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- Improved compatibility with Node.js
- Improved compatibility with Tableau
- Improved compatibility with Vectorworks

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- Improved compatibility with SSIS
- Improved compatibility with Microsoft Query

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- Now tokens and passwords are stored in an encrypted form in the DSN record

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- Added support for SQL_ATTR_MAX_ROWS attribute
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- Improved compatibility with Linked Server in SQL Server
- Improved compatibility with Alteryx

New features in ODBC Driver for Google BigQuery 1.3

- Added support for custom ClientId and ClientSecrect in connection string parameters
- Improved compatibility with Linked Server in SQL Server 2019
- Improved compatibility with Tableau Prep Builder
- Improved compatibility with Crystal Reports

New features in ODBC Driver for Google BigQuery 1.2

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- Improved compatibility with FICO Mosel

- Improved compatibility with FileMaker
- Improved support for an ODBC installer on Windows 2000

New features in ODBC Driver for Google BigQuery 1.1

- MSI installer for deploying through GPO is added

New features in ODBC Driver for Google BigQuery 1.0

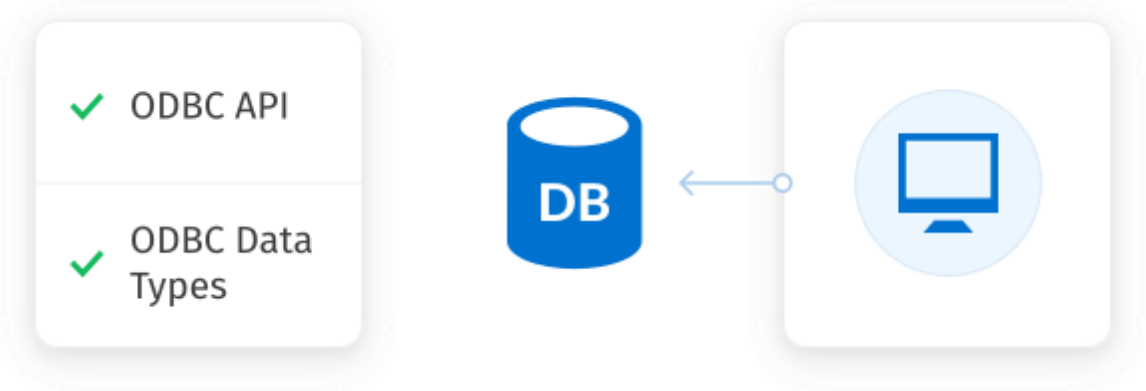
- Initial release of ODBC Driver for Google BigQuery
- Windows 32-bit is supported
- Windows 64-bit is supported

2 General Information

2.1 Overview

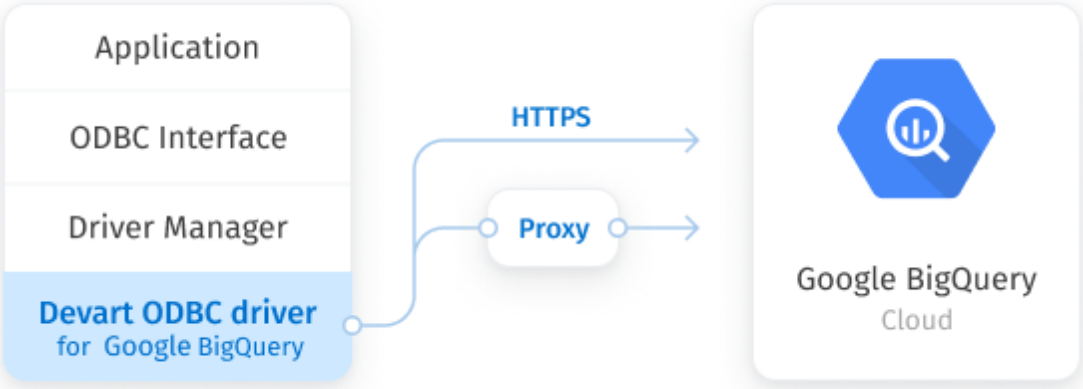
Overview

Devart ODBC Driver for Google BigQuery is a high-performance connectivity solution with enterprise-level features for accessing Google BigQuery from ODBC-compliant reporting, analytics, BI, and ETL tools on both 32-bit and 64-bit Windows. Our ODBC driver fully supports standard ODBC API functions and data types and enables easy and secure access to live BigQuery data from anywhere.

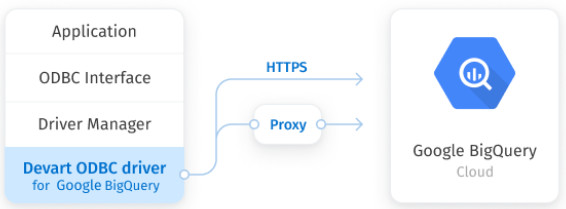


Connection to BigQuery

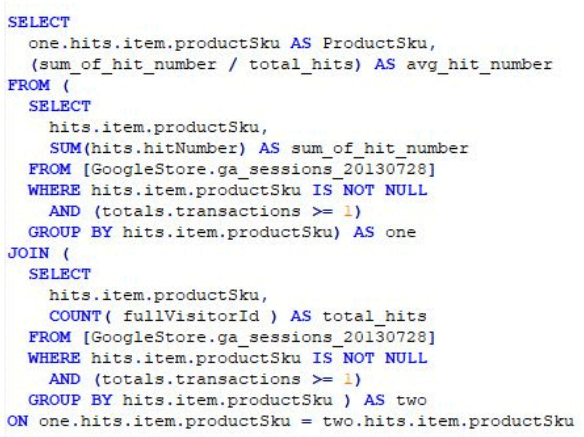
Our data connector enables various ODBC-aware applications to connect to BigQuery directly via HTTPS. If you have no direct access to BigQuery via HTTPS, you have the option of establishing a connection through a proxy server.



2.2 Features

	Connection to Google BigQuery

	Our driver provides capabilities to establish connections to Google BigQuery cloud databases directly via HTTPS. If you have no ability to access Google BigQuery via HTTPS, you can also connect using Proxy options: Host, Port, Username, Password.

## BigQuery Standard SQL 	
 	
Our ODBC Driver supports all of the BigQuery standard SQL expressions, including functions and operations, and all of the BigQuery data types. Below are some examples of supported BigQuery functions:
• Aggregate functions
• Array functions
• Datetime functions
• Geography functions
• JSON functions
• Navigation functions
• Net functions
• Hash functions
	
	``
	SELECT
	  one.hits.item.productSku AS ProductSku,
	  (sum_of_hit_number / total_hits) AS avg_hit_number
	FROM (
	  SELECT
	    hits.item.productSku,
	    SUM(hits.hitNumber) AS sum_of_hit_number
	  FROM [GoogleStore.ga_sessions_20130728]
	  WHERE hits.item.productSku IS NOT NULL
	    AND (totals.transactions >= 1)
	  GROUP BY hits.item.productSku) AS one
	JOIN (
	  SELECT
	    hits.item.productSku,
	    COUNT(fullVisitorId) AS total_hits
	  FROM [GoogleStore.ga_sessions_20130728]
	  WHERE hits.item.productSku IS NOT NULL
	    AND (totals.transactions >= 1)
	  GROUP BY hits.item.productSku) AS two
	ON one.hits.item.productSku = two.hits.item.productSku
	``

DML Operations

Devart ODBC Driver for Google BigQuery provides support for DML:

- INSERT
- UPDATE
- DELETE

which allows you to modify data in Google BigQuery the same way as in SQL databases.

Bulk Updates

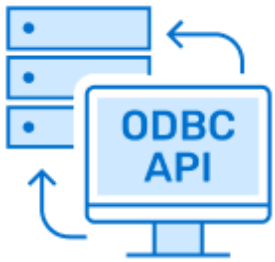
Moreover, with our driver you can perform bulk updates to Google BigQuery by combining SQL statements into batches, thus simplifying and speeding up large data modification with Google BigQuery.

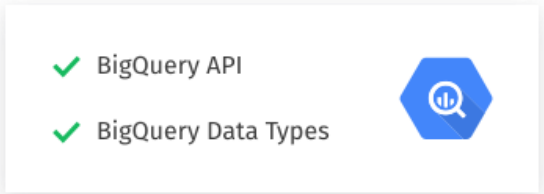
ODBC Conformance

The driver provides full support for common ODBC interface:

- ODBC API Functions support
- ODBC Data Types support

In addition, we provide support for Advanced Connection String parameters. Thus allowing any desktop and web



applications to connect to Google BigQuery from various environments and platforms, that support ODBC.	
	## Google BigQuery Compatibility Our ODBC driver fully supports all data types defined in the Google BigQuery API. Moreover, the driver is compatible with the Google BigQuery API itself.
## Advanced Data Conversion We have implemented advanced Data Conversion mechanisms that provide bi-directional mapping between any Google BigQuery and ODBC data types.	## Integration The driver is compatible with 3rd-party data analysis tools, such as Microsoft Excel, and integrates with various IDEs and systems like Visual Studio, etc. For the complete list of compatible tools and environments visit the Compatibility page.
## Platforms Variety Devart ODBC Driver for Google BigQuery can be used with 32-bit and 64-bit	## Fully Unicode Driver With our fully Unicode driver, you can retrieve and work with any data from multi-

applications on both x32 and x64 platforms, so there is no need to additionally configure the driver, applications or environment.	lingual Google BigQuery databases correctly, not depending on whether its charset is Latin, Cyrillic, Hebrew, Chinese, etc., in any environment localization.
### High Performance Every operation with Google BigQuery becomes significantly faster using such capabilities of our driver as Local data caching, connection pooling, query optimization and much more.	### Support Visit our Support page to get instant help from knowledgeable and experienced professionals, a quick resolution of your problems, and nightly builds with hotfixes.

2.3 Compatibility

Google BigQuery Compatibility

Google BigQuery API	✓
Google BigQuery Data Types	✓

Supported Platforms

- Windows 32-bit and 64-bit (including Windows Terminal Server)
- Compatible with all Windows versions (Windows Vista and higher) that support .NET Framework 4.5.

Compatibility with Third-Party Tools

Application Development Tools

Adobe ColdFusion	✓
Embarcadero Delphi & C++Builder UniDAC, FireDAC, dbGo (ADO), BDE and dbExpress	✓
FileMaker	✓
Lazarus	✓
Microsoft Visual FoxPro	✓
Microsoft Visual Studio Server Explorer and ADO.NET ODBC Provider	✓
Omnis Studio	✓
PHP	✓
PowerBASIC	✓
Python	✓

Database Management

Aqua Data Studio	✓
DBArtisan	✓
dbForge Studio	✓
dBeaver	✓
EMS SQL Management Studio	✓
Informatica Cloud	✓
RazorSQL	✓
SQL Server Data Tools	✓
SQL Server Management Studio	✓
SQL Server Reporting Services	✓

BI & Analytics Software

Alteryx	✓
DBxtra	✓
Dundas BI	✓
FICO Xpress Mosel	✓
IBM SPSS Statistics	✓
MicroStrategy	✓
Oracle BI	✓
Power BI	✓
Qlik Sense	✓
QlikView	✓
RStudio	✓
SAP Crystal Reports	✓
SAS JMP	✓
Tableau	✓
TARGIT	✓
TIBCO Spotfire	✓

Office Software Suites

LibreOffice	✓
Microsoft Access	✓
Microsoft Excel	✓
OpenOffice	✓
StarOffice	✓

2.4 Requirements

The following requirements must be met for ODBC Driver for Google BigQuery:

- Only one version of ODBC Driver for Google BigQuery is installed on your system.
- .NET Framework 4.5 or later is installed on your system.

2.5 Licensing

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2.6 Getting Support

This document lists several ways you can find help with using ODBC Driver for Google BigQuery describes the Priority Support program.

Support Options

There are a number of resources for finding help on installing and using ODBC Driver for Google BigQuery:

- You can find out more about ODBC Driver for Google BigQuery installation or licensing by consulting Installation and License articles of this manual respectively.
- You can get community assistance and technical support on the Community Forum.
- You can get advanced technical assistance by ODBC Driver for Google BigQuery developers through the ODBC Driver for Google BigQuery Priority Support program.

Subscriptions

The ODBC Driver for Google BigQuery Subscription program is an annual maintenance and support service for ODBC Driver for Google BigQuery users.

Users with a valid ODBC Driver for Google BigQuery Subscription get the following benefits:

- Product support through the ODBC Driver for Google BigQuery Priority Support program
- Access to new versions of ODBC Driver for Google BigQuery when they are released
- Access to all ODBC Driver for Google BigQuery updates and bug fixes
- Notifications about new product versions

Priority Support

ODBC Driver for Google BigQuery Priority Support is an advanced product support service for getting expedited individual assistance with ODBC Driver for Google BigQuery-related questions from the ODBC Driver for Google BigQuery developers themselves. Priority Support is carried out over email and has a two business day response policy. Priority Support is available for users with an active ODBC Driver for Google BigQuery Subscription.

To get help through the ODBC Driver for Google BigQuery Priority Support program, please send an email to support@devart.com describing the problem you are having. Make sure to include the following information in your message:

Your ODBC Driver for Google BigQuery Registration number.

- Full ODBC Driver for Google BigQuery edition name and version number. You can find the version number in DLL version information.
- Versions of the Google BigQuery server and client you are using.
- A detailed problem description.
- If possible, ODBC Administrator Log, scripts for creating and filling in database objects, and the application using ODBC Driver for Google BigQuery.

If you have any questions regarding licensing or subscriptions, please see the FAQ or contact sales@devart.com.

3 Using ODBC Driver

3.1 Installation

ODBC Driver for Google BigQuery currently supports Windows 32-bit and 64-bit.

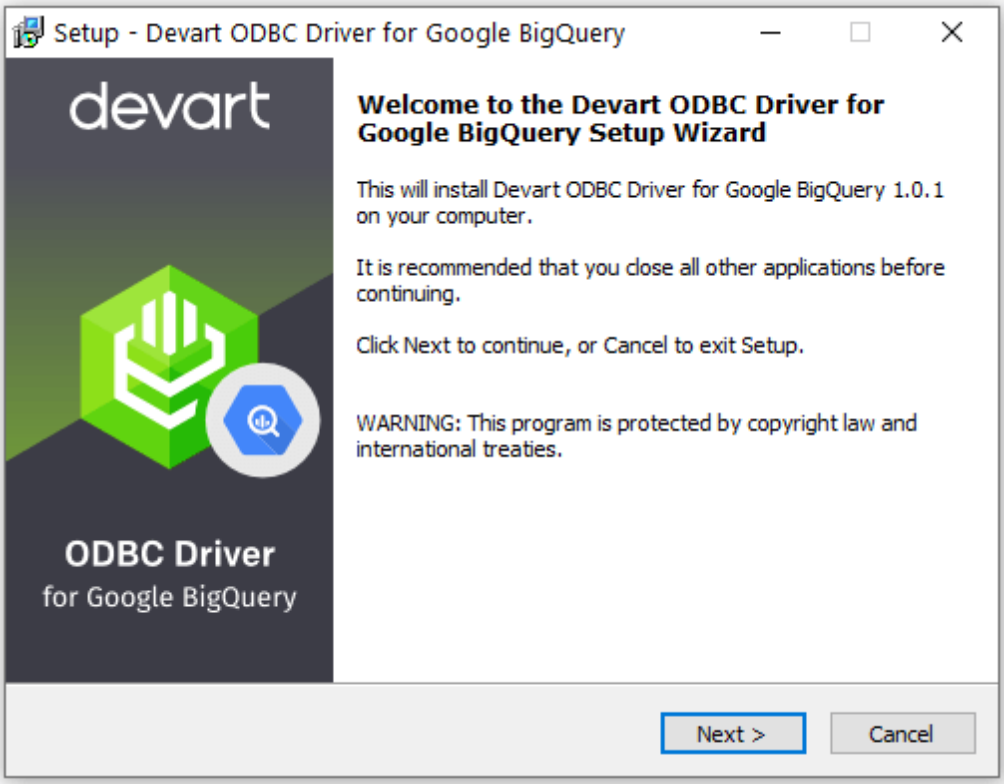
- Regular Installation
- Silent Installation

3.1.1 Windows

Installation on Windows

1. Download and run installer executive file.

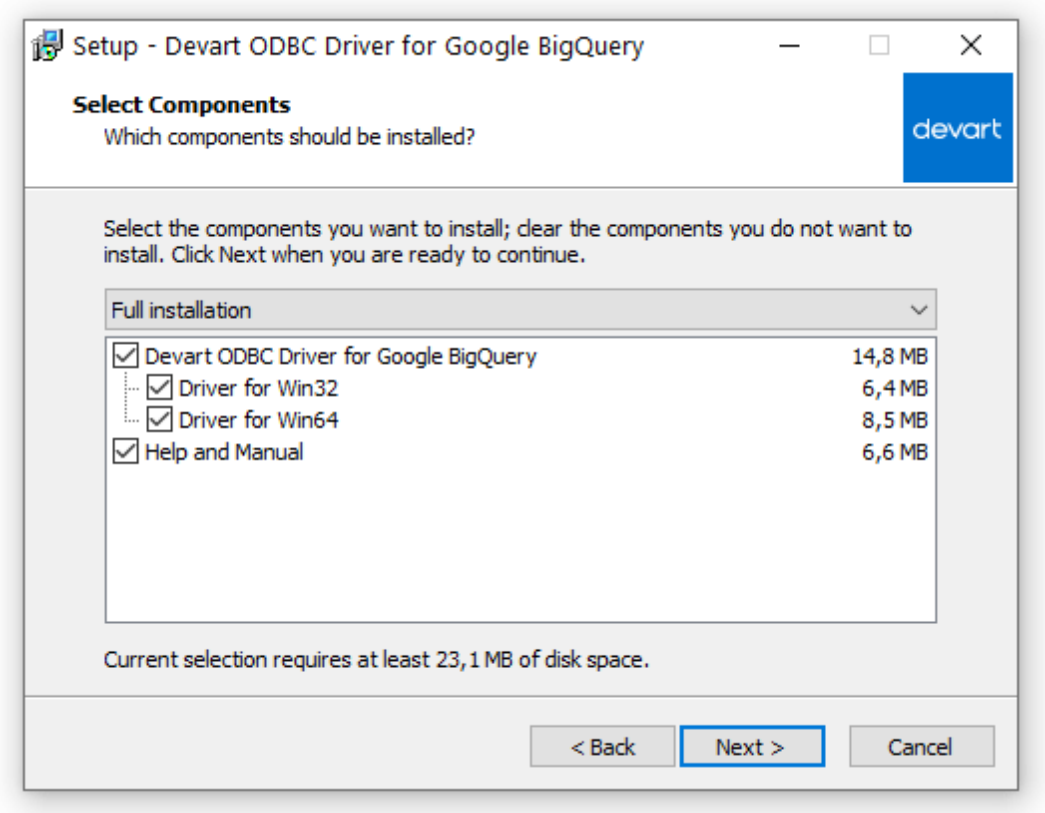
2. Follow the instructions in the wizard.



3. If you already have the specified installation folder on the PC or another driver version is installed, you will get a warning. Click **Yes** to overwrite the old files with the current

installation, but it is recommended to completely uninstall the previous driver version first, and then install the new one.

4. On the **Select Components** page, you can choose whether to install the **64-bit** version of the driver. Clear the checkbox if you do not need a 64-bit installation. There is also a checkbox on this page that allows you to choose whether to install Help and Manual.



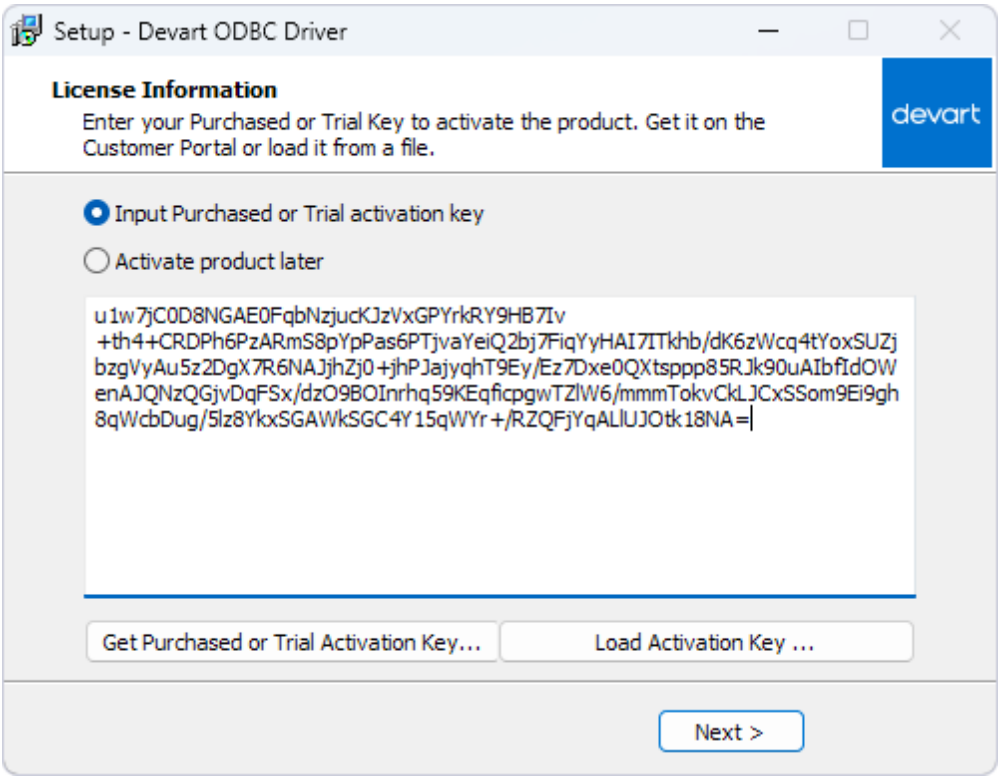
5. On the **License Information** page, select when you want to activate the driver:

- **Immediately after installation:** Select **Input Purchased or Trial activation key** and enter your key in the provided box, or click **Load Activation Key** and select the file containing your key.
- **Any other time:** Select **Activate product later**.

You need to activate the driver even for the trial version.

You can find your activation key in the registration email or your Customer Portal account.

To open the Customer Portal, click **Get Purchased or Trial Activation Key**.



6. Click **Next** to complete the installation.

7. Click **Finish** to exit Setup.

8. After the installation is completed, you need to configure the driver.

3.1.2 Silent

Silent Installation with OEM license on Windows

1. Run the Command Prompt as an administrator.

2. Use the following command-lines to perform the driver silent/very silent installation:

```
DevartODBCBigQuery.exe /SILENT /ActivationKey=y1c7nmgdu234laszxcvONGurjfhxm9
```

```
DevartODBCBigQuery.exe /VERYSILENT /ActivationKey=ekhdh765mh09ukr237gfHRtril
```

Note: The installation is performed by entering a license key.

```
DevartODBCBigQuery.exe /SILENT /ActivationFile=d:\lic.key
```

```
DevartODBCBigQuery.exe /VERYSILENT /ActivationFile=d:\lic.key
```

Note: The installation is performed by specifying the path to a license key file with any name.

When /SILENT is used, the installation progress is displayed, but no user interaction is required during installation.

When /VERYSILENT is used, the installation wizard dialog is hidden and the installation process is performed without user interference.

3.2 Remote Installation

One of the key advantages of Group Policy is the ability to deploy software remotely using MSI files. This section explains how to use Group Policy to remotely install the ODBC Driver for Google BigQuery on client computers.

