhome/employee/Documents
```

4. Set the `LogFileCount` key to the maximum number of log files to keep.

Note:

After the maximum number of log files is reached, each time an additional file is created, the driver deletes the oldest log file.

5. Set the `LogFileSize` key to the maximum size of each log file in megabytes (MB).

Note:

After the maximum file size is reached, the driver creates a new file and continues logging.

6. Save the `teradata.prestoodbc.ini` configuration file.
7. Restart your ODBC application to make sure that the new settings take effect.

The Teradata Presto ODBC Driver produces a log file named `driver.log` at the location you specify using the `LogPath` key.

To disable logging:

1. Open the `teradata.prestoodbc.ini` configuration file in a text editor.
2. Set the `LogLevel` key to 0.
3. Save the `teradata.prestoodbc.ini` configuration file.

Testing the Connection

To test the connection, you can use an ODBC-enabled client application. For a basic connection test, you can also use the test utilities that are packaged with your driver manager installation. For example, the iODBC driver manager includes simple utilities called `iodbctest` and `iodbctestw`. Similarly, the unixODBC driver manager includes simple utilities called `isql` and `iusql`.

Using the iODBC Driver Manager

You can use the `iodbctest` and `iodbctestw` utilities to establish a test connection with your driver. Use `iodbctest` to test how your driver works with an ANSI application, or use `iodbctestw` to test how your driver works with a Unicode application.

Note:

There are 32-bit and 64-bit installations of the iODBC driver manager available. If you have only one or the other installed, then the appropriate version of `iodbctest` (or `iodbctestw`) is available. However, if you have both 32- and 64-bit versions installed, then you need to make sure that you are running the version from the correct installation directory.

For more information about using the iODBC driver manager, see <http://www.iodbc.org>.

To test your connection using the iODBC driver manager:

1. Run **`iodbctest`** or **`iodbctestw`**.
2. Optionally, if you do not remember the DSN, then type a question mark (?) to see a list of available DSNs.
3. Type an ODBC connection string using the following format, specifying additional connection attributes as needed:

```
DSN=[DataSourceName];[Key]=[Value]
```

[DataSourceName] is the DSN that you are using for the connection. *[Key]* is any connection attribute that is not already specified as a configuration key in the DSN, and *[Value]* is the value for the attribute. Add key-value pairs to the connection string as needed, separating each pair with a semicolon (;).

If the connection is successful, then the `SQL>` prompt appears.

Using the unixODBC Driver Manager

You can use the `isql` and `iusql` utilities to establish a test connection with your driver and your DSN. `isql` and `iusql` can only be used to test connections that use a DSN. Use `isql` to test how your driver works with an ANSI application, or use `iusql` to test how your driver works with a Unicode application.

Note:

There are 32-bit and 64-bit installations of the unixODBC driver manager available. If you have only one or the other installed, then the appropriate version of `isql` (or `iusql`) is available. However, if you have both 32- and 64-bit versions installed, then you need to make sure that you are running the version from the correct installation directory.

For more information about using the unixODBC driver manager, see <http://www.unixodbc.org>.

To test your connection using the unixODBC driver manager:

1. Run `isql` or `iusql` by using the corresponding syntax:

- `isql [DataSourceName]`
- `iusql [DataSourceName]`

[DataSourceName] is the DSN that you are using for the connection.

If the connection is successful, then the `SQL>` prompt appears.

Note:

For information about the available options, run `isql` or `iusql` without providing a DSN.

Using a Connection String

For some applications, you might need to use a connection string to connect to your data source. For detailed information about how to use a connection string in an ODBC application, refer to the documentation for the application that you are using.

The connection strings in the following sections are examples showing the minimum set of connection attributes that you must specify to successfully connect to the data source. Depending on the configuration of the data source and the type of connection you are working with, you might need to specify additional connection attributes. For detailed information about all the attributes that you can use in the connection string, see [Driver Configuration Options](#) on page 37.

DSN Connection String Example

The following is an example of a connection string for a connection that uses a DSN:

```
DSN=[DataSourceName];
```

[DataSourceName] is the DSN that you are using for the connection.

You can set additional configuration options by appending key-value pairs to the connection string. Configuration options that are passed in using a connection string take precedence over configuration options that are set in the DSN.

DSN-less Connection String Examples

Some applications provide support for connecting to a data source using a driver without a DSN. To connect to a data source without using a DSN, use a connection string instead.

The placeholders in the examples are defined as follows, in alphabetical order:

- *[CatalogName]* is the name of the catalog to which you are connecting.
- *[PortNumber]* is the number of the port that the Presto server uses to listen for client connections.
- *[Server]* is the IP address or host name of the Presto server to which you are connecting.

The following is the format of a DSN-less connection string:

```
Driver=Teradata Presto ODBC Driver;Catalog=[CatalogName];  
Host=[Server];Port=[PortNumber];
```

For example:

```
Driver=Teradata Presto ODBC Driver;Catalog=hive;  
Host=192.168.222.160;Port=8080;
```

Features

For more information on the features of the Teradata Presto ODBC Driver, see the following:

- [Catalog and Schema Support](#) on page 35
- [Parameters](#) on page 35
- [Data Types](#) on page 35

Catalog and Schema Support

The Teradata Presto ODBC Driver supports both catalogs and schemas to make it easy for the driver to work with various ODBC applications.

The Teradata Presto ODBC Driver supports querying against Hive, MySQL, and PostgreSQL schemas.

Parameters

A parameterized query contains placeholders that are used for parameters. The values of those parameters are supplied at execution time.

The Teradata Presto ODBC Driver fully supports parameterized queries. If Auto Populate Parameter Metadata is selected or the `AutoIPD` option is set to 1, the driver automatically populates the metadata for parameters.

Data Types

The Teradata Presto ODBC Driver supports many common SQL data types.

The table below lists the supported data types.

Supported SQL types	
ARRAY	REAL Note: Only supported in Presto 0.152t and later.
BIGINT	ROW
BOOLEAN	SMALLINT
CHAR(x)	TIME
DATE	TIME WITH TIME ZONE
DECIMAL	TIMESTAMP
DOUBLE	TIMESTAMP WITH TIME ZONE
FLOAT Note: Deprecated in Presto 0.152t and later.	TINYINT
INTEGER	VARBINARY
INTERVAL DAY TO SECOND	VARCHAR (fixed length)
INTERVAL YEAR TO MONTH	VARCHAR (variable length)
JSON	VARCHAR(X)
MAP	

Driver Configuration Options

Driver Configuration Options lists the configuration options available in the Teradata Presto ODBC Driver alphabetically by field or button label. Options having only key names, that is, not appearing in the user interface of the driver, are listed alphabetically by key name.

When creating or configuring a connection from a Windows computer, the fields and buttons are available in the Teradata Presto ODBC Driver DSN Setup dialog box. When using a connection string or configuring a connection from a Linux or Mac OS X computer, use the key names provided.

Configuration Options Appearing in the User Interface

The following configuration options are accessible via the Windows user interface for the Teradata Presto ODBC Driver, or via the key name when using a connection string or configuring a connection from a Linux or Mac OS X computer:

- [Allow Common Name Host Name Mismatch](#) on page 38
- [Allow Self-Signed Server Certificate](#) on page 38
- [Authentication Type](#) on page 39
- [Auto Populate Parameter Metadata](#) on page 40
- [Catalog](#) on page 40
- [Connection Test](#) on page 41
- [Enable SSL](#) on page 41
- [Host](#) on page 42
- [Log Level](#) on page 42
- [Log Path](#) on page 43
- [Max File Size](#) on page 44
- [Max Number Files](#) on page 44
- [Password](#) on page 45
- [Port](#) on page 45
- [Save Password \(Encrypted\)](#) on page 46
- [Schema](#) on page 46
- [Server Version](#) on page 47
- [Time Zone ID](#) on page 47
- [Trusted Certificates](#) on page 48
- [User](#) on page 48

When creating or configuring a connection from a Windows computer, the fields and buttons are available in the Teradata Presto ODBC Driver DSN Setup dialog box. When

using a connection string or configuring a connection from a Linux or Mac OS X computer, use the key names provided.

Allow Common Name Host Name Mismatch

Key Name	Default Value	Required
AllowHostNameCNMismatch	Clear (0)	No

Description

This option specifies whether a CA-issued SSL certificate name must match the host name of the Presto server.

- Enabled (1): The driver allows a CA-issued SSL certificate name to not match the host name of the Presto server.
- Disabled (0): The CA-issued SSL certificate name must match the host name of the Presto server.