The information is organized into the following sections:

- Creating the MST File Using Orca
- Remote Deployment and Activation
- Upgrading Driver Version and License Key

3.2.1 Package Transformation

Creating the MST File Using Orca

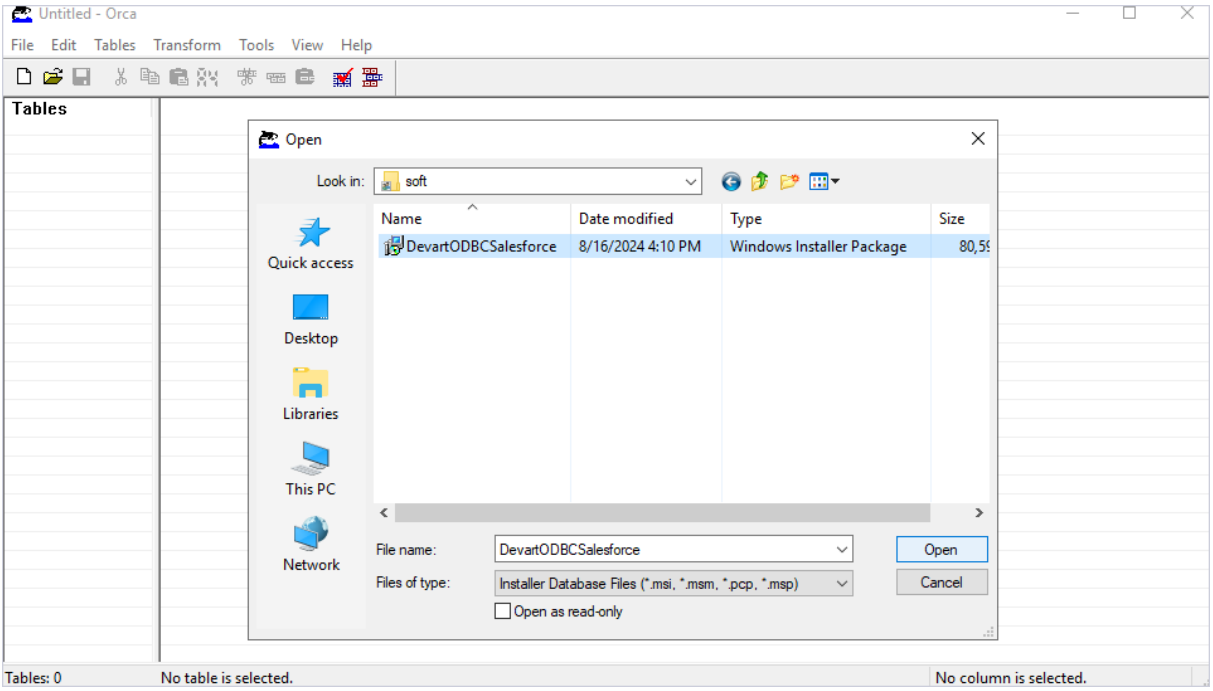
To customize the installation of the ODBC Driver for Google BigQuery, you first need to edit the Windows Installer Package (MSI) by creating an MST file. This will allow for customized installation of an original Windows Installer (MSI) Package.

An MST file, or Windows Installer Setup Transform file, contains program configuration settings. In our case, the MST file for the ODBC Driver for Google BigQuery will include the correct license information. This MST file is used together with the original MSI package in the Group Policy software distribution system.

There are many tools available for customizing MSI file settings, so you can choose the one that best suits your needs. In this example, we'll be using **Orca**, which is available as part of the Windows SDK Components for Windows Installer Developers. For more information about Orca, visit the official Microsoft website.

To start the process of MST file generation using the Orca editor, follow the steps below:

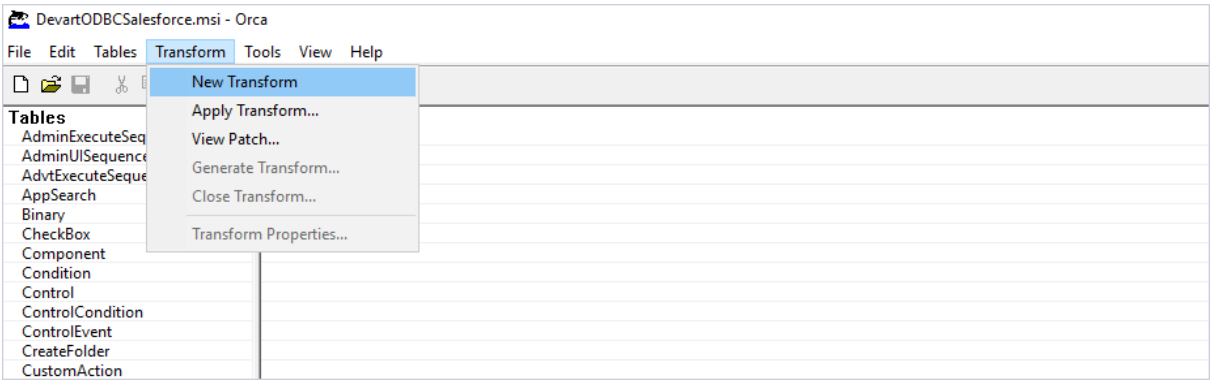
1. Launch the Orca application, then open the required MSI file by selecting **Open** in the **File** menu or click the **Open** icon on the toolbar below.



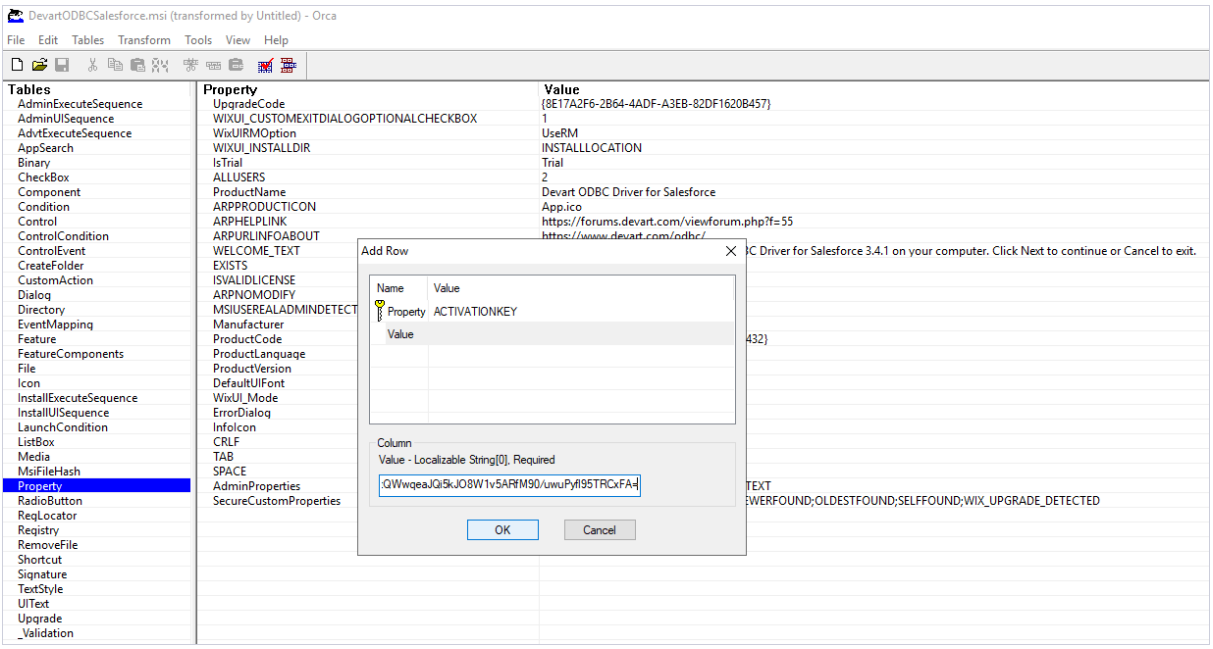
The MSI file for the ODBC Driver for Salesforce is taken as an example to illustrate the Group Policy installation process. Use the same steps described in this section when installing the ODBC Driver for Google BigQuery.

2. As a result, the **Tables** menu on the left side of the main application window will display the properties of the selected MSI file.

3. Next, navigate **Transform** -> **New Transform**.



4. To proceed, select **Property** from the **Tables** menu, then double-click any empty row on the right side of the application window.



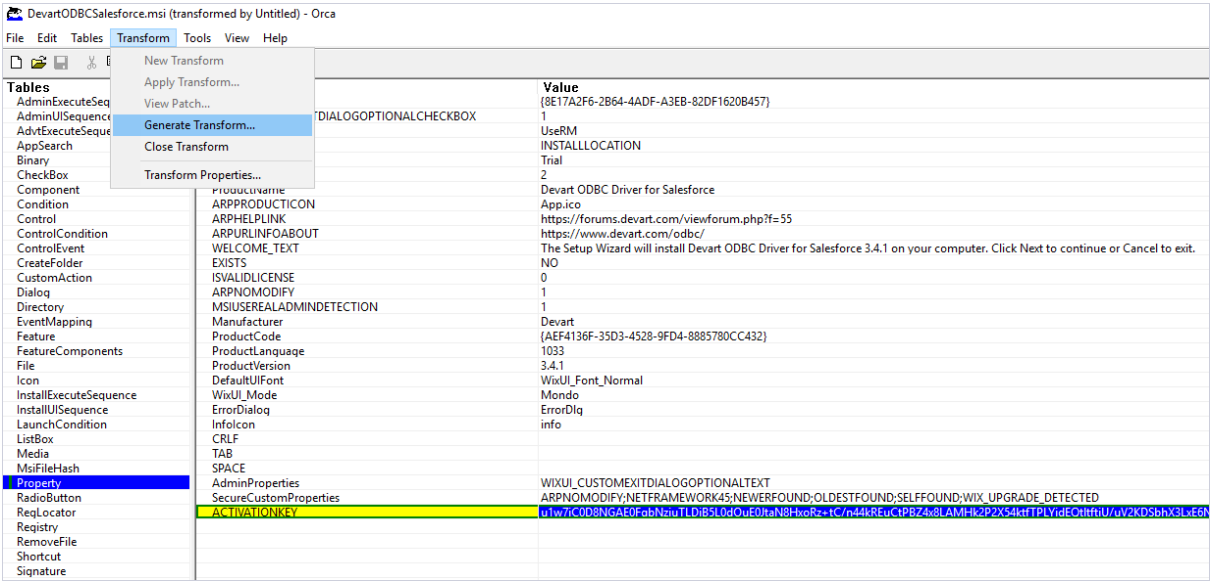
In the **Add Row** dialog that opens, make the following settings and press **OK** to apply the changes:

- **Property** - enter **ACTIVATIONKEY** with capital letters only.
- **Value** - enter the valid OEM license key for the ODBC Driver for Google BigQuery.

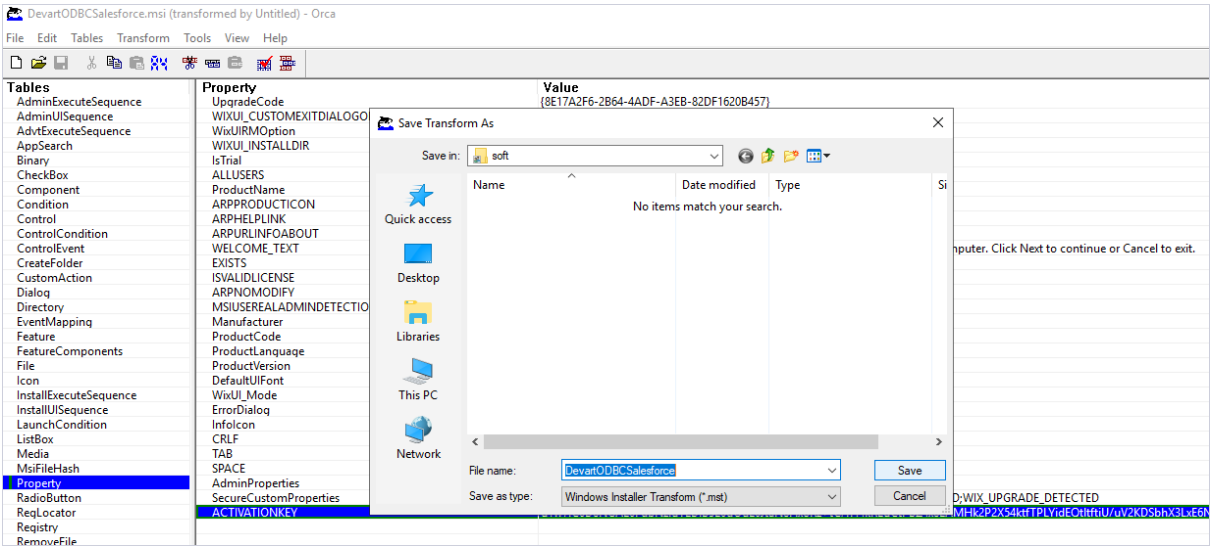
As shown in the following screen, a new property, **ACTIVATIONKEY**, has been added, with

the license key displayed in the value column next to it.

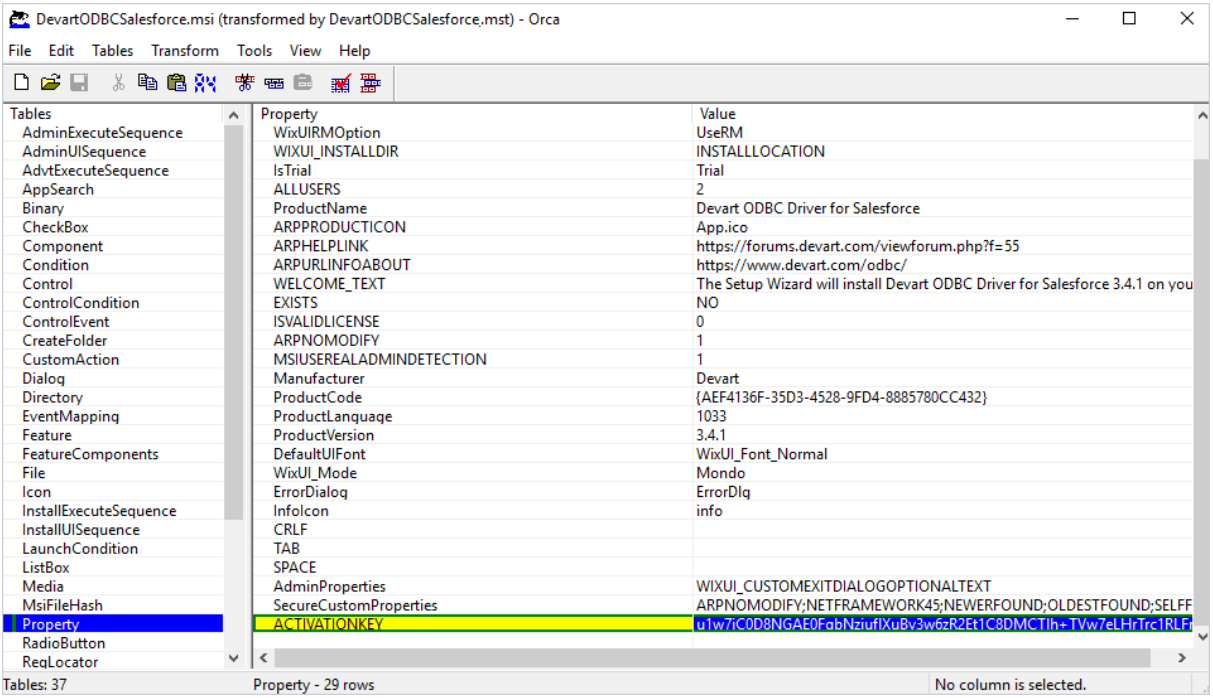
5. Once the configuration changes have been made, select **Transform** -> **Generate Transform**.



6. In the **Save Transform As** dialog that appears, enter a suitable name for the new MST file and click **Save** to apply your settings.



7. If successful, the encryption message *DevartODBCSalesforce.msi (transformed by DevartODBCSalesforce.mst) - Orca* will be displayed at the top of the Orca application window.



In case of a positive outcome, the newly created MST file will be located in the folder you specified, alongside the MSI file.

3.2.2 Deployment and Activation

Installing and Activating Software Remotely

Group Policy automated-program installation is specifically designed for deploying Windows Installer packages (MSI files). Therefore, when deploying the ODBC Driver for Google BigQuery using Group Policy, be sure to use the corresponding MSI file for the ODBC Driver for Google BigQuery.

Prerequisites: Locating the MSI Installation File

Prior to making configuration settings in the Group Policy, you'll need to create a distribution folder:

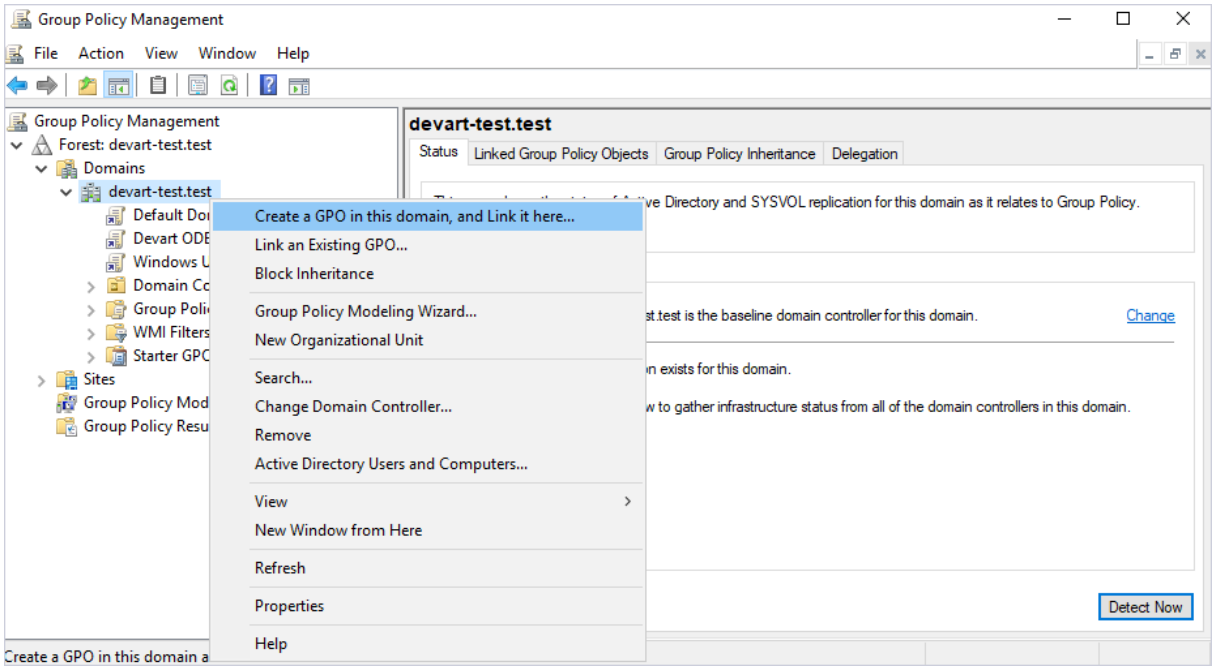
1. Create a shared network folder on the publishing server.
2. Set the appropriate sharing permissions on this folder to allow read access to the driver installation package for all domain users.
3. Download the ODBC Driver for Google BigQuery MSI file, and place it in the network folder.

The MSI file for the ODBC Driver for Salesforce is taken as an example to illustrate the Group Policy installation process. Use the same steps described in this section when installing the ODBC Driver for Google BigQuery.

Further in this section, you'll find more detailed information on how to deploy and activate the ODBC Driver for Google BigQuery on remote client computers using Group Policy.

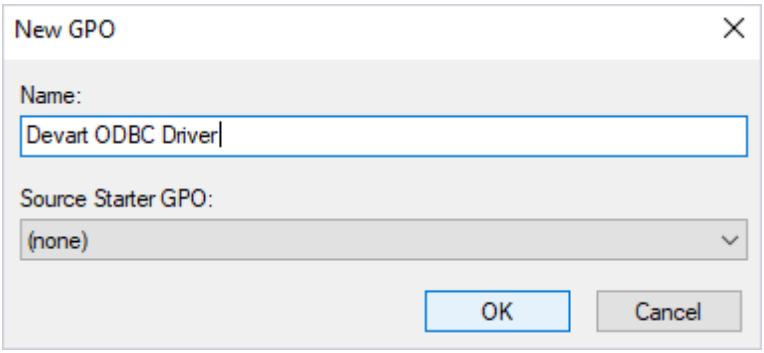
Server-Side Actions

1. Open the **Group Policy Management** desktop application.
2. In the **Group Policy Management** window, navigate to the desired forest node, then expand the appropriate option under the **Domains** node. For this example, we'll select **devart-test.test**. Right-click the Domains node, and from the context menu, select **Create a GPO in this domain, and Link it here**.



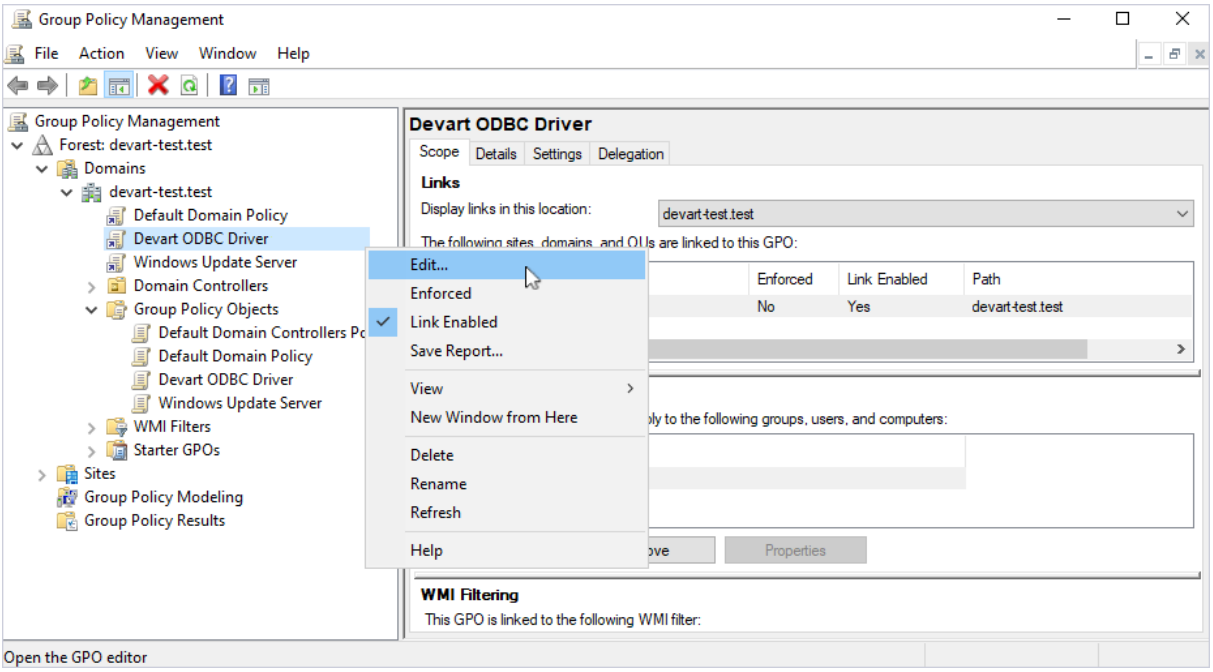
3. You can now create a New Group Policy Object. In the **New GPO** dialog enter a name for the new object and click **OK**. The new GPO will then appear within the **Group Policy Management** container.

For example, let's create a GPO named after the ODBC driver name.

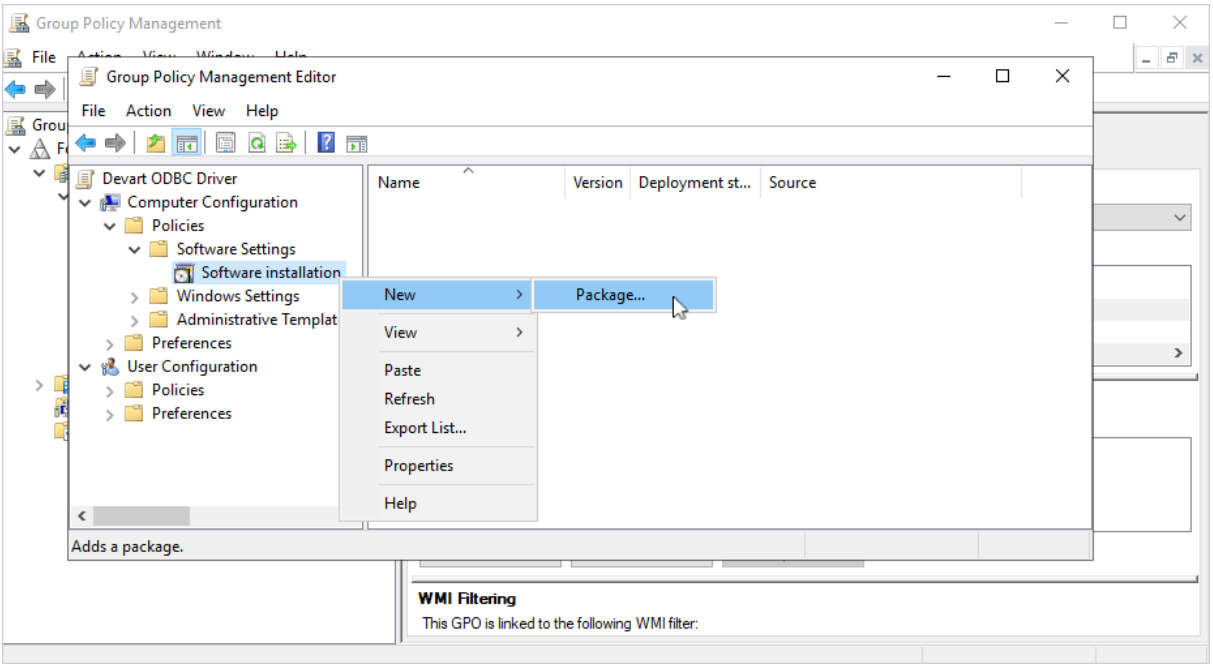


Keep in mind that each ODBC Driver for Google BigQuery Windows installation package corresponds to one Group Policy Object (GPO), which is important for managing future software upgrades. To install multiple drivers using Group Policy, you need to create a separate GPO for each driver you want to deploy.

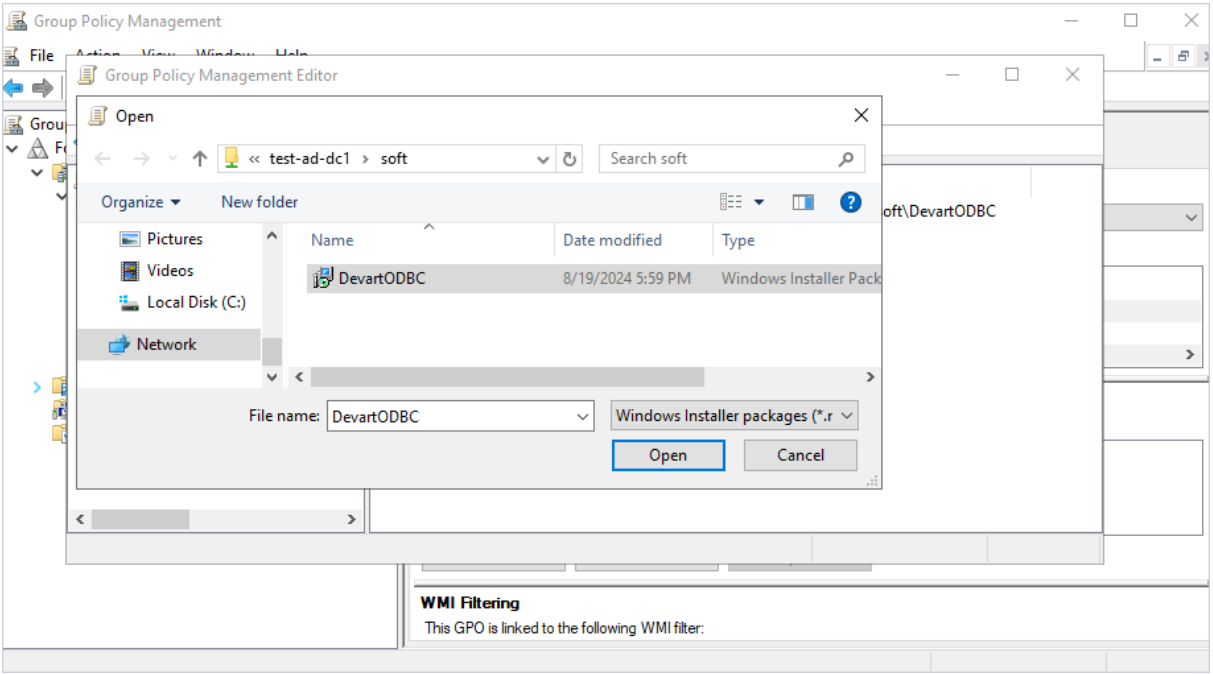
4. Right-click the new object and select **Edit** from the context menu.



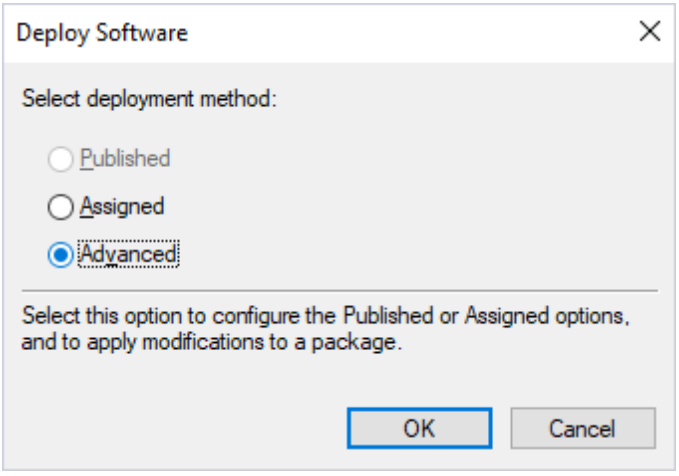
5. In the left pane of the **Group Policy Management Editor**, navigate to **Computer Configuration --> Policies --> Software Settings --> Software installation**. Your current deployment package will appear in the right pane. Right-click **Software installation**, then select **New --> Package**.



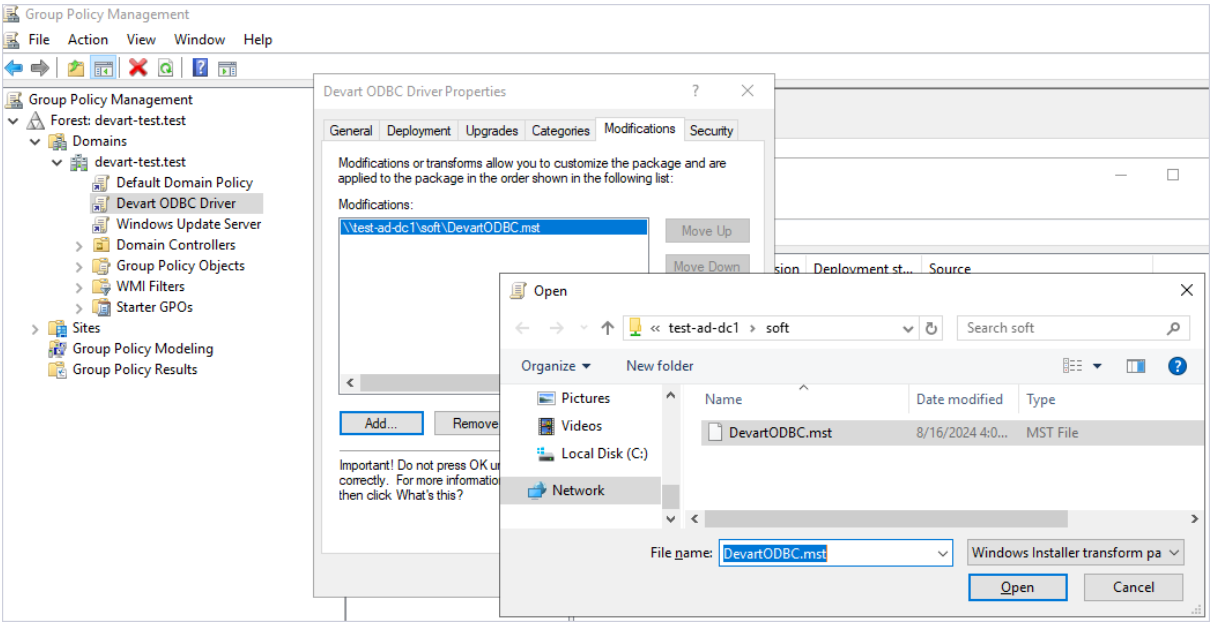
6. In the **Group Policy Management Editor** dialog that opens, select the desired MSI installation file and click **Open**.



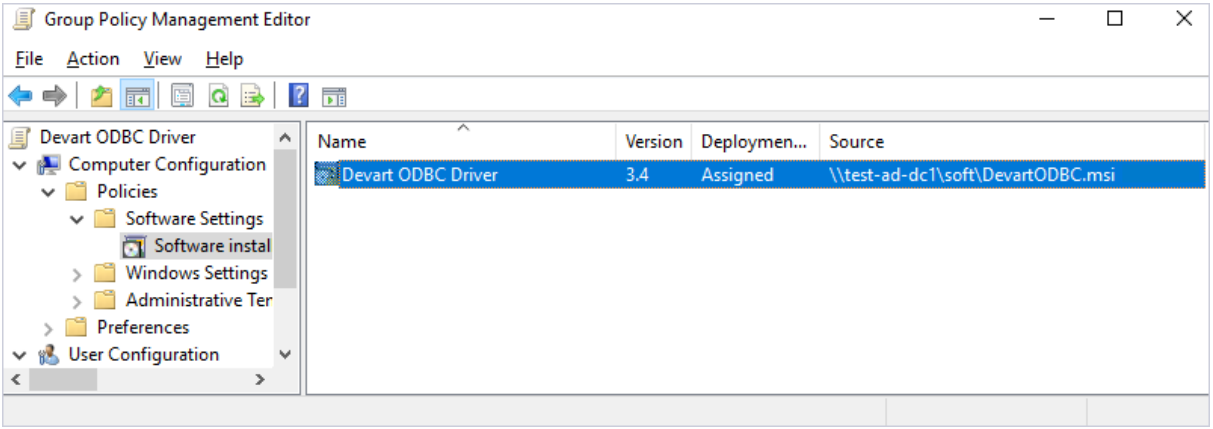
7. In the **Deploy Software** dialog, select **Advanced** to specify the software deployment method. The **Advanced** deployment method allows you to make necessary modifications to the MSI file, such as creating the MST file in Orca.



8. In the **Properties** dialog of the installation package that opens, go to the **Modifications** tab and select **Add**. Browse for the corresponding MST file, select it, and click **Open** to apply the settings.



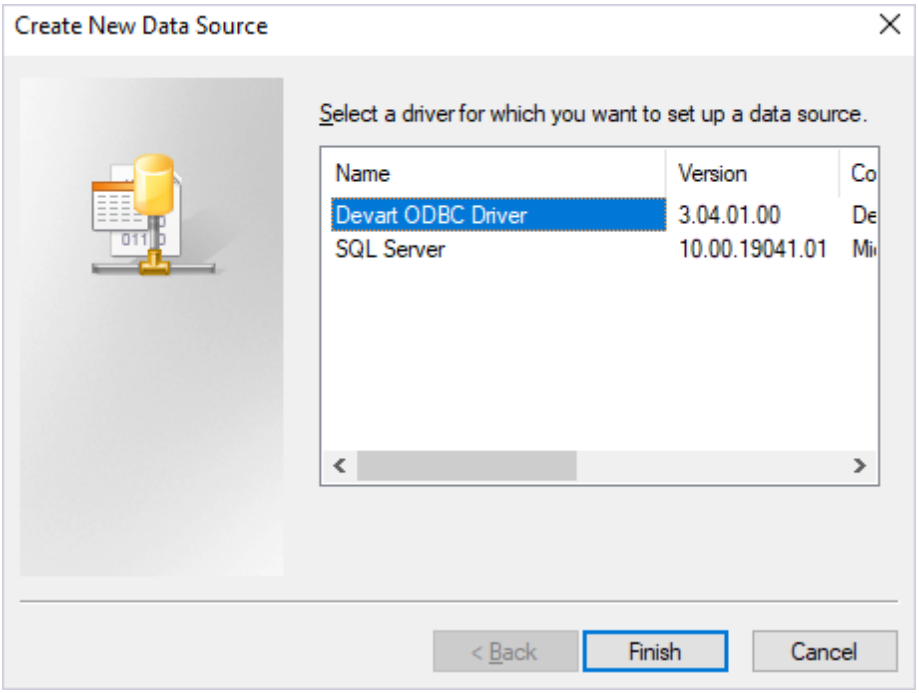
9. If configured correctly, the **Group Policy Management Editor** window should look as follows:



Client-Side Actions

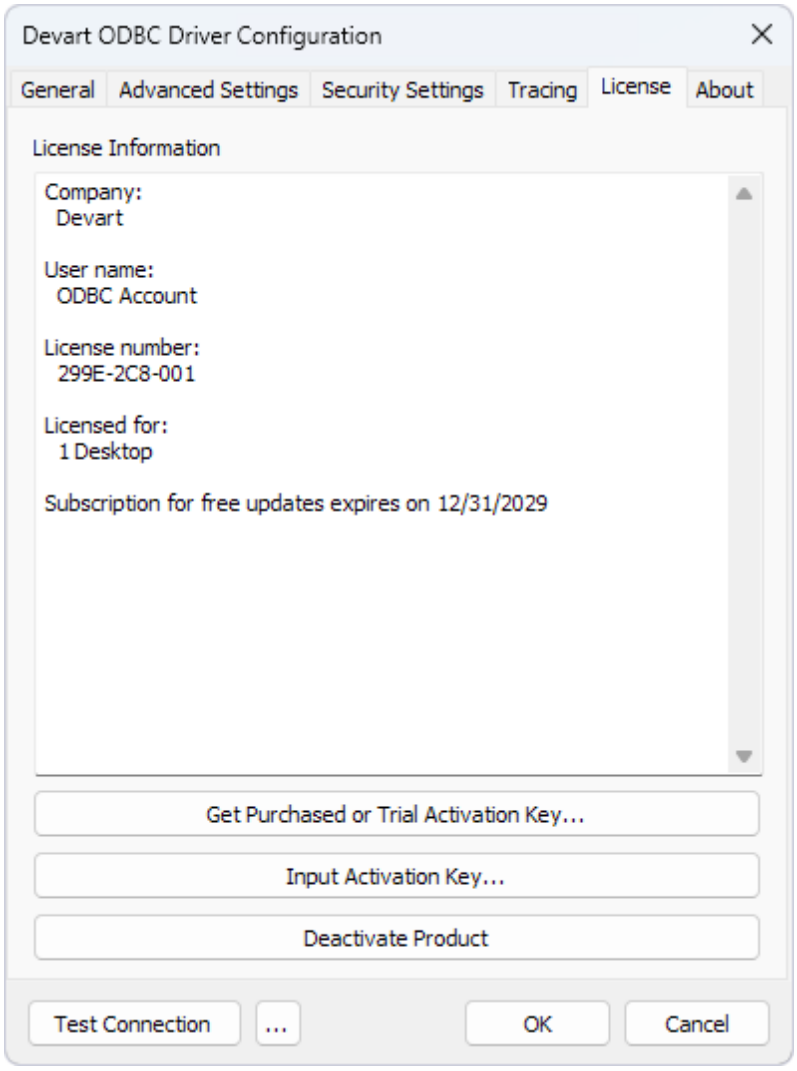
For the ODBC Driver for Google BigQuery to be successfully installed on remote client machines, all domain users must restart their computers after logging in for the first time.

In case of successful deployment, the ODBC driver will be installed on the client's computer. To verify, open the ODBC Data Source Administrator on the client's machine and add the deployed ODBC driver.



All information on the deployed driver is accessible upon clicking the **About** tab.

Similarly, the valid license key will be automatically activated after the successful installation of the ODBC Driver for Google BigQuery.



See Also

- Creating the MST File Using Orca
- Activating on Windows - ODBC Driver for Google BigQuery
- License Information - ODBC Driver for Google BigQuery

3.2.3 Software Upgrade

Automatic Software Update Using Group Policy

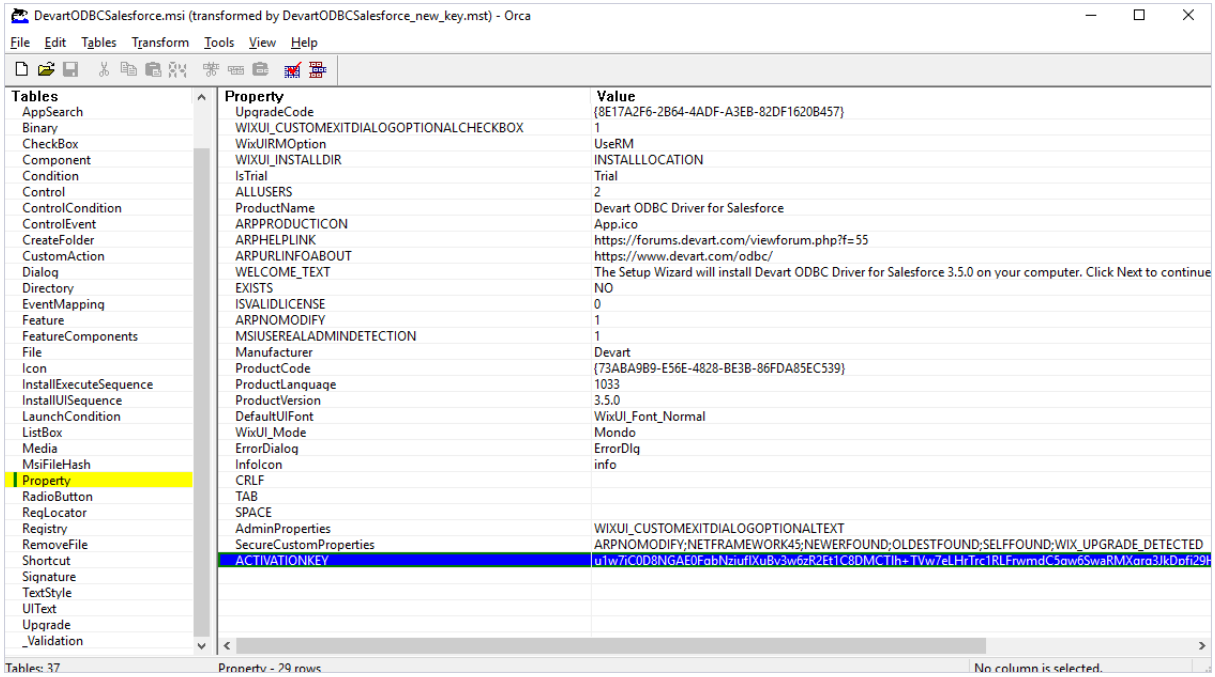
If the ODBC Driver for Google BigQuery was initially deployed through Group Policy, it can be easily updated to a newer version. Follow the steps below to update both the ODBC Driver for

Google BigQuery and the license to newer versions on all remote computers in the domain.

1. Download the ODBC Driver for Google BigQuery installation MSI file of a newer version and place it in the shared network folder.

2. Create a new MST file with a new license key using Orca.

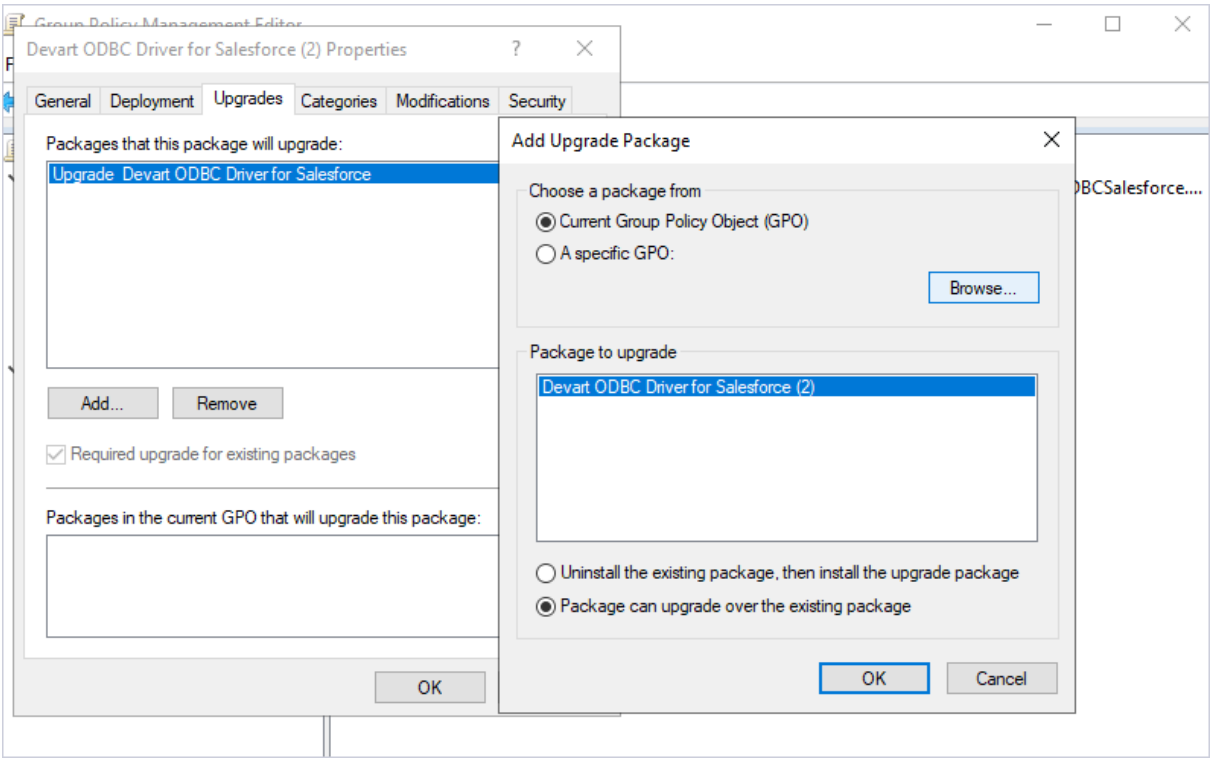
> If your license is still valid, there's no need to create a new MST file. Use the current MST file instead.



> The MSI file for the ODBC Driver for Salesforce is taken as an example to illustrate the Group Policy installation process. Use the same steps described in this section when installing the ODBC Driver for Google BigQuery.

3. Follow the same workflow as outlined in Step 4 to Step 7 of the ODBC Driver for Google BigQuery Remote Deployment and Activation section.

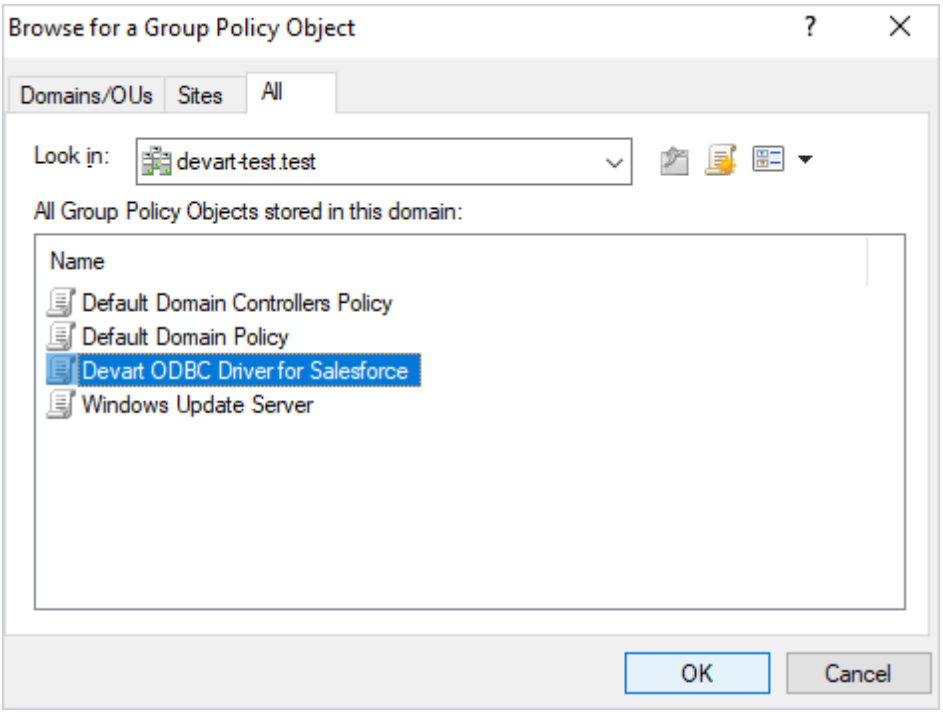
4. In the **Properties** dialog that appears after selecting the **Advanced** deployment method, go to the **Upgrades** tab and click **Add**.