Note:

This setting is applicable only when SSL is enabled.

Allow Self-Signed Server Certificate

Key Name	Default Value	Required
AllowSelfSignedServerCert	Clear (0)	No

Description

This option specifies whether the driver allows self-signed certificates from the server.

- Enabled (1): The driver authenticates the Presto server even if the server is using a self-signed certificate.

- Disabled (0): The driver does not allow self-signed certificates from the server.

Note:

This setting is applicable only when SSL is enabled.

Authentication Type

Key Name	Default Value	Required
AuthenticationType	No Authentication	No

Description

This option specifies the type of authentication that the driver uses.

Select from the following:

- `No Authentication`: The driver does not authenticate the connection.
- `Kerberos Authentication`: The driver uses Kerberos to authenticate the connection. For more information about Kerberos authentication on Windows, see the Windows Kerberos documentation: [https://msdn.microsoft.com/en-us/library/windows/desktop/aa378747\(v=vs.85\).aspx](https://msdn.microsoft.com/en-us/library/windows/desktop/aa378747(v=vs.85).aspx). For more information about Kerberos authentication on Mac OSX or Linux, see the MIT Kerberos Documentation: <http://web.mit.edu/kerberos/krb5-latest/doc/>.
- `LDAP Authentication`: The driver uses LDAP to authenticate the connection.

Note:

If either Kerberos Authentication or LDAP Authentication are specified, the driver automatically uses SSL to communicate with the Presto server.

Auto Populate Parameter Metadata

Key Name	Default Value	Required
AutoIPD	Enabled (1)	No

Description

This option specifies whether the driver automatically populates the parameter metadata for parameterized SQL statements.

The server does not necessarily provide metadata for every parameter in a parameterized SQL statement. When the server does not provide parameter metadata, the driver defines the parameter data type as SQL_VARCHAR.

Automatically populating parameter metadata when the server does not provide accurate metadata for parameters may cause certain ODBC applications to not function correctly. In that case, this option should be disabled.

- Enabled (1): The driver automatically populates the metadata for parameters.
- Disabled (0): The driver does not automatically populate the metadata for parameters..

Catalog

Key Name	Default Value	Required
Catalog	None	Yes

Description

The current catalog context for all requests against the server.

Connection Test

Key Name	Default Value	Required
ConnectionTest	Enabled (1)	No

Description

This option specifies whether the driver should automatically attempt to test the connection by contacting the server while establishing the connection.

- Enabled (1): The driver automatically tests the connection while establishing the connection.
- Disabled (0): The driver does not automatically test the connection.

Note:

- Disabling this option may improve driver performance.
- If this option is disabled, you should specify the version of the Presto server in the Server Version or ServerVersion configuration option (see [Server Version](#) on page 47).

Enable SSL

Key Name	Default Value	Required
SSL	Clear (0)	No

Description

This option specifies whether the client uses an SSL encrypted connection to communicate with the Presto server.

- Enabled (1): The client communicates with the Presto server using SSL.
- Disabled (0): SSL is disabled.

SSL is configured independently of authentication. When authentication and SSL are both enabled, the driver performs the specified authentication method over an SSL connection.

Note:

If either Kerberos Authentication or LDAP Authentication are specified, the driver automatically uses SSL to communicate with the Presto server.

Host

Key Name	Default Value	Required
HOST	None	Yes

Description

The IP address or host name of the Presto server.

Log Level

Key Name	Default Value	Required
LogLevel	OFF (0)	No

Description

Use this property to enable or disable logging in the driver and to specify the amount of detail included in log files.

Important:

- Only enable logging long enough to capture an issue. Logging decreases performance and can consume a large quantity of disk space.
- This option is not supported in connection strings. To configure logging for the Windows driver, you must use the Logging Options dialog box. To configure logging for a non-Windows driver, you must use the `teradata.prestoodbc.ini` file.

Set the property to one of the following values:

- OFF (0): Disable all logging.
- FATAL (1): Logs severe error events that lead the driver to abort.
- ERROR (2): Logs error events that might allow the driver to continue running.
- WARNING (3): Logs events that might result in an error if action is not taken.
- INFO (4): Logs general information that describes the progress of the driver.
- DEBUG (5): Logs detailed information that is useful for debugging the driver.