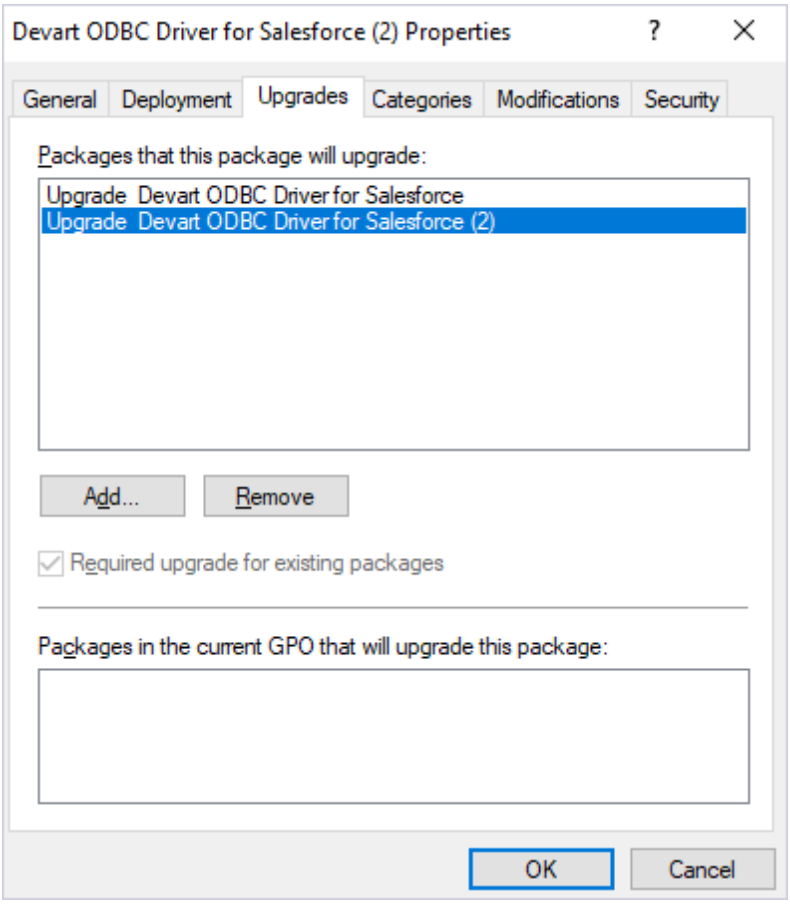
Make sure to select the following check boxes while adding the package:

- **Current Group Policy Object**
- **Package can upgrade over the existing package**

5. Browse for the corresponding GPO object and click **OK** to apply the settings.

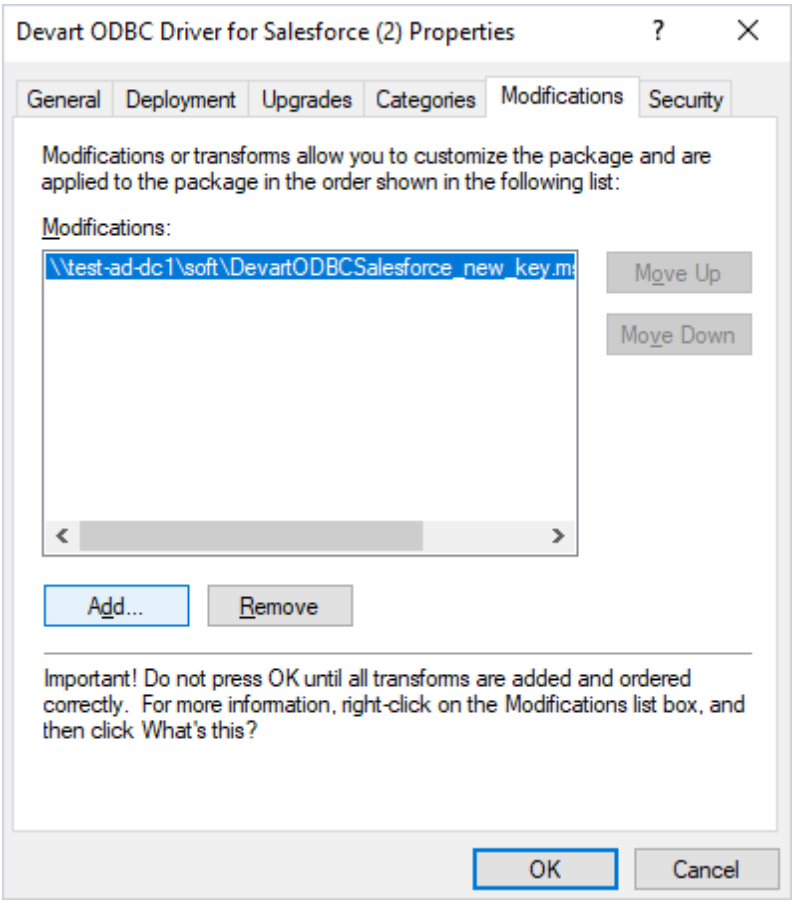


6. Now the **Upgrades** tab of the **Properties** dialog will list a new package with a newer version.

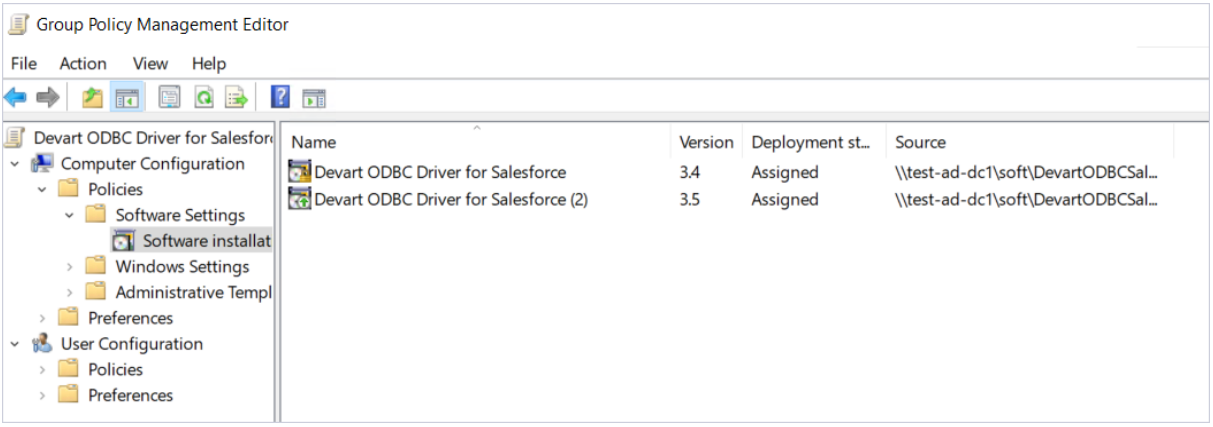


7. Go to the **Modifications** tab in the same properties dialog, click **Add** and browse to the MST file.

   We have already created a new MST file with a new license key in Step 2.



8. In case of a positive outcome both the old and new versions of the driver package will be displayed in the Group Policy Management Editor.



Once the GPO configuration on the server is complete, the ODBC Driver for Google

BigQuery will automatically update to the latest version each time a client computer restarts.

Client-Side Actions

To update the ODBC Driver for Google BigQuery to a newer version on remote client machines, all domain users must restart their computers after their first login.

If successful, both the driver and the license key will be automatically updated to the new version on remote computers. For detailed instructions on how to view the technical details of the ODBC Driver for Google BigQuery after upgrading, refer to Client-Side Actions.

See Also

- Creating the MST File Using Orca
- Remote Deployment and Activation - ODBC Driver for Microsoft Access
- Activating on Windows - ODBC Driver for Google BigQuery
- License Information - ODBC Driver for Google BigQuery

3.3 Product Activation

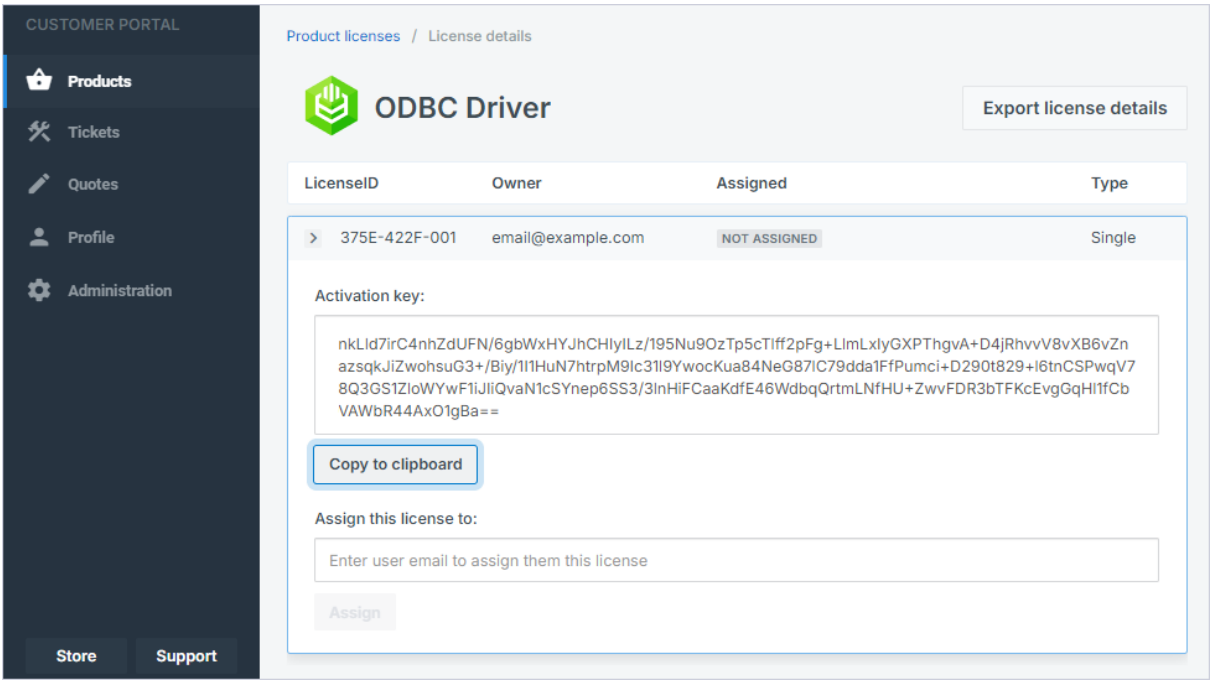
See how to activate Devart ODBC Driver for Google BigQuery:

- Obtaining Activation Key
- Activation on Windows
- Where to see the license information

3.3.1 Obtaining Activation Key

Follow these steps to obtain your product activation key:

- **From the Customer Portal:**
  1. Open the Customer Portal and sign in.
  2. On the **Product licenses** page, select the driver.
  3. Click **Copy to clipboard** to copy the activation key.



- **From the registration email:**
  1. Locate the registration email you received from Devart after installing the driver. This email contains a Purchased or Trial activation key.
  2. Copy the activation key.

See also:

- Activation on Windows

3.3.2 Activation on Windows

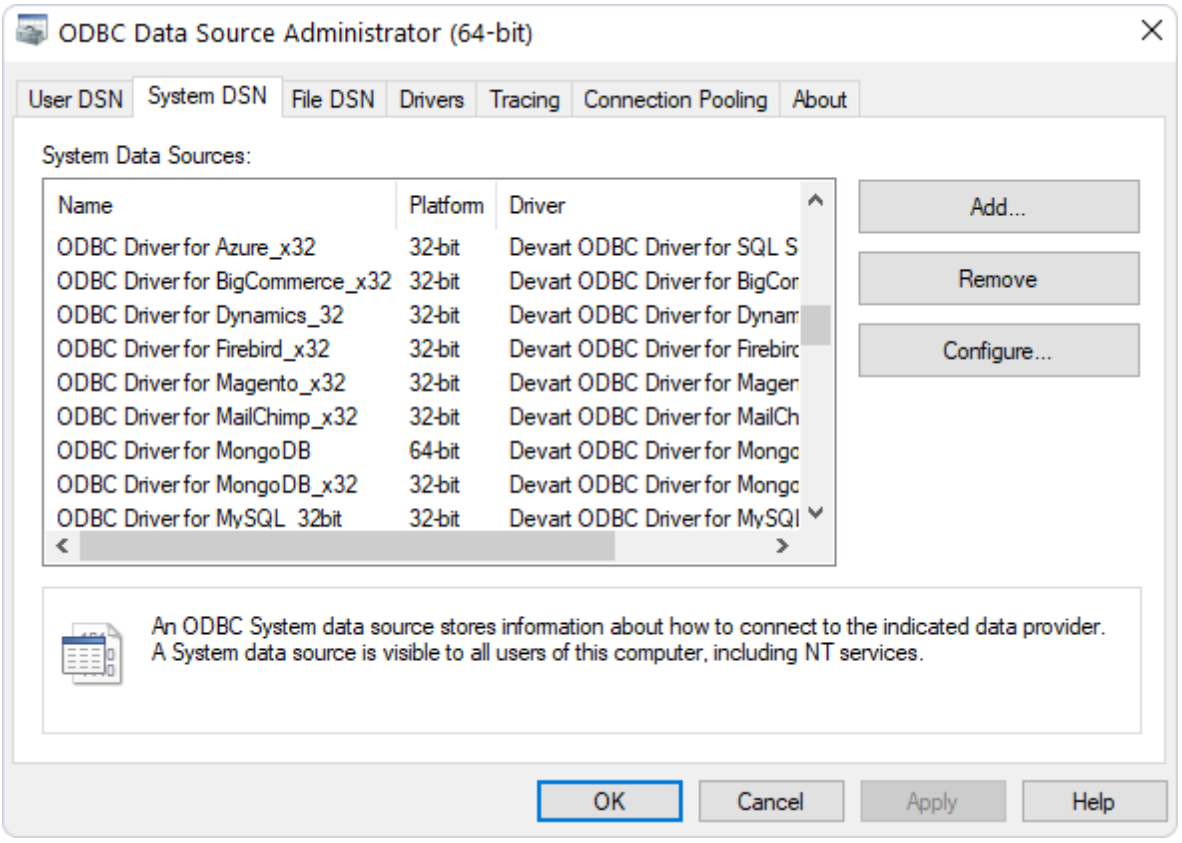
Driver Activation After Installation

To activate your installed driver, perform the following steps.

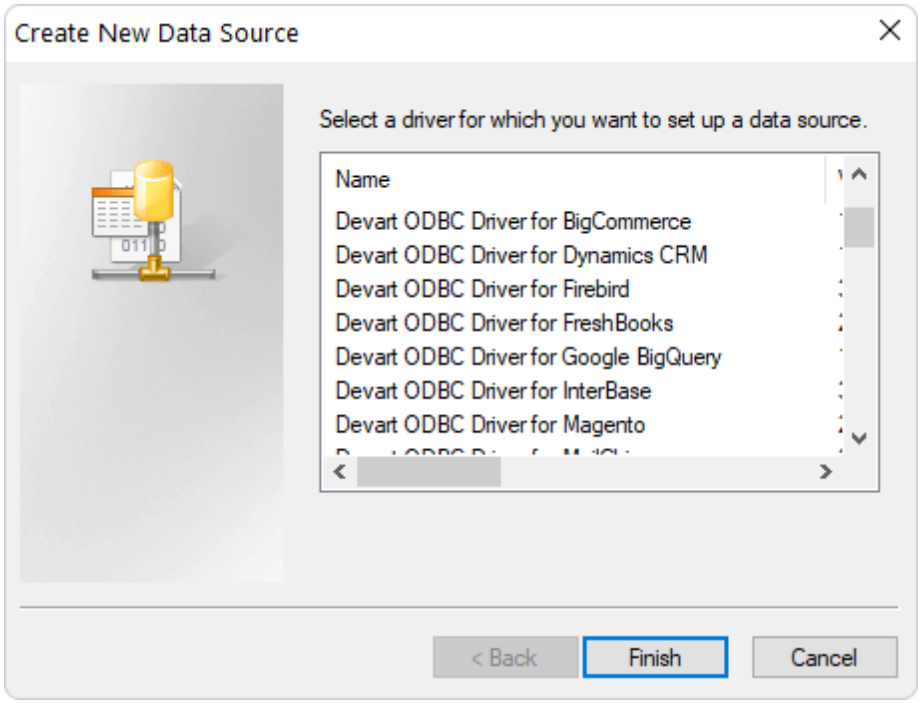
You need to activate the driver even for the trial version.

1. Open the ODBC Data Source Administrator.

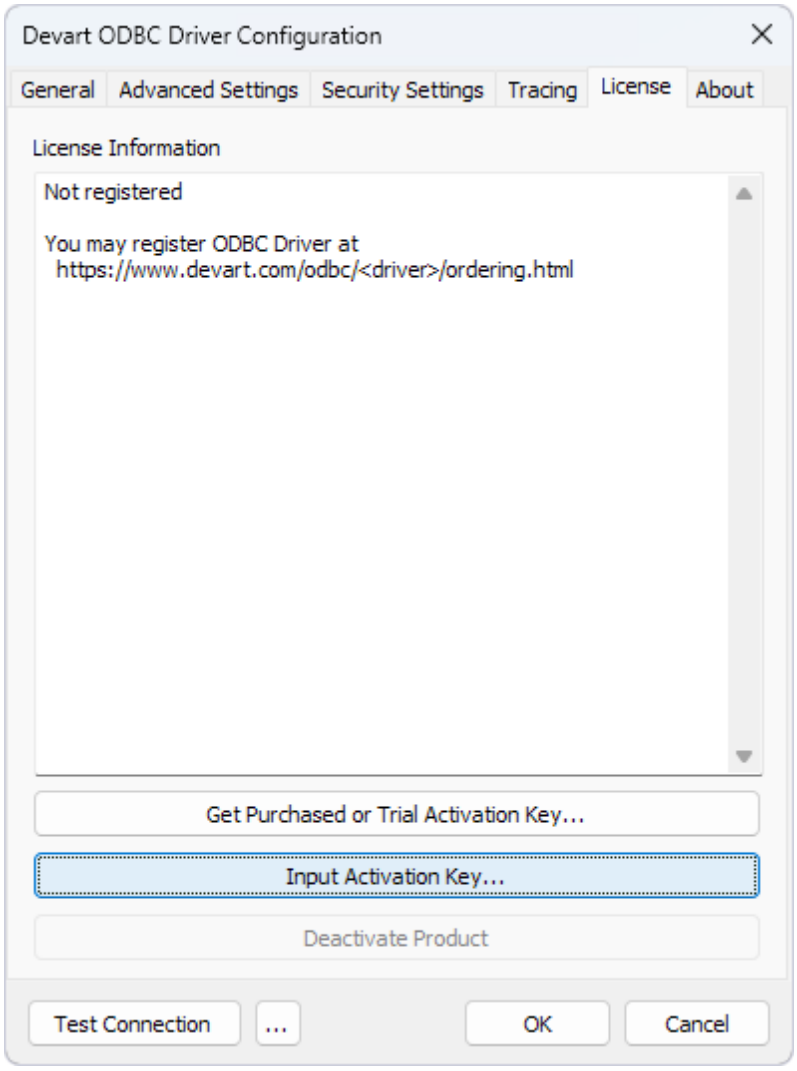
2. On the **System DSN** tab, click **Add**.



3. In the **Create New Data Source** dialog, select the installed driver, then click **Finish**.



4. In the configuration dialog, navigate to the **License** tab, and click **Input Activation Key**.

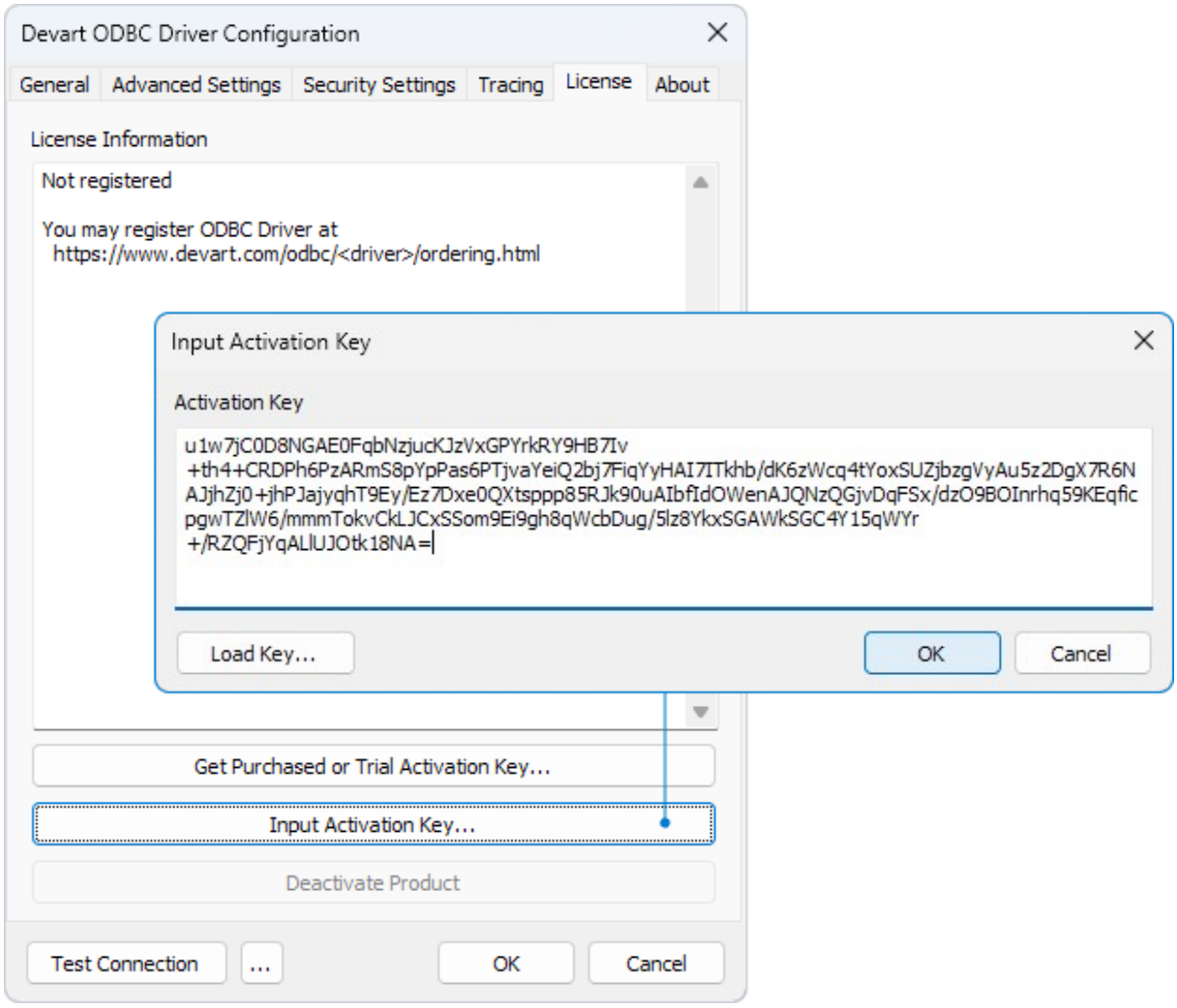


5. Here, you can activate the driver using one of the following methods:

- **Enter an activation key:** Paste your activation key into the corresponding box.
- **Load an activation file:** Click **Load Key** and select the file that contains the activation key.

You can find your activation key in the registration email or your Customer Portal account.

To open the Customer Portal, click **Get Purchased or Trial Activation Key**.

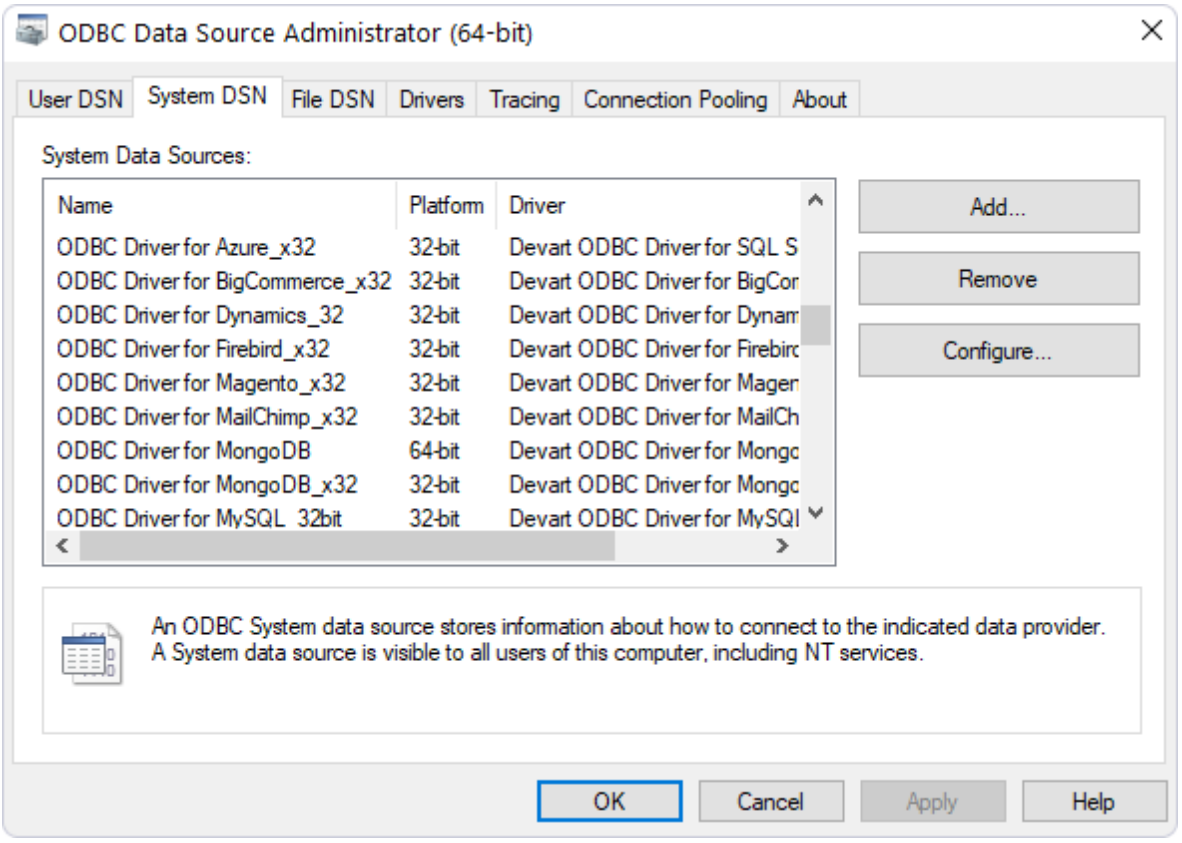


6. Click **OK**.

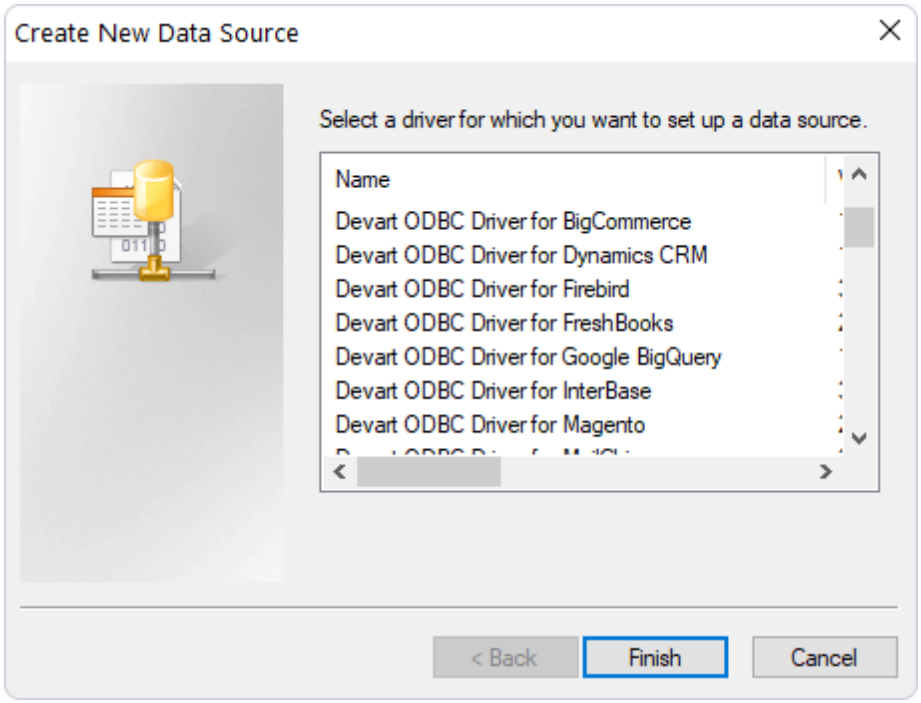
3.3.3 Where to See the License Information?

To see the license information of your installed driver, do the following:

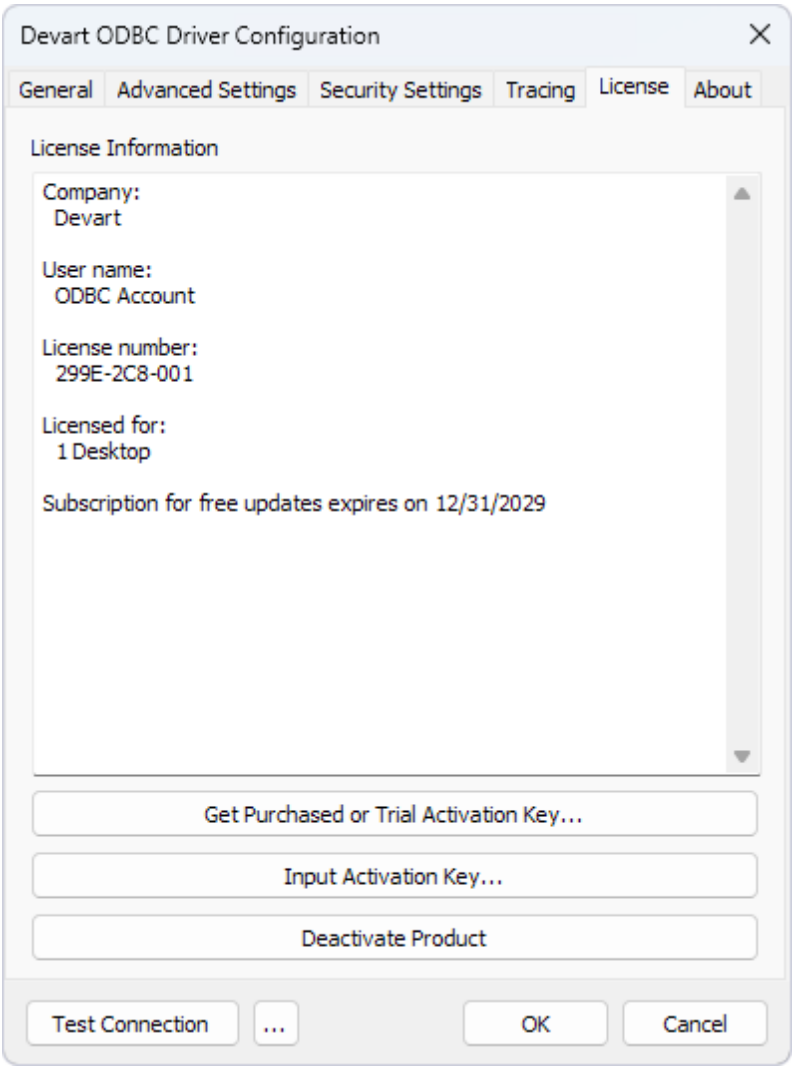
1. Open the ODBC Data Source Administrator.
2. On the **System DSN** tab, click **Add**.



3. Select the driver, then click **Finish**.



4. In the configuration dialogue, navigate to the **License** tab to view the license details.



3.4 Connecting to BigQuery

Windows DSN Configuration

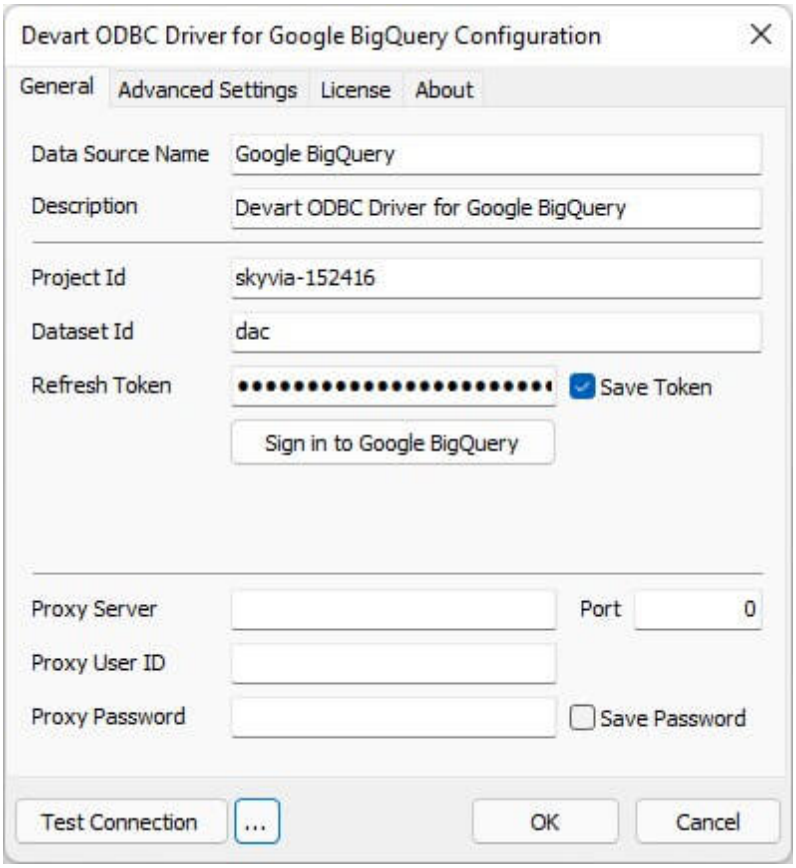
After installing the driver, create a DSN for BigQuery in the ODBC Data Source Administrator.

1. Open the ODBC Data Source Administrator.

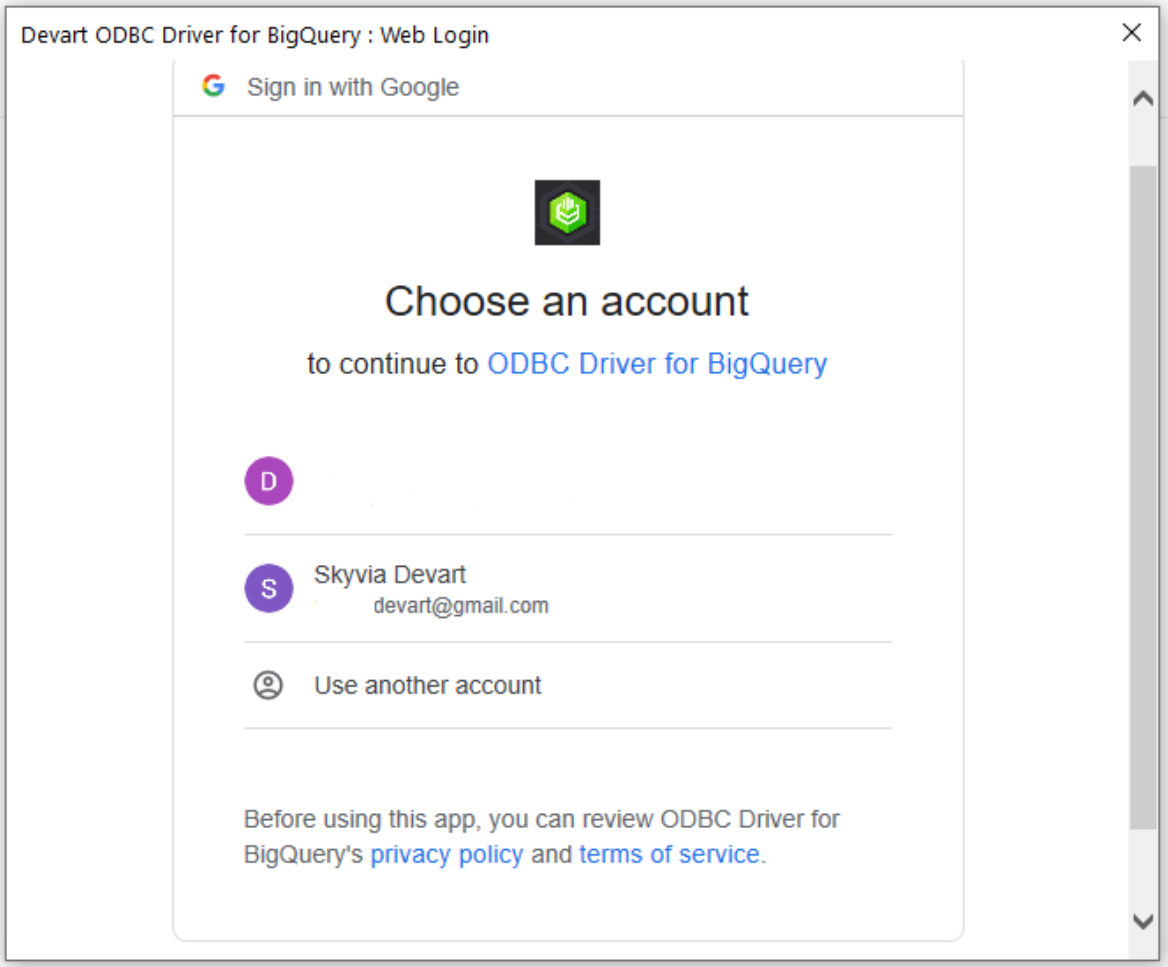
- Type `ODBC Data Sources` in the Windows 10 search box and choose the ODBC Data Sources application that matches the bitness of your application (32-bit or 64-bit). You can also open ODBC Data Sources from `Control Panel` > `Administrative Tools`. Note that before Windows 8, the icon was named Data Sources (ODBC).

- Alternatively, you can run `C:\Windows\SysWOW64\odbcad32.exe` to create a 32-bit DSN or `C:\Windows\System32\odbcad32.exe` to create a 64-bit DSN.

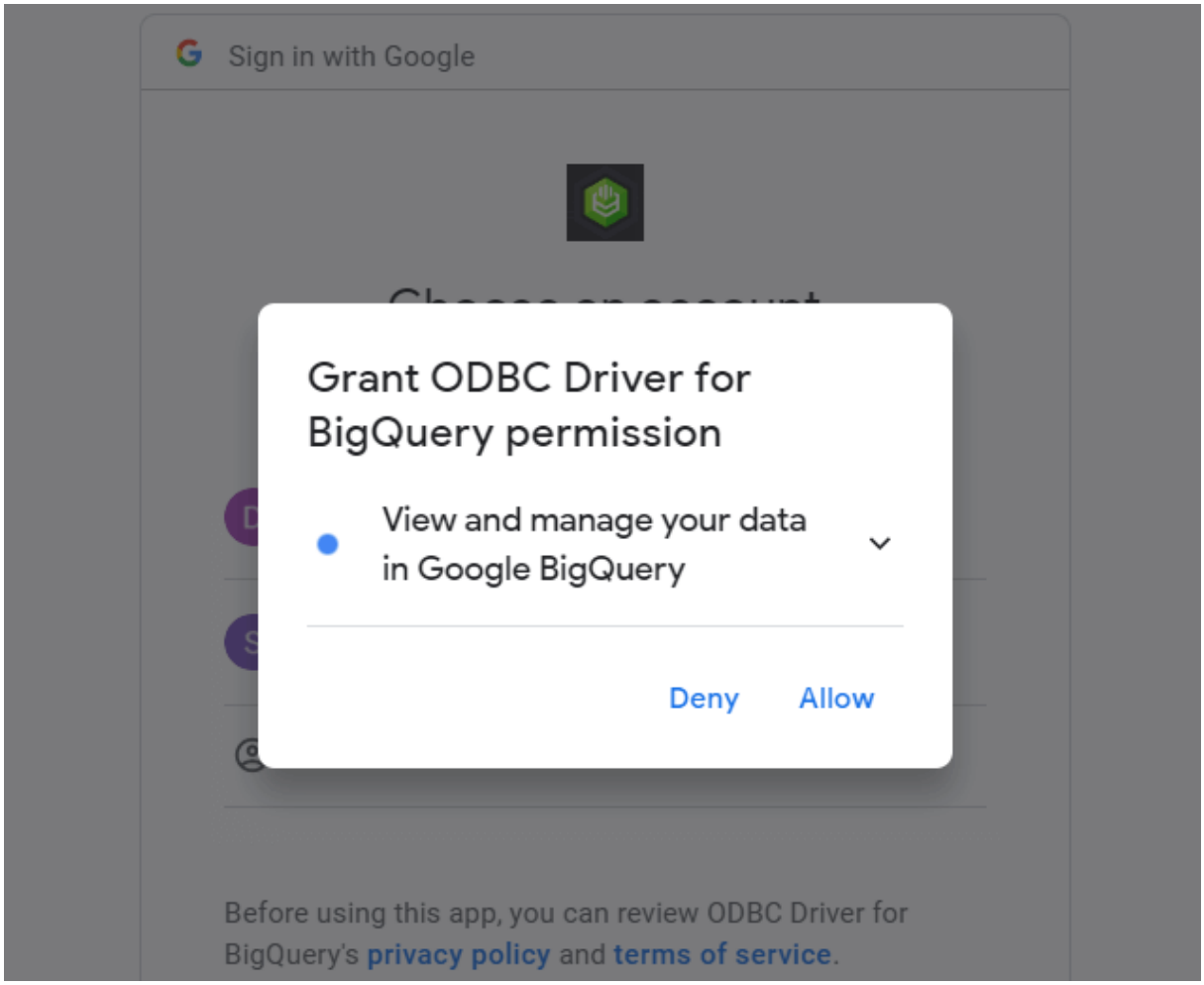
2. Select the **User DSN** or **System DSN**. Most applications work with any of them, yet some applications require a specific type of DSN.
3. Click **Add**. The Create New Data Source dialog appears.
4. Select Devart ODBC Driver for Google BigQuery and click **Finish**. The driver setup dialog opens.
5. Enter your **Project Id** and **Dataset Id**. Click **Sign In with Google**.



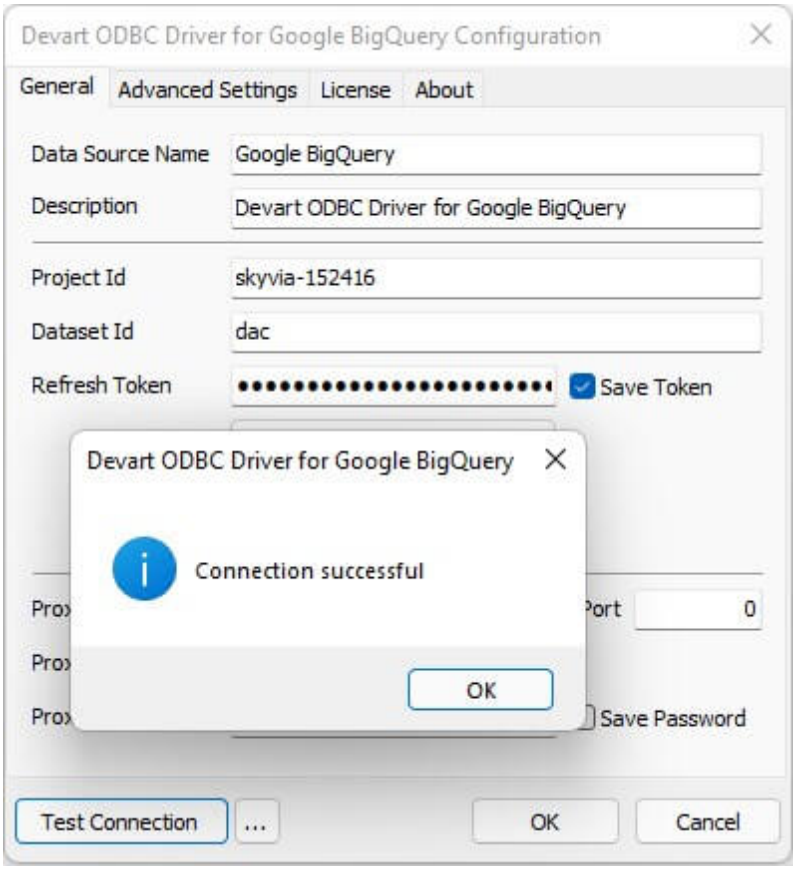
6. In the web login dialog, sign in with the Google account associated with your BigQuery account.



7. Allow the driver to view and manage your BigQuery data.



8. Refresh Token will be automatically filled in. Select **Save Token** to remember the refresh token.



9. You may test the connectivity by clicking **Test Connection**.

10.Click **OK** to save the DSN.

See Also

Connection Options

3.5 Connection String Parameters

BigQuery ODBC Connection String Parameters

The following table lists the connection string parameters for BigQuery.

Parameter	Description
`Project Id`	The project ID is a unique identifier for a project.

DataSet Id	The dataset ID is a unique dataset name inside the project namespace.
Refresh Token	The refresh token that authorizes the driver to access your BigQuery data.
Proxy Settings	
Proxy Server	The proxy hostname or IP address.
Proxy Port	The port number used to connect to a proxy server.
Proxy User	The proxy username.
Proxy Password	The proxy password.
Advanced Settings	
AllowNullStringsInMetadata	Some parameters don't accept null values when retrieving metadata. If a third-party tool passes a null value to such a parameter, the driver returns an error. By default, these options are enabled for compatibility with such third-party tools.
EmptyStringsAsNullInMetadata	
Connection Timeout	The time (in seconds) to wait for a connection to open before terminating an attempt. The default value is 60.
ODBC Behavior	Sets the behavior corresponding to the ODBC specification version expected by a third-party tool. The behavior of the ODBC driver can be changed by calling the SQLSetEnvAttr function to set the SQL_ATTR_ODBC_VERSION environment attribute. Some third-party tools expect the driver to exhibit ODBC 2.x behavior, but forget to call SQLSetEnvAttr with the needed version, or pass an incorrect value. In this case, the behavior can be explicitly set in the connection string. 0 The default value. ODBC behavior is determined by a third-party tool. 2 ODBC 2.x behavior is explicitly set.

	`3` ODBC 3.x behavior is explicitly set.
`Primary Key Columns`	Specifies a column or a set of comma-delimited columns that will be returned by the driver as primary keys for BigQuery tables. Google BigQuery has no primary key or unique constraints, which makes it impossible for some third-party tools to work with BigQuery tables correctly. The default column is `id`.
`QueryTimeout`	The time to wait for a query execution result before terminating and generating an error.
`RegionalNumberSettings`	Enables the use of local regional settings when converting numbers to strings.
`RegionalDateTimeSettings`	Enables the use of local regional settings when converting dates and times to strings.

`String Types`	Sets the string value types returned by the driver as Default, ANSI, or Unicode.
	`Default`
	The driver defines the string types.
	`Ansi`
	All string types are returned as SQL_CHAR, SQL_VARCHAR, and SQL_LONGVARCHAR.
	`Unicode`
	All string types are returned as SQL_WCHAR, SQL_WVARCHAR, and SQL_WLONGVARCHAR.
	Note: Set the parameter to `Ansi` or `Unicode` if your third-party tool supports only ANSI or Unicode strings.

`UTC Dates`	Specifies whether all the datetime values retrieved from the data source are returned as UTC values or converted to local time and whether the date values specified on the application side (e.g., in SQL statements) are considered UTC or local. The default value is false.

BigQuery ODBC Connection String sample

```
DRIVER={Devart ODBC Driver for BigQuery};Project
ID=myprojectid;DataSet Id=mydatasetid;Refresh Token=myrefreshtoken
```

3.6 Enabling ODBC Tracing

Creating an ODBC Trace Log on Windows

When you start or stop tracing in the 64-bit ODBC Administrator, the tracing is also enabled or disabled in the 32-bit ODBC Administrator, and vice versa.

If the ODBC client application you need to trace runs under Local System account or any other user login than your own, select `Machine-Wide tracing for all user identities`. For example, this option may be necessary for SSMS.

To generate a trace file using ODBC Source Administrator on Windows, follow the steps below.

1. Type `ODBC Data Sources` in the Windows 10 search box (in earlier versions of Windows, open `Control Panel` > `Administrative Tools`) and choose the application of the needed bitness.
2. Select the `Tracing` tab.
3. If necessary, change the default `Log File Path`. Make sure that the path is writable by the application, then click `Apply`.
4. Click `Start Tracing Now`.
5. Restart all application processes.
6. Click `Test Connection` in the DSN settings to make sure the driver is able to connect.
7. Reproduce the issue.
8. Click `Stop Tracing Now` on the `Tracing` tab.
9. Send us the obtained log file (for example, devart.log).

Creating an ODBC Trace Log on macOS

To enable the trace option on macOS, use the Tracing tab within ODBC Administrator.

1. Open the ODBC Administrator.
2. Select the `Tracing` tab.
3. If necessary, change the default `Log file path`.
4. Select `All the time` in the `When to trace` option.

Creating an ODBC Trace Log on Linux

To trace the ODBC calls on Linux, set the `Trace` and `TraceFile` keyword/value pairs in the `[ODBC]` section of the `/etc/odbcinst.ini` file, for example:

```
[ODBC]
Trace=Yes
TraceFile=/home/test/devart.log
```

Make sure to disable logging after obtaining a log file since it affects the read/write speed.

3.7 Usage Statistics

Usage Statistics

ODBC Driver for Google BigQuery can collect anonymous usage statistics. This data helps us improve product quality, resolve issues faster, and better understand how our products are used.

The collected data is anonymous and does not include personal information. The amount of transmitted data is minimal and is used only for diagnostic and product improvement purposes.

Collected Data

The driver collects the following data:

- Product name and version.
- Name of the process (application) using the driver.
- License information: license type, license number, and license status.
- Operating system name and version, number of processor cores.
- An anonymous user identifier.

> The user identifier is an internal ID generated only for statistical purposes. It is not the operating system user name and cannot be used to identify the actual user.

- An anonymous hardware identifier.

> The hardware identifier is an internal ID generated only for statistical purposes. It does not contain any data that can identify specific hardware.

- Database server name and version.
- Names of connection parameters used to connect to the database server.

> Only parameter names are collected. We do not collect parameter values such as database name, user name, or password.

- Connection result: success, or a numeric error code if the connection fails.