- TRACE (6): Logs all driver activity.

When logging is enabled, the driver produces a log file named `driver.log` in the location specified in the Log Path (`LogPath`) property.

Log Path

Key Name	Default Value	Required
LogPath	None	Yes, if logging is enabled.

Description

The full path to the folder where the driver saves log files when logging is enabled.

Important:

This option is not supported in connection strings. To configure logging for the Windows driver, you must use the Logging Options dialog box. To configure logging for a non-Windows driver, you must use the `teradata.prestoodbc.ini` file.

Max File Size

Key Name	Default Value	Required
LogFileSize	20	No

Description

The maximum size of each log file in megabytes (MB). After the maximum file size is reached, the driver creates a new file and continues logging.

Important:

This option is not supported in connection strings. To configure logging for the Windows driver, you must use the Logging Options dialog box. To configure logging for a non-Windows driver, you must use the `teradata.prestoodbc.ini` file.

Max Number Files

Key Name	Default Value	Required
LogFileCount	50	No

Description

The maximum number of log files to keep. After the maximum number of log files is reached, each time an additional file is created, the driver deletes the oldest log file.

Important:

This option is not supported in connection strings. To configure logging for the Windows driver, you must use the Logging Options dialog box. To configure logging for a non-Windows driver, you must use the `teradata.prestoodbc.ini` file.

Password

Key Name	Default Value	Required
PWD	None	No

Description

The password corresponding to the LDAP user name that you provided in the User field (the `UID` key).

Note:

This option is only available when the Authentication Type is set to LDAP Authentication.

Port

Key Name	Default Value	Required
Port	8080	Yes

Description

The number of the TCP port that the Presto server uses to listen for client connections.

Save Password (Encrypted)

Key Name	Default Value	Required
N/A	Clear	No

Description

This option specifies whether the password is saved in the registry.

- Enabled: The password is saved in the registry.
- Disabled: The password is not saved in the registry.

This option is available only in the Windows driver. It appears in the Teradata Presto ODBC Driver DSN Setup dialog box.

Important:

The password is obscured (not saved in plain text). However, it is still possible for the encrypted password to be copied and used.

Schema

Key Name	Default Value	Required
Schema	None	No

Description

The current schema context for all requests against the server.

Note:

This option is only used when the `Catalog` option is specified and the value is not an empty string.

Server Version

Key Name	Default Value	Required
ServerVersion	None	No

Description

This option specifies the version of the Presto server that the driver connects to, for example, 0.148-t. This value is used when the driver cannot automatically detect the server version.

Note:

If Connection Test is cleared or `ConnectionTest` is set to 0, this option should be set to the version of the Presto server that is being used.

Time Zone ID

Key Name	Default Value	Required
TimeZoneID	System time zone	No

Description

This option specifies the local time zone that the driver uses.

Valid values for this option are specified in the IANA Time Zone Database. For a complete list of time zones, see

https://en.wikipedia.org/wiki/List_of_tz_database_time_zones.

Trusted Certificates

Key Name	Default Value	Required
TrustedCerts	The cacerts.pem file in the \lib subfolder within the driver's installation directory. The exact file path varies depending on the version of the driver that is installed. For example, the path for the Windows driver is different from the path for the Mac OS X driver.	No

Description

The full path of the .pem file containing trusted CA certificates for verifying the server when using SSL.

If this option is not set, then the driver defaults to using the trusted CA certificates .pem file installed by the driver.

Note:

This setting is applicable only when SSL is enabled.

User

Key Name	Default Value	Required
UID	PrestoODBC_Driver	No

Description

The user name that you use to access the Presto server.

Configuration Options Having Only Key Names

The `Driver` configuration option does not appear in the Windows user interface for the Teradata Presto ODBC Driver. It is accessible only when you use a connection string or configure a connection on Mac OS X or Linux.

Driver

Key Name	Default Value	Required
<code>Driver</code>	Teradata Presto ODBC Driver when installed on Windows, or the absolute path of the driver shared object file when installed on a non-Windows machine.	Yes

Description

On Windows, the name of the installed driver (Teradata Presto ODBC Driver).

On other platforms, the name of the installed driver as specified in `odbcinst.ini`, or the absolute path of the driver shared object file.

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