> Only the numeric error codes are collected. We do not collect full error messages, which might contain sensitive data (for example, database or user names).

Default Settings

Usage statistics is enabled by default when you install the driver.

To disable usage statistics, follow the instructions for your operating system:

- Enable or Disable Usage Statistics on Windows

3.7.1 Enable or Disable on Windows

Enable or Disable Usage Statistics on Windows

Usage statistics is enabled by default when you install the driver. You can disable it in one of the following ways:

- **During installation**: In the installation wizard or from the command line.
- **After installation**: By editing the Windows Registry.

Disable Usage Statistics in the Installation Wizard

To disable usage statistics in the installation wizard, clear the **Improvement Program** checkbox on the last page of the wizard. The checkbox is selected by default.

Disable Usage Statistics From the Command Line

When you install the driver from the command line, you can disable usage statistics by adding the `/NOUSAGESTATISTICS` parameter to the command.

Silent and Very Silent Mode

To disable statistics during silent or very silent installation with the EXE installer, run one of the following commands:

```
DevartODBCBigQuery.exe /NOUSAGESTATISTICS /SILENT
DevartODBCBigQuery.exe /NOUSAGESTATISTICS /VERYSILENT
```

Quiet Mode

To disable statistics during quiet installation with the MSI installer, run the following command as an administrator:

```
msiexec /i DevartODBCBigQuery.msi /q NOUSAGESTATISTICS=true
```

Change Usage Statistics Settings in the Windows Registry

To enable or disable usage statistics for an installed driver, edit the Windows Registry as follows:

1. Open the Registry Editor. To do this, press **Win+R**, type `regedit` in the **Run** dialog, and press **Enter**.
2. Depending on your driver version, navigate to one of the following keys:
   - 64-bit driver: `HKEY_LOCAL_MACHINE\SOFTWARE\ODBC\ODBCINST.INI\Devart ODBC Driver for Google BigQuery`
   - 32-bit driver: `HKEY_LOCAL_MACHINE\SOFTWARE\WOW6432Node\ODBC\ODBCINST.INI\Devart ODBC Driver for Google BigQuery`
3. Set the value of the `UsageStatistics` parameter to `False` to disable statistics, or `True` to enable statistics.

3.8 Supported Data Types

Data Type Mapping

The Devart ODBC Driver for Google BigQuery supports all Google BigQuery data types.

The following table describes how the Google BigQuery data types are mapped to the ODBC data types.

BigQuery Data Types	ODBC Data Types
INT64	SQL_BIGINT
STRING	SQL_VARCHAR
	SQL_LONGVARCHAR
	SQL_WVARCHAR
	SQL_WLONGVARCHAR
NUMERIC	SQL_NUMERIC
	SQL_DECIMAL
FLOAT64	SQL_DOUBLE

BOOL	SQL_BIT
BYTES	SQL_VARBINARY
DATE	SQL_TYPE_DATE
DATETIME	SQL_TYPE_TIMESTAMP
TIMESTAMP	SQL_TYPE_TIMESTAMP
TIME	SQL_TYPE_TIME
ARRAY	SQL_VARCHAR
STRUCT	SQL_VARCHAR
GEOGRAPHY	SQL_VARCHAR
	SQL_WVARCHAR

3.9 Supported ODBC API Functions

Supported ODBC Functions

The SQLGetInfo function returns information about the driver and data source. To find out whether a specific function is supported in the driver, call SQLGetFunctions.

For more information about the ODBC interface, see the ODBC Programmer's Reference.

ODBC Driver for Google BigQuery supports all deprecated functions for backward compatibility.

The following table lists the currently supported ODBC functions.

Function Name	Support	Standard	Purpose
SQLAllocHandle	✓	ISO 92	Obtains an environment, connection, statement, or descriptor handle.
SQLConnect	✓	ISO 92	Connects to a specific driver by

			data source name, user ID, and password.
SQLDriverConnect	✓	ODBC	Connects to a specific driver by connection string or requests that the Driver Manager and driver display connection dialog boxes for the user.
SQLAllocEnv	✓	Deprecated	Obtains an environment handle allocated from driver.
SQLAllocConnect	✓	Deprecated	Obtains a connection handle

ODBC API Calls for Obtaining Information about a Driver and Data Source

Function Name	Support	Standard	Purpose
SQLDataSources	✓	ISO 92	Returns the list of available data sources, handled by the Driver Manager
SQLDrivers	✓	ODBC	Returns the list of installed drivers and their attributes, handles by Driver Manager

SQLGetInfo	✓	ISO 92	Returns information about a specific driver and data source.
SQLGetFunctions	✓	ISO 92	Returns the functions supported by the driver.
SQLGetTypeInfo	✓	ISO 92	Returns information about supported data types.

ODBC API Calls for Setting and Retrieving Driver Attributes

Function Name	Support	Standard	Purpose
SQLSetConnectAttr	✓	ISO 92	Sets a connection attribute.
SQLGetConnectAttr	✓	ISO 92	Returns the value of a connection attribute.
SQLSetConnectOption	✓	Deprecated	Sets a connection option
SQLGetConnectOption	✓	Deprecated	Returns the value of a connection option
SQLSetEnvAttr	✓	ISO 92	Sets an environment attribute.
SQLGetEnvAttr	✓	ISO 92	Returns the value of an environment attribute.
SQLSetStmtAttr	✓	ISO 92	Sets a statement

			attribute.
SQLGetStmtAttr	✓	ISO 92	Returns the value of a statement attribute.
SQLSetStmtOption	✓	Deprecated	Sets a statement option
SQLGetStmtOption	✓	Deprecated	Returns the value of a statement option

ODBC API Calls for Preparing SQL Requests

Function Name	Support	Standard	Purpose
SQLAllocStmt	✓	Deprecated	Allocates a statement handle
SQLPrepare	✓	ISO 92	Prepares an SQL statement for later execution.
SQLBindParameter	✓	ODBC	Assigns storage for a parameter in an SQL statement.
SQLGetCursorName	✓	ISO 92	Returns the cursor name associated with a statement handle.
SQLSetCursorName	✓	ISO 92	Specifies a cursor name.
SQLSetScrollOptions	✓	ODBC	Sets options that control cursor behavior.

ODBC API Calls for Submitting Requests

Function Name	Support	Standard	Purpose
SQLExecute	✓	ISO 92	Executes a prepared statement.
SQLExecDirect	✓	ISO 92	Executes a statement
SQLNativeSql	✓	ODBC	Returns the text of an SQL statement as translated by the driver.
SQLDescribeParam	✓	ODBC	Returns the description for a specific parameter in a statement.
SQLNumParams	✓	ISO 92	Returns the number of parameters in a statement.
SQLParamData	✓	ISO 92	Used in conjunction with SQLPutData to supply parameter data at execution time. (Useful for long data values.)
SQLPutData	✓	ISO 92	Sends part or all of a data value for a parameter. (Useful for long data values.)

ODBC API Calls for Retrieving Results and Information about Results

Function Name	Support	Standard	Purpose
SQLRowCount	✓	ISO 92	Returns the number of rows affected by an insert, update, or delete request.
SQLNumResultCols	✓	ISO 92	Returns the number of columns in the result set.
SQLDescribeCol	✓	ISO 92	Describes a column in the result set.
SQLColAttribute	✓	ISO 92	Describes attributes of a column in the result set.
SQLColAttributes	✓	Deprecated	Describes attributes of a column in the result set.
SQLFetch	✓	ISO 92	Returns multiple result rows.
SQLFetchScroll	✓	ISO 92	Returns scrollable result rows.
SQLExtendedFetch	✓	Deprecated	Returns scrollable result rows.
SQLSetPos	✓	ODBC	Positions a cursor within a fetched block of data and enables an application to refresh data in the rowset or to update or delete

			data in the result set.
SQLBulkOperations	✓	ODBC	Performs bulk insertions and bulk bookmark operations, including update, delete, and fetch by bookmark.

ODBC API Calls for Retrieving Error or Diagnostic Information

Function Name	Support	Standard	Purpose
SQLError	✓	Deprecated	Returns additional error or status information
SQLGetDiagField	✓	ISO 92	Returns additional diagnostic information (a single field of the diagnostic data structure).
SQLGetDiagRec	✓	ISO 92	Returns additional diagnostic information (multiple fields of the diagnostic data structure).

ODBC API Calls for Obtaining Information About Database Objects (Catalog Functions)

Function Name	Support	Standard	Purpose
SQLColumnPrivileges	✓	ODBC	Returns a list of columns and associated privileges for one or more tables.
SQLColumns	✓	X/Open	Returns the list of column names in specified tables.
SQLForeignKeys	✓	ODBC	Returns a list of column names that make up foreign keys, if they exist for a specified table.
SQLPrimaryKeys	✓	ODBC	Returns the list of column names that make up the primary key for a table.
SQLProcedureColumns	✓	ODBC	Returns the list of input and output parameters, as well as the columns that constitute the result set for the specified procedures.
SQLProcedures	✓	ODBC	Returns the list of procedure names stored in a specific data source.

SQLSpecialColumns	✓	X/Open	Returns information about the optimal set of columns that uniquely identifies a row in a specified table, or the columns that are automatically updated when any value in the row is updated by a transaction.
SQLStatistics	✓	ISO 92	Returns statistics about a single table and the list of indexes associated with the table.
SQLTablePrivileges	✓	ODBC	Returns a list of tables and the privileges associated with each table.
SQLTables	✓	X/Open	Returns the list of table names stored in a specific data source.

ODBC API Calls for Performing Transactions

Function Name	Support	Standard	Purpose

SQLTransact	✓	Deprecated	Commits or rolls back a transaction
SQLEndTran	✓	ISO 92	Commits or rolls back a transaction.

ODBC API Calls for Terminating a Statement

Function Name	Support	Standard	Purpose
SQLFreeStmt	✓	ISO 92	Ends statement processing, discards pending results, and, optionally, frees all resources associated with the statement handle.
SQLCloseCursor	✓	ISO 92	Closes a cursor that has been opened on a statement handle.
SQLCancel	✓	ISO 92	Cancels an SQL statement.

ODBC API Calls for Terminating a Connection

Function Name	Support	Standard	Purpose
SQLDisconnect	✓	ISO 92	Closes the connection.
SQLFreeHandle	✓	ISO 92	Releases an environment, connection, statement, or descriptor handle.

SQLFreeConnect	✓	Deprecated	Releases connection handle.
SQLFreeEnv	✓	Deprecated	Releases an environment handle.

4 Using in Third-Party Tools

This section discusses how to use ODBC Driver for Google BigQuery with ODBC-compliant tools.

- DBeaver
- DBxtra
- Informatica PowerCenter
- Microsoft Access
- Microsoft Excel
- Microsoft Visual Studio
- OpenOffice and LibreOffice
- Oracle Database Link
- PHP
- Power BI
- Python
- QlikView
- SQL Server Management Studio
- SSIS
- Tableau

4.1 Using in DBeaver

This section describes how to connect DBeaver to Google BigQuery using Devart ODBC Driver for Google BigQuery.

- Connect DBeaver Community to Google BigQuery through ODBC
- Connect DBeaver Enterprise to Google BigQuery through ODBC

4.1.1 Connect DBeaver Community to Google BigQuery through ODBC

DBeaver Community and DBeaver Enterprise let users connect to Google BigQuery via ODBC, enabling SQL-based querying, reporting, and data management.

If you need basic ODBC connectivity to Google BigQuery and are comfortable with manual configuration using a generic ODBC Connection, choose DBeaver Community—a free, open-source database management tool.

If you require a simplified connection setup with built-in ODBC support, enhanced security, and performance features, you may try DBeaver Enterprise. For more information on connecting to Google BigQuery data from DBeaver Enterprise, see Connect DBeaver Enterprise to Google BigQuery through ODBC.

Initial configuration

1. Download `jdbc-odbc-bridge-jre7.jar` and `x64/JdbcOdbc.dll` from Github.

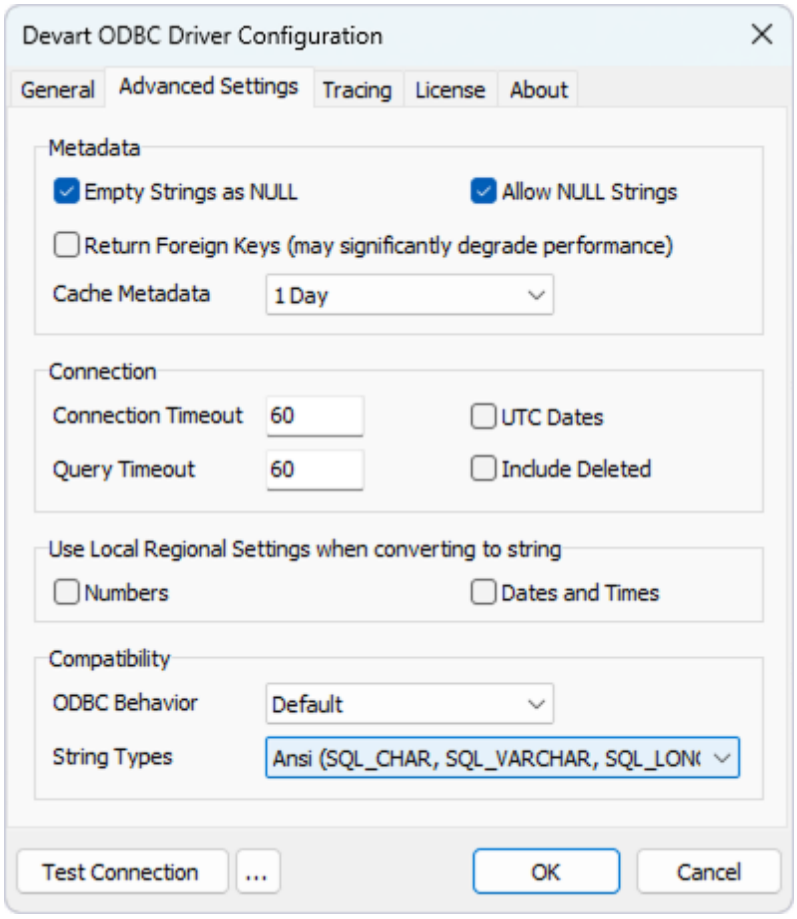
2. Download the **Microsoft Visual C++ 2010 Service Pack 1 Redistributable Package** from the Microsoft website.

The built-in legacy ODBC driver was removed in DBeaver Community Edition 23.1. If you're using an earlier version of DBeaver Community, skip steps 1 and 2.

3. Configure an ODBC data source. For more information, see Windows DSN Configuration.

4. On the **Advanced Settings** tab of the DSN configuration window, select **Ansi** from the **String Types**.

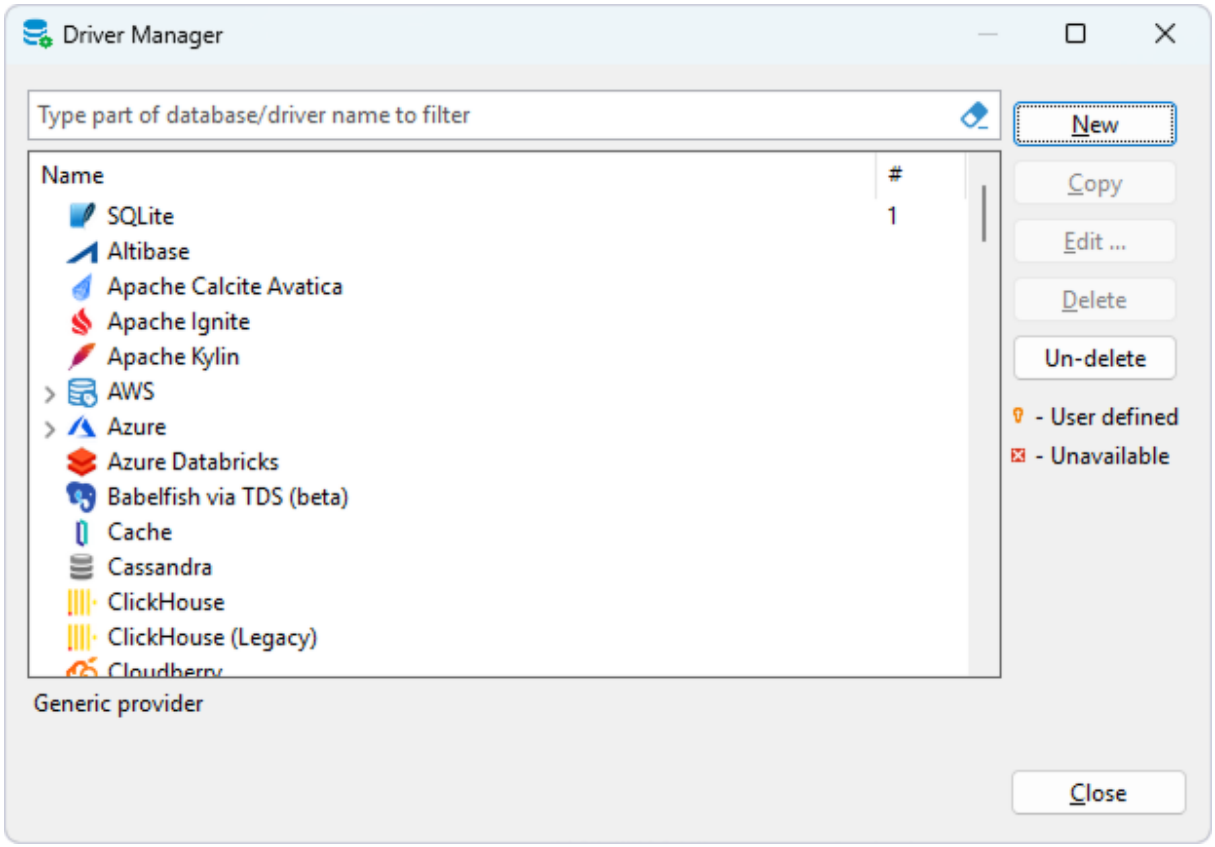
This option is required for the proper display of the SQL_WVARCAHAR data type in DBeaver. It also ensures that all string types will be returned as **SQL_CHAR**, **SQL_VARCHAR**, and **SQL_LONGVARCHAR**.



Connect to Google BigQuery

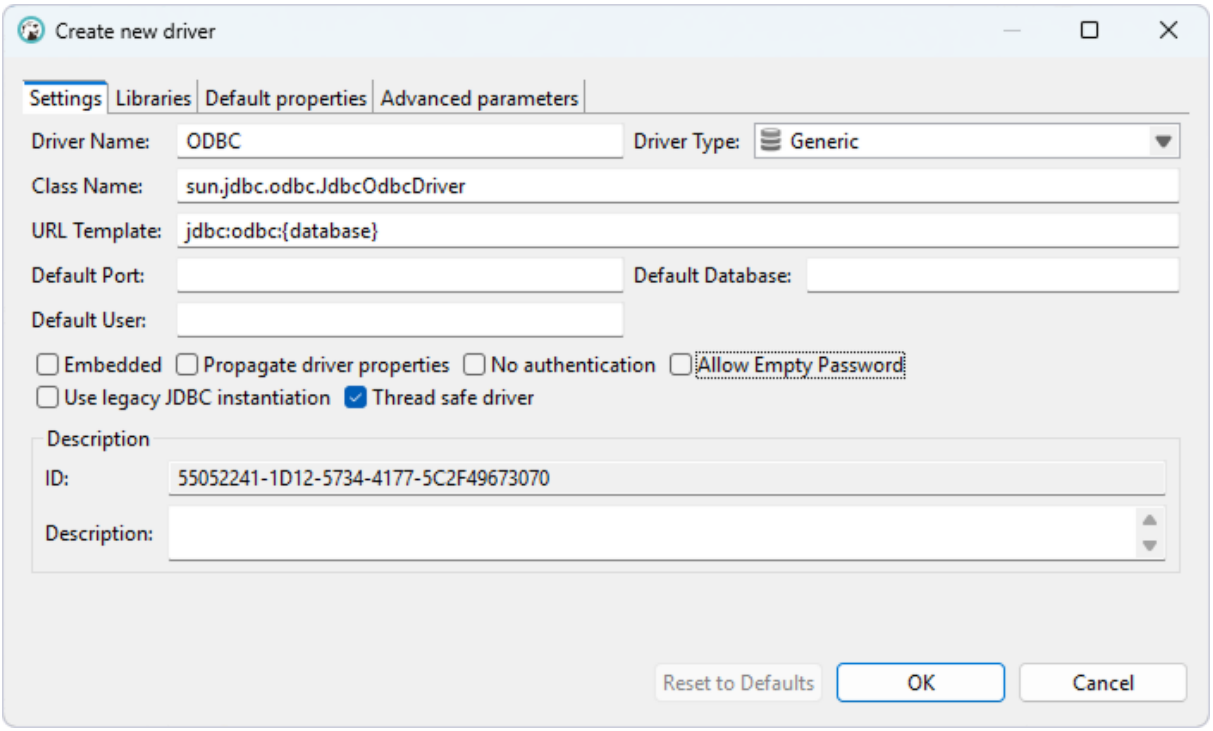
1. In DBeaver, select **Database** > **Driver Manager**.

2. Click **New**.



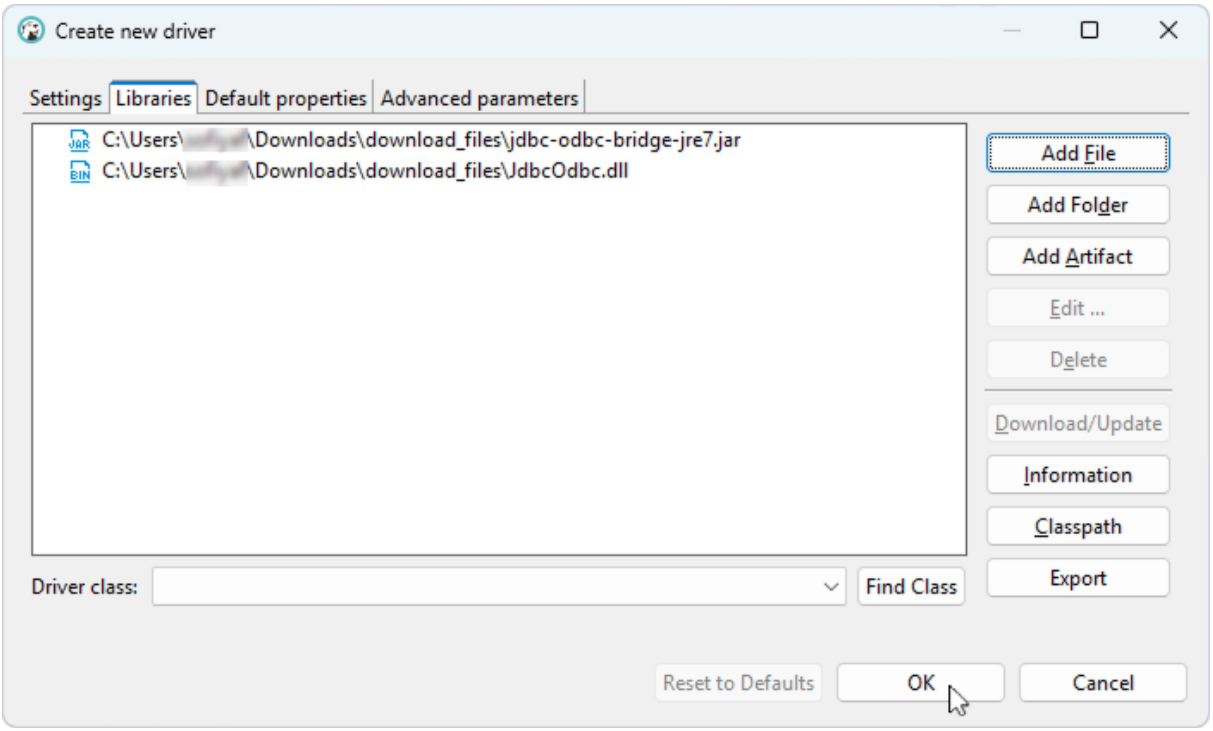
3. Configure the following properties for a new driver:

- In the **Driver Name** field, enter *ODBC*.
- In the **Class Name** field, enter *sun.jdbc.odbc.JdbcOdbcDriver*
- In the **URL Template** field, select *jdbc:odbc:{database}*.

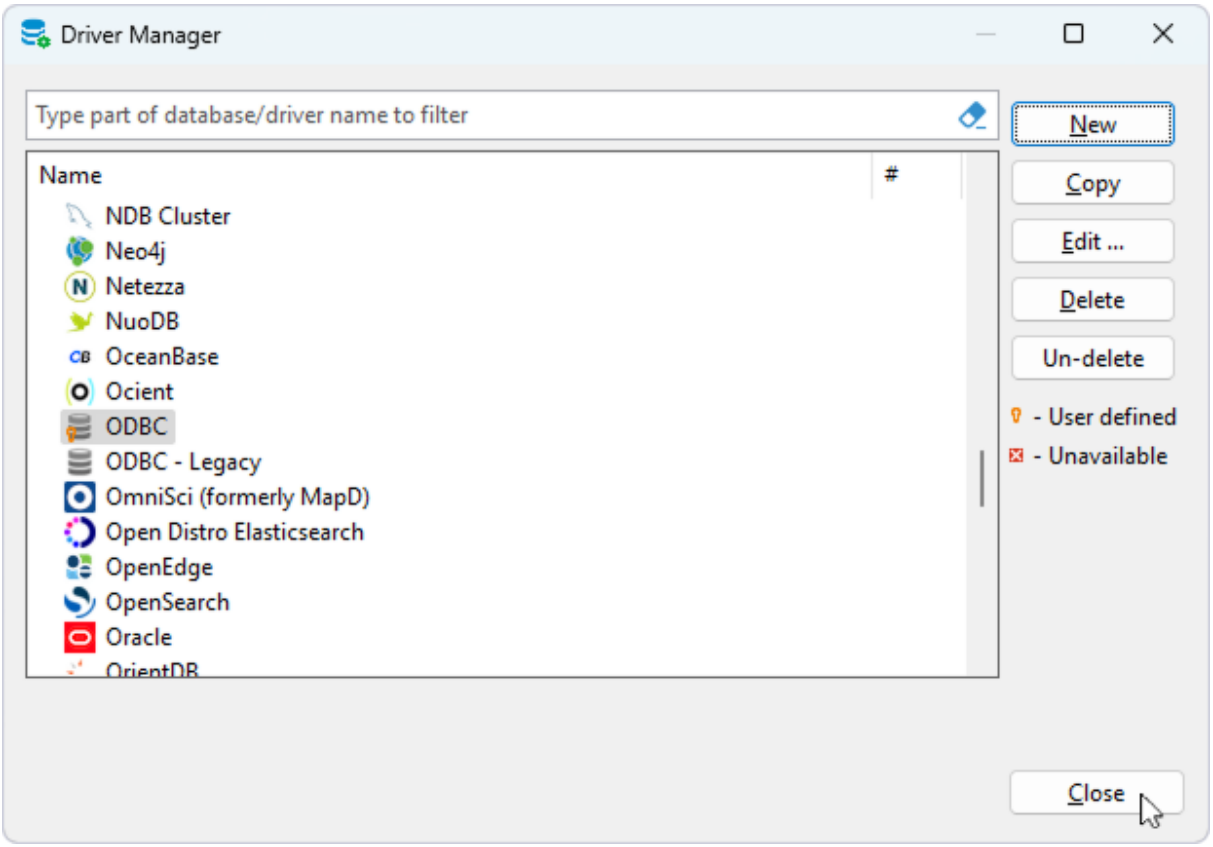


4. On the **Libraries** tab, click **Add File**.

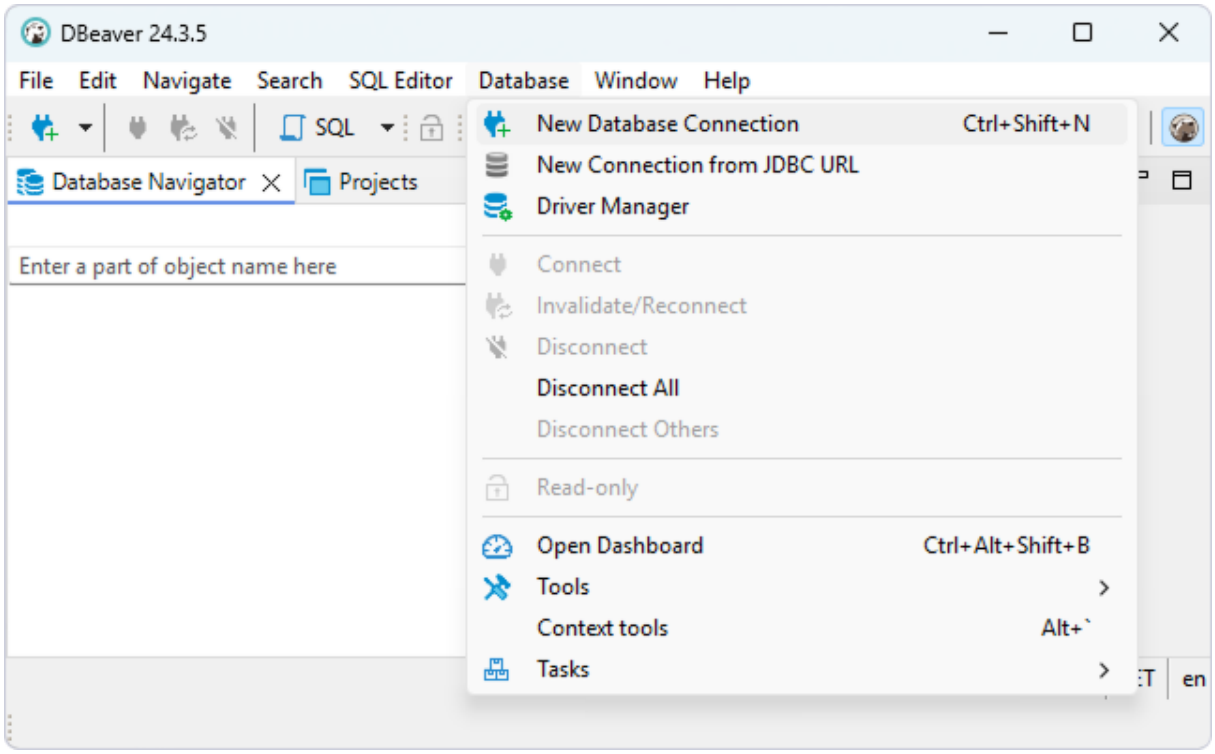
5. Select the `jdbc-odbc-bridge-jre7.jar`, then click **OK**. After that, select `JdbcOdbc.dll`, then click **OK**.



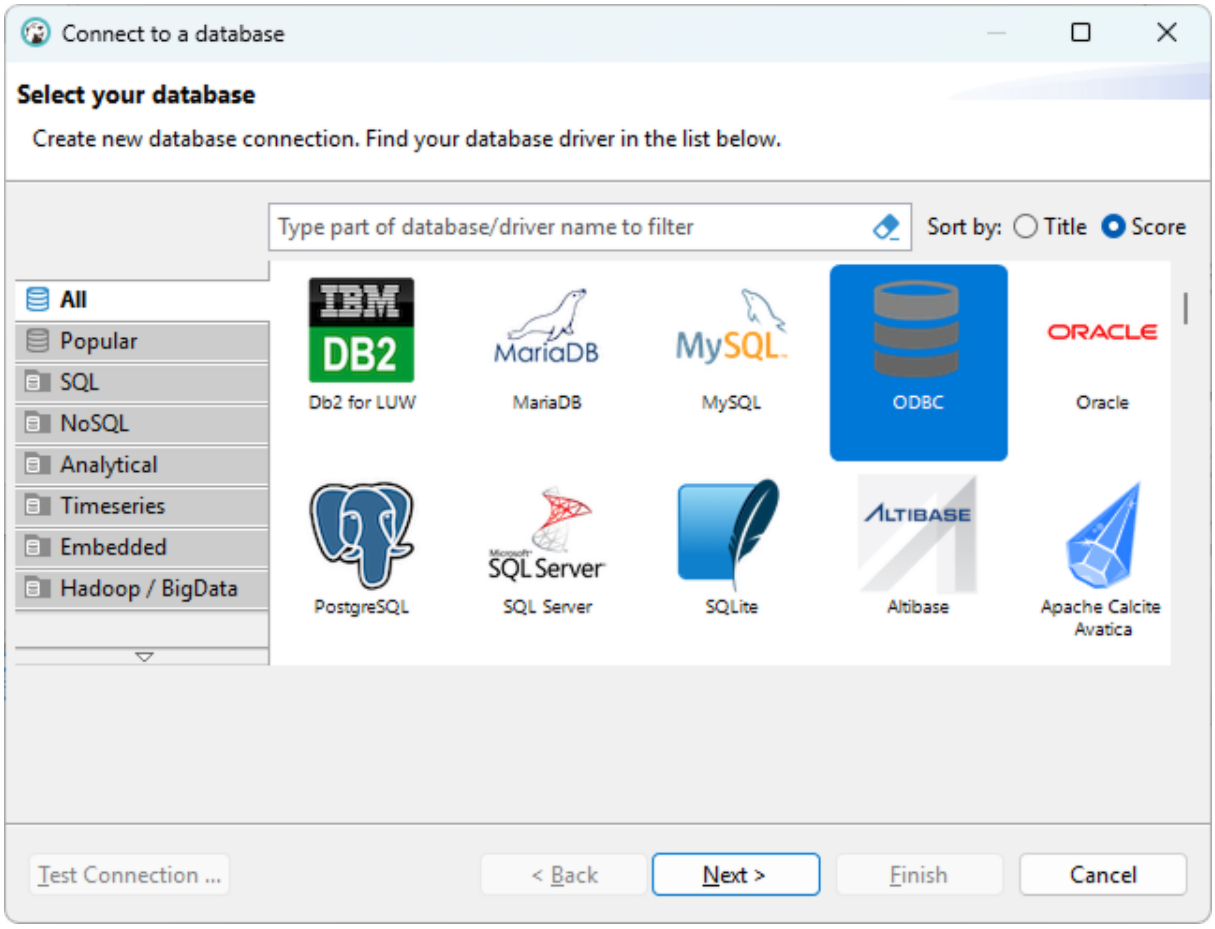
6. Once a new ODBC driver appears on the list, click **Close**.



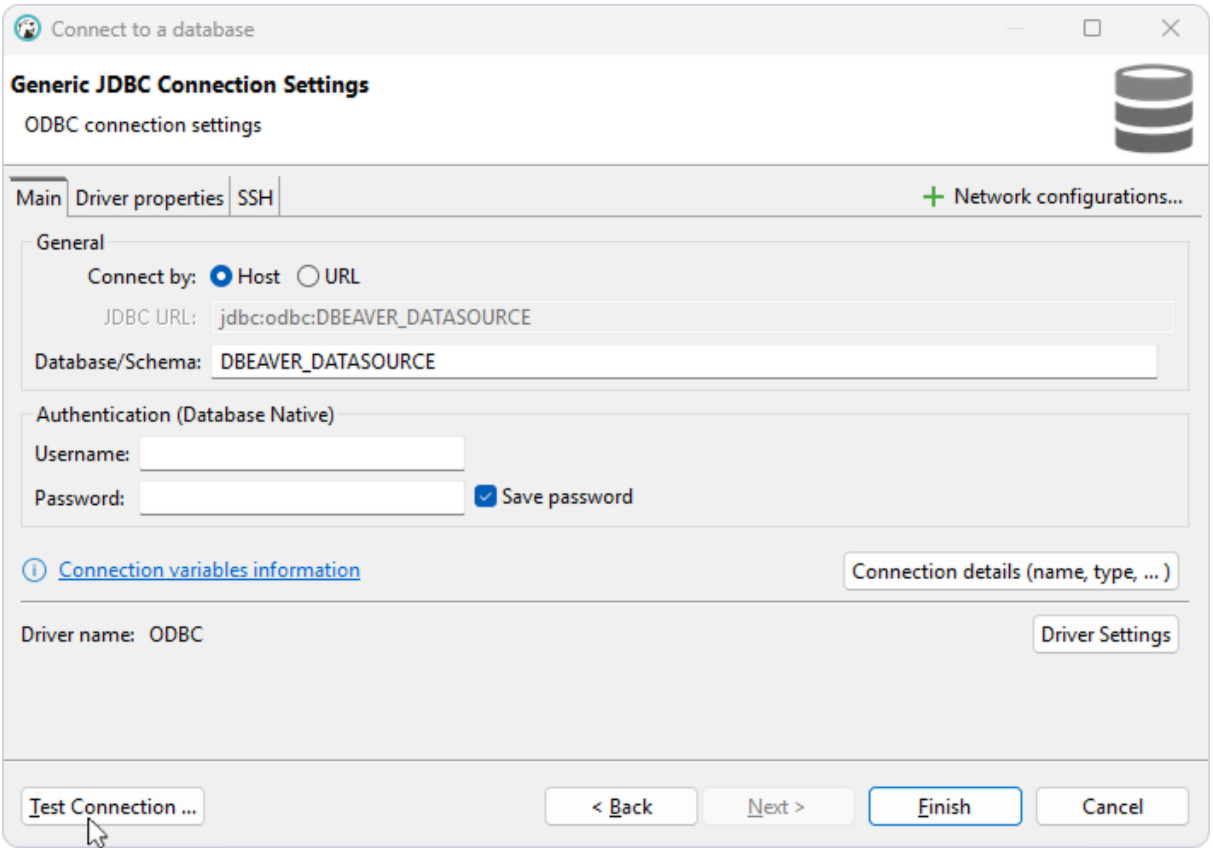
7. Select **Database** > **New Database Connection**.



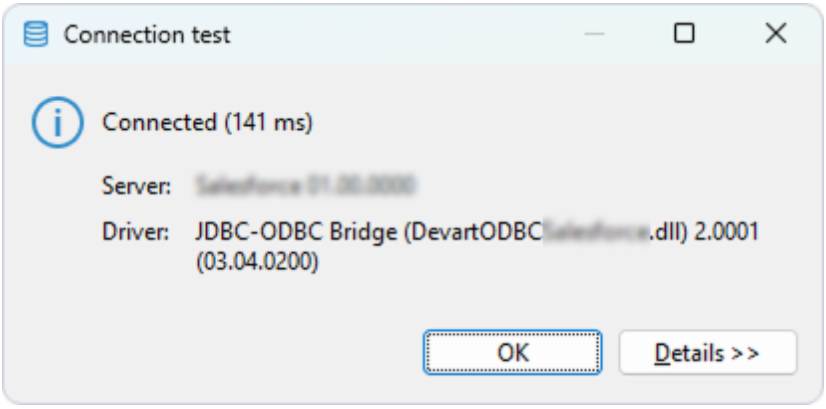
8. Select the **ODBC** driver, then click **Next**.



9. In the **Database/Schema** field, specify the name of your DSN.



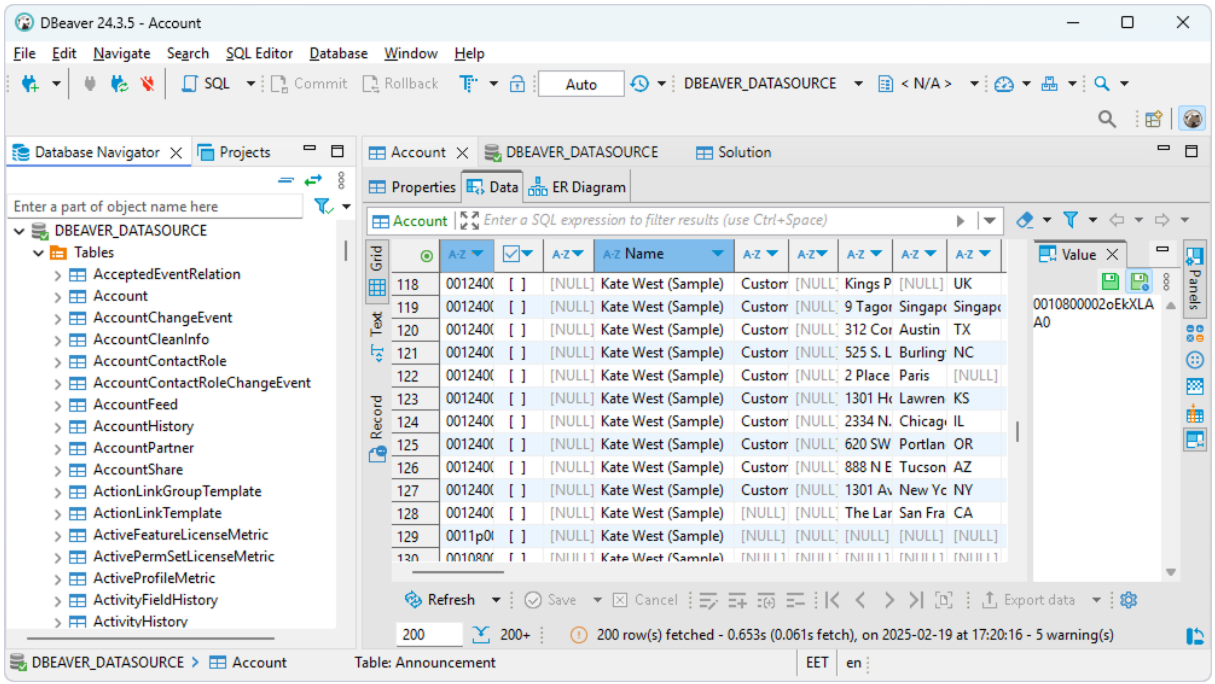
10. Optional: Select **Test Connection** to verify the connection settings.



11. Click **Finish**.

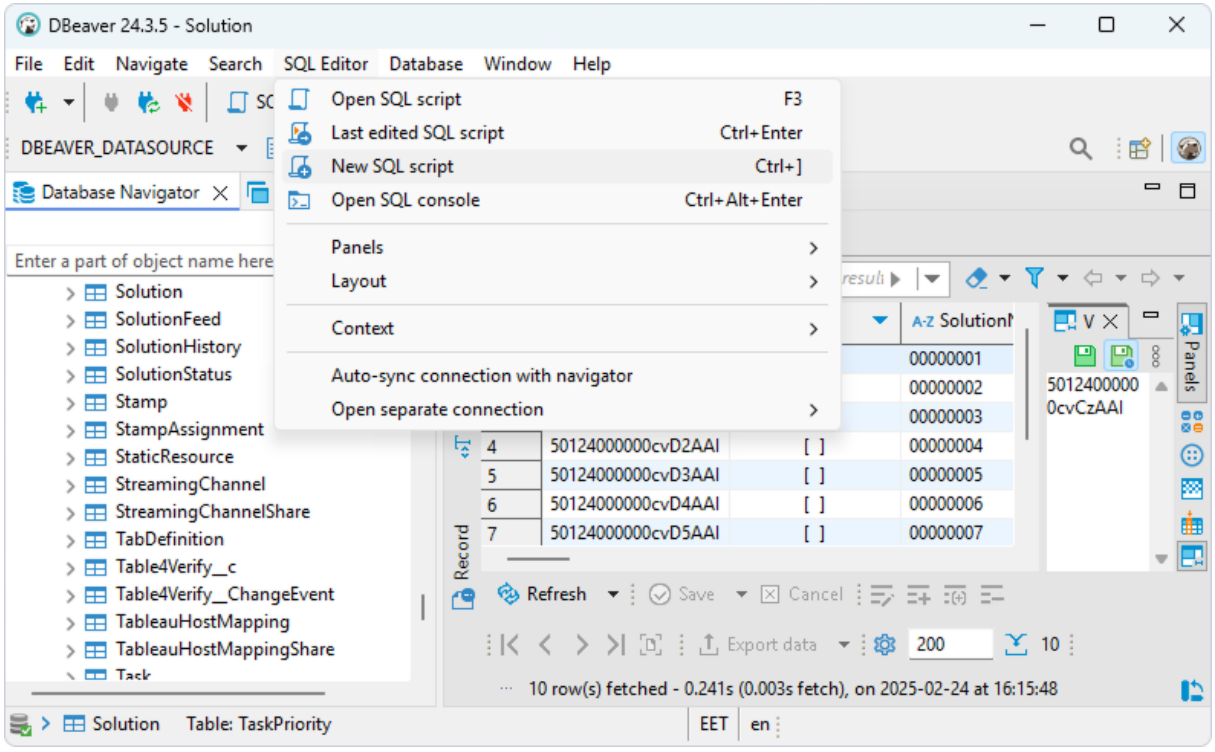
The database appears on the left pane.

12. To view the data stored in a table, expand the database structure and click the needed table.

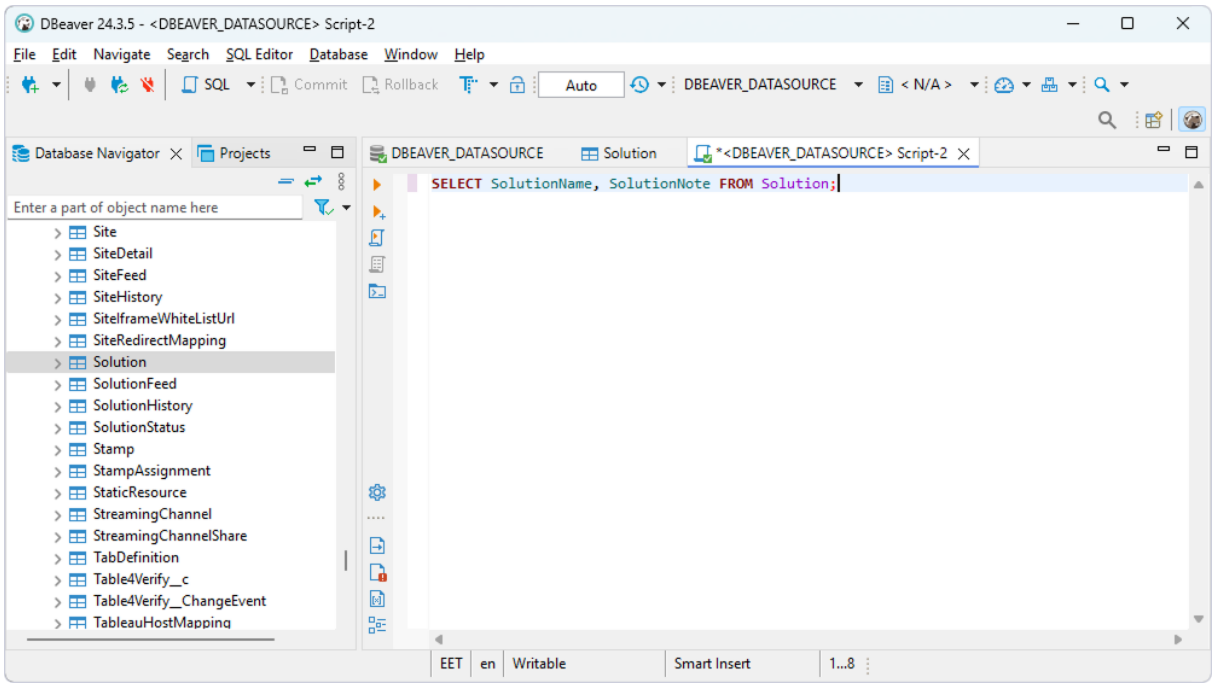


Query Google BigQuery data

1. Select **SQL Editor** > **New SQL script**.

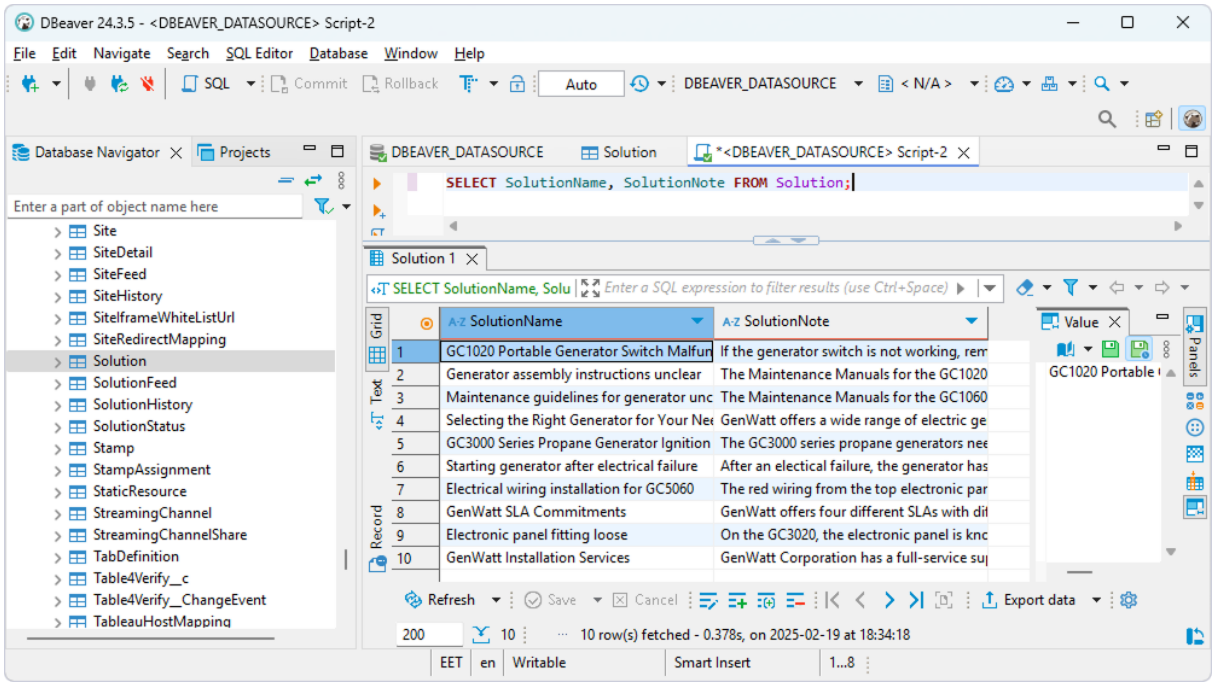


2. Enter your query.



3. Select **SQL Editor** > **Execute SQL query**.

The query results are displayed in the main window.



4.1.2 Connect DBeaver Enterprise to Google BigQuery through ODBC

DBeaver Enterprise and DBeaver Community let users connect to Google BigQuery via ODBC, enabling SQL-based querying, reporting, and data management.

If you require a simplified connection setup with built-in ODBC support, enhanced security, and performance features, you may try DBeaver Enterprise.

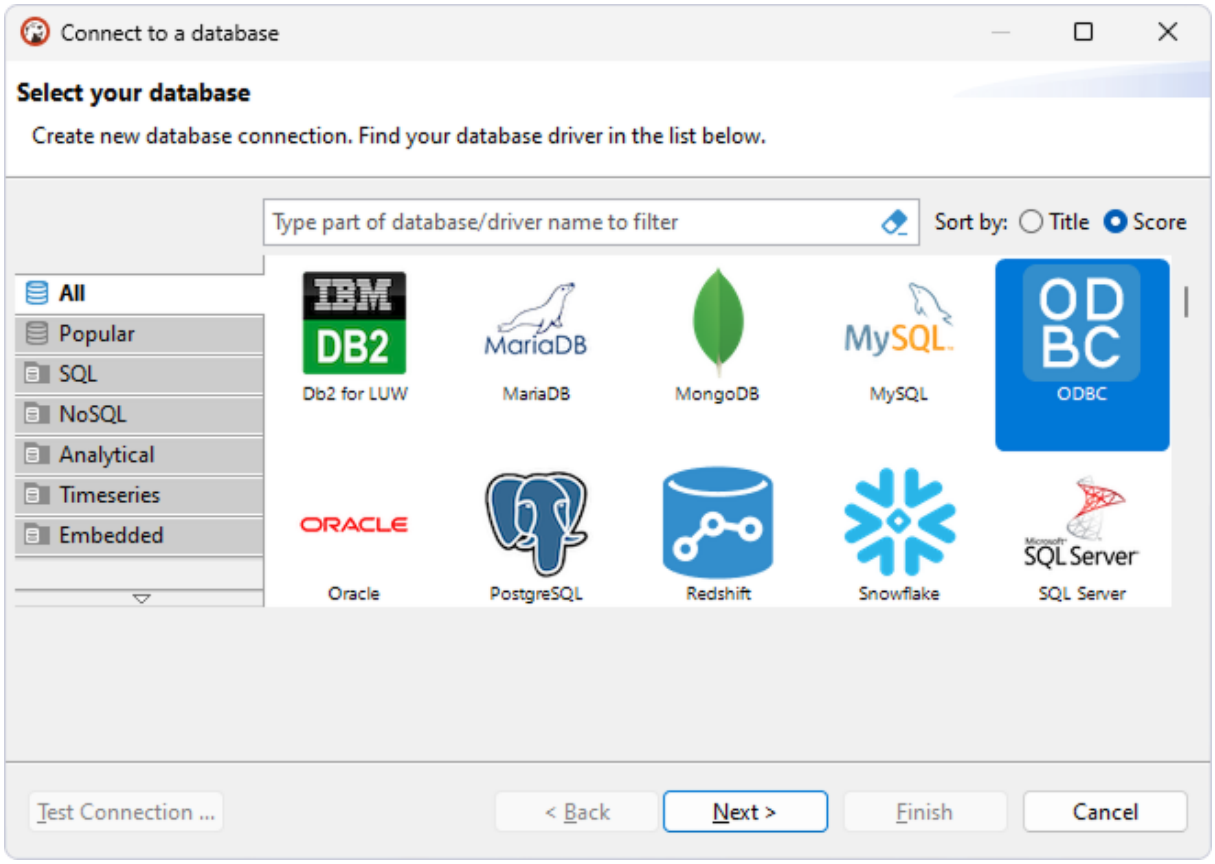
If you need basic ODBC connectivity to Google BigQuery and are comfortable with manual configuration using a generic ODBC connection, choose DBeaver Community—a free, open-source database management tool. For more information on connecting to Google BigQuery data from DBeaver Community, see Connect DBeaver Community to Google BigQuery through ODBC.

Connect to Google BigQuery

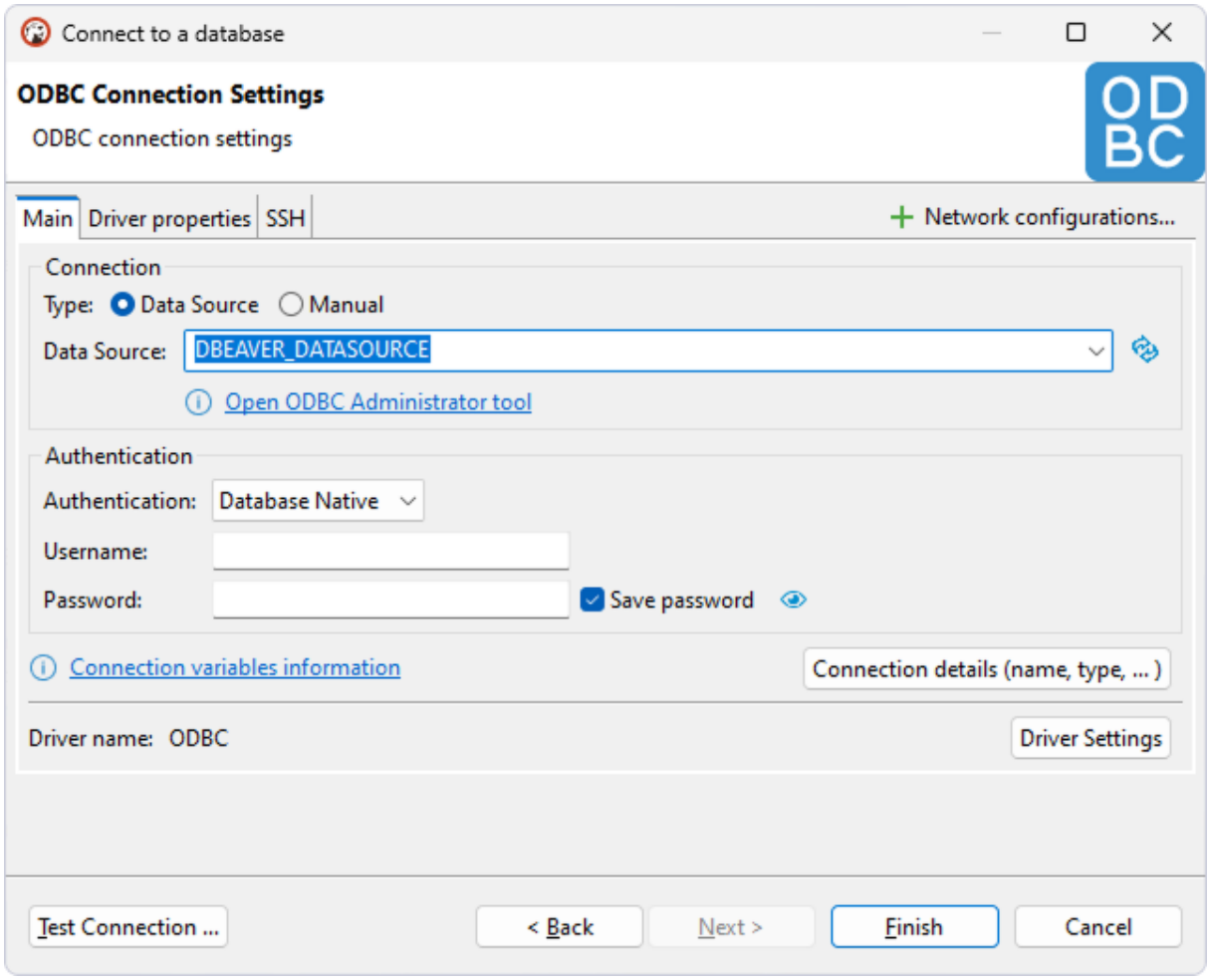
To connect to the Google BigQuery database from DBeaver Enterprise:

1. Select **Database** > **New Database Connection**.

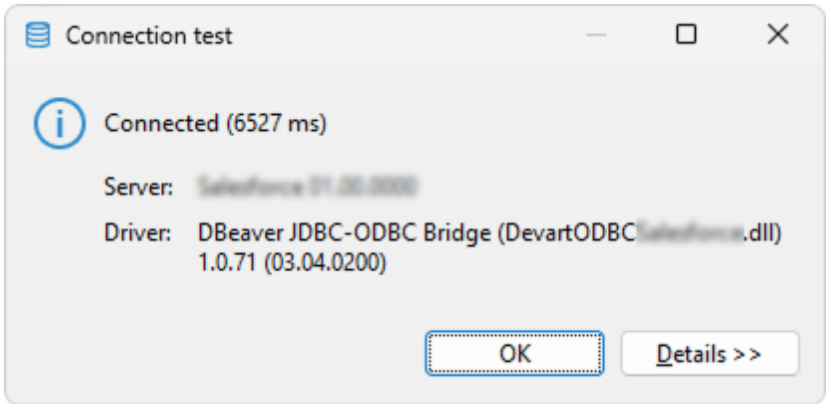
2. Select the **ODBC** driver and click **Next**.



3. In the **Database Source** field, specify the name of your DSN.



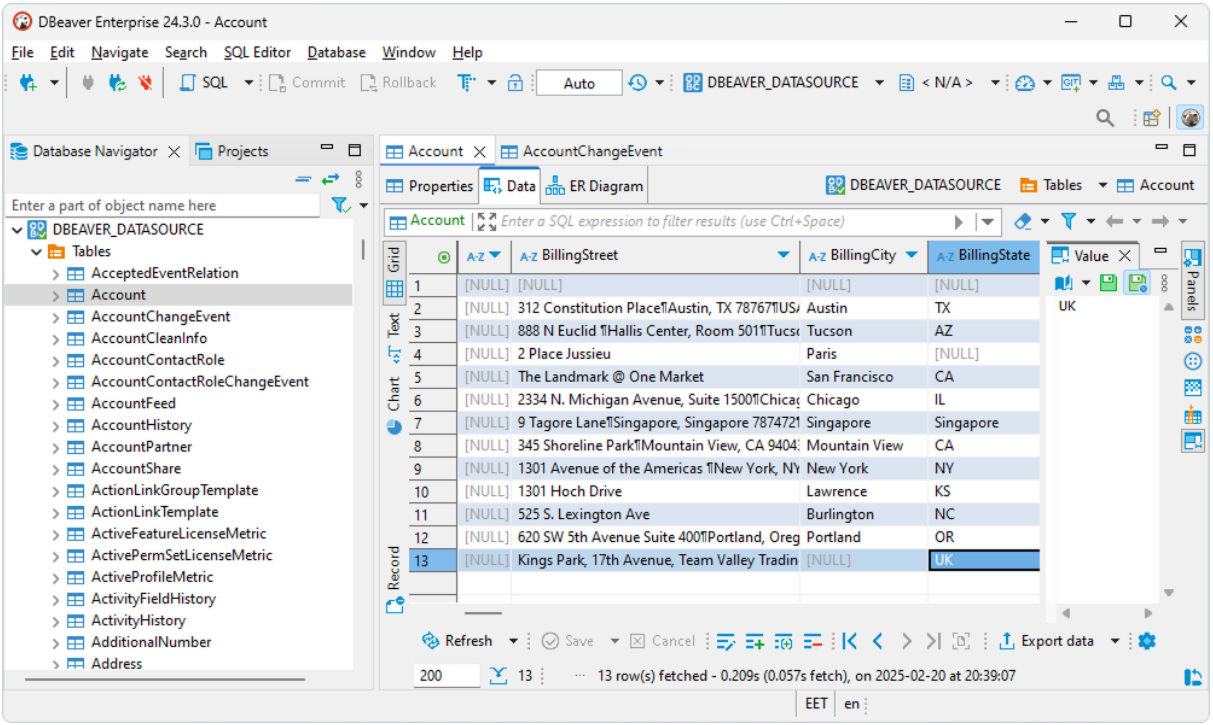
4. Optional: Select **Test Connection** to verify the connection settings.



5. Click **Finish**.

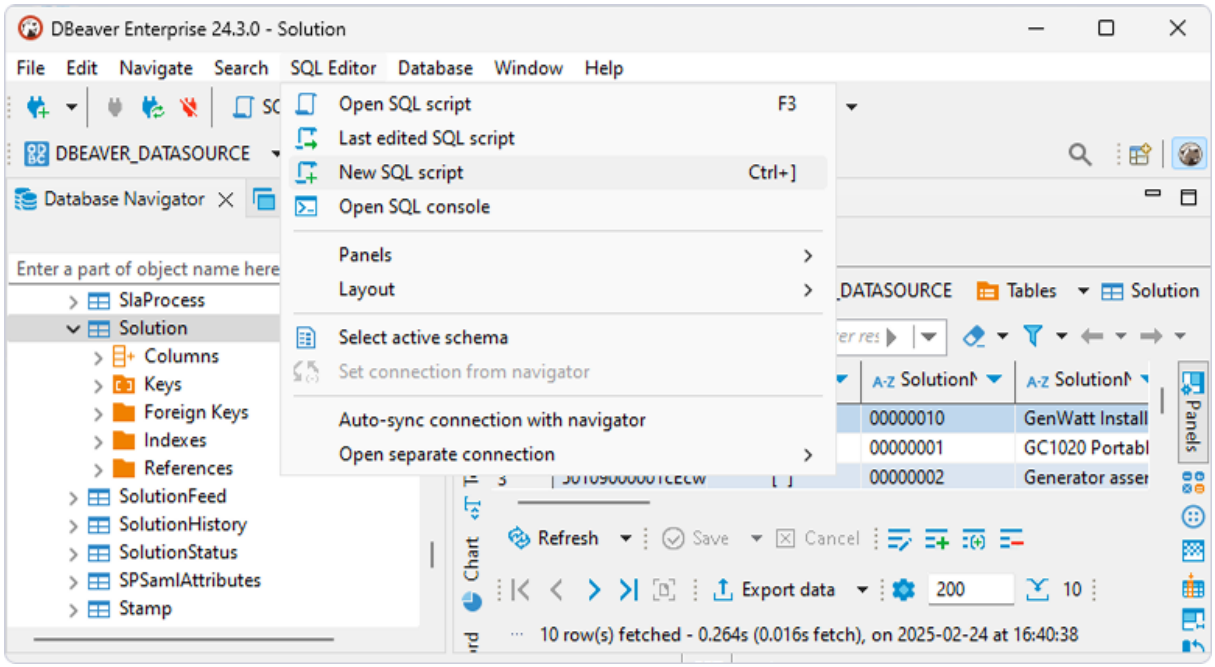
The database appears on the left pane.

6. To view the data stored in a table, expand the database structure and click the needed table.

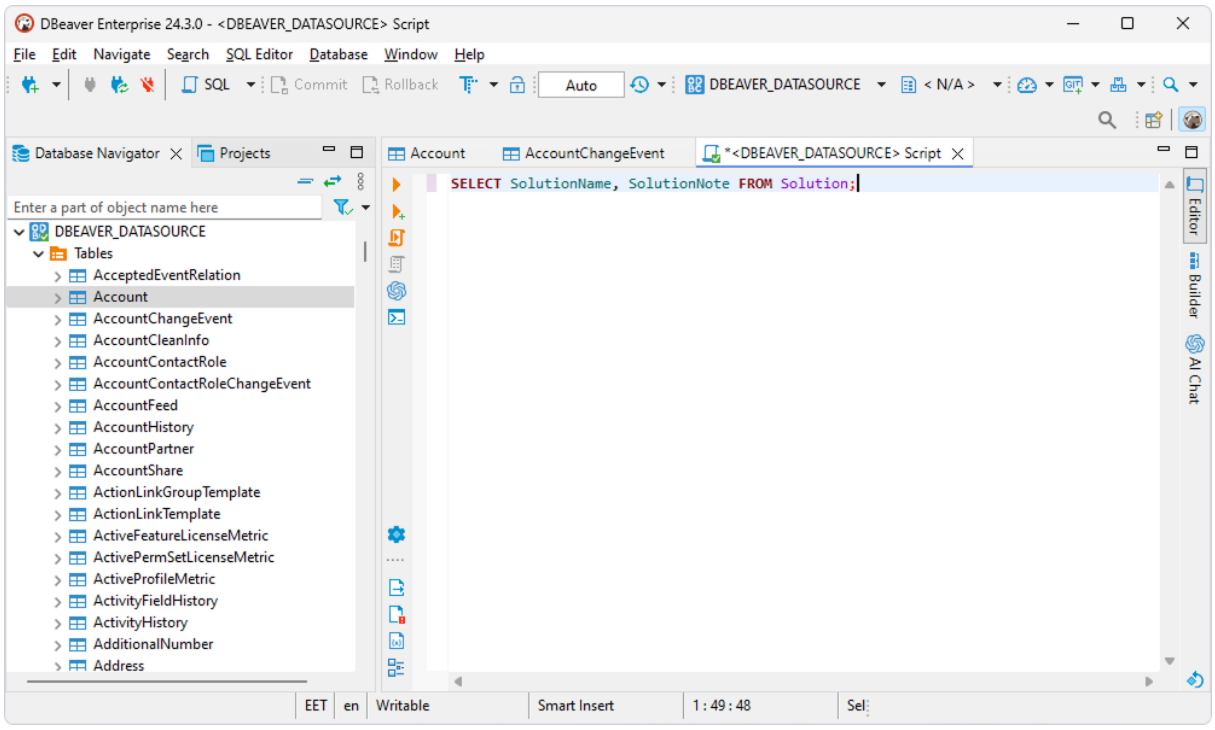


Query Google BigQuery data

1. Select **SQL Editor** > **New SQL script**.

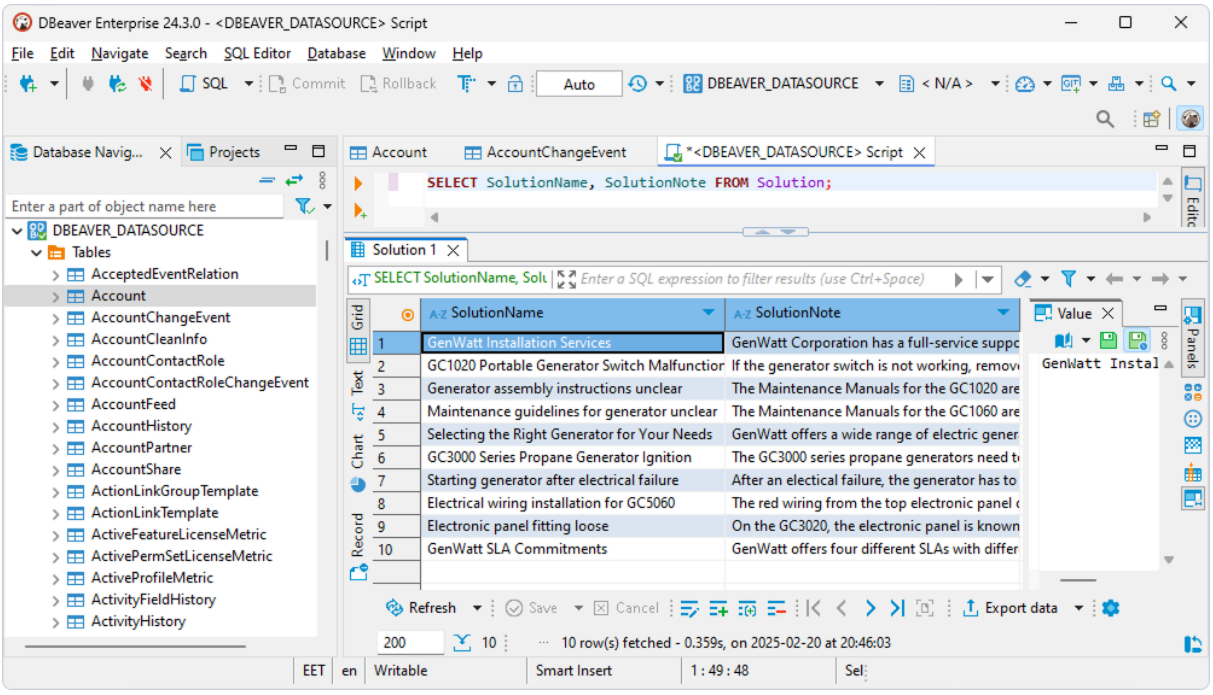


2. Enter your query.



3. Select **SQL Editor** > **Execute SQL query**.

The query results are displayed in the main window.

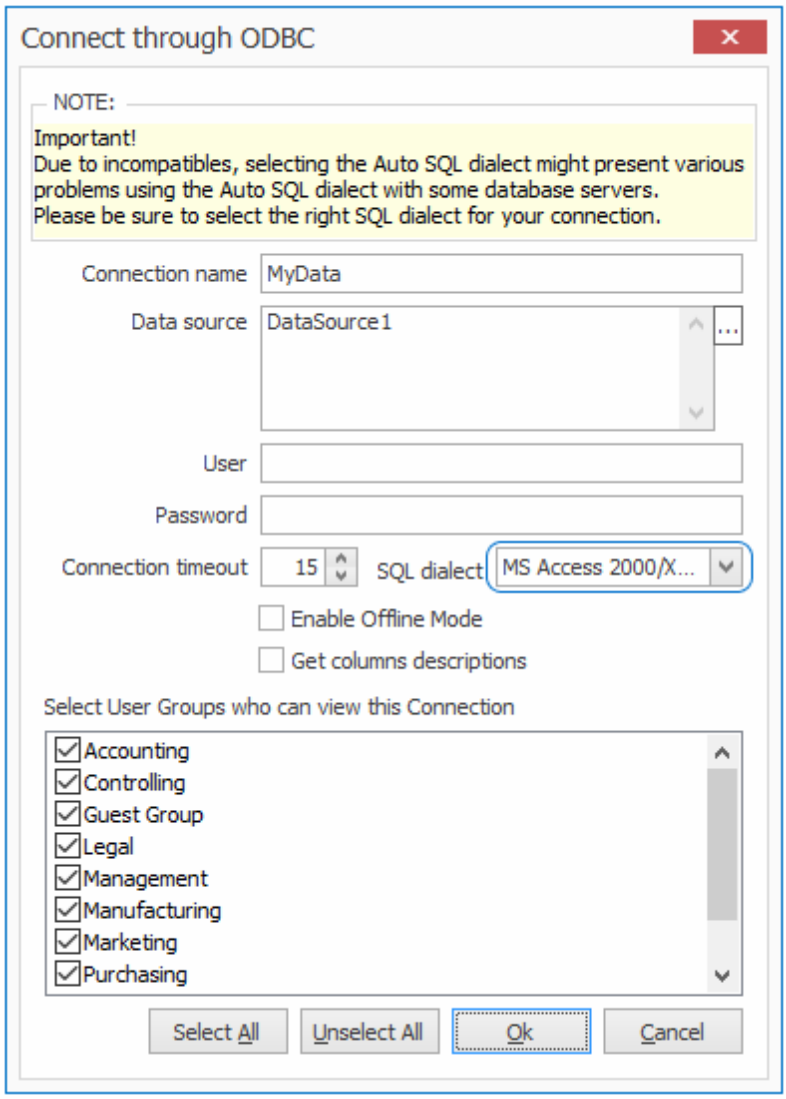


4.2 Using in DBxtra

Troubleshooting Google BigQuery ODBC Connection in DBxtra

This page explains how to troubleshoot your ODBC connection to Google BigQuery in DBxtra.

Due to incompatibilities between DBxtra and Google BigQuery, leaving the `SQL dialect` property to its default might present various issues. To resolve compatibility issues, set the property to `MS Access 2000/XP/2003` or `ANSI SQL/2003` for DBxtra version 11.0.1 or newer, and to `ANSI SQL/2003` for versions prior to 11.0.1.



4.3 Using in Informatica PowerCenter

You can connect Informatica PowerCenter to Google BigQuery through an ODBC driver on Windows to unify and manage data across these systems.

Prerequisites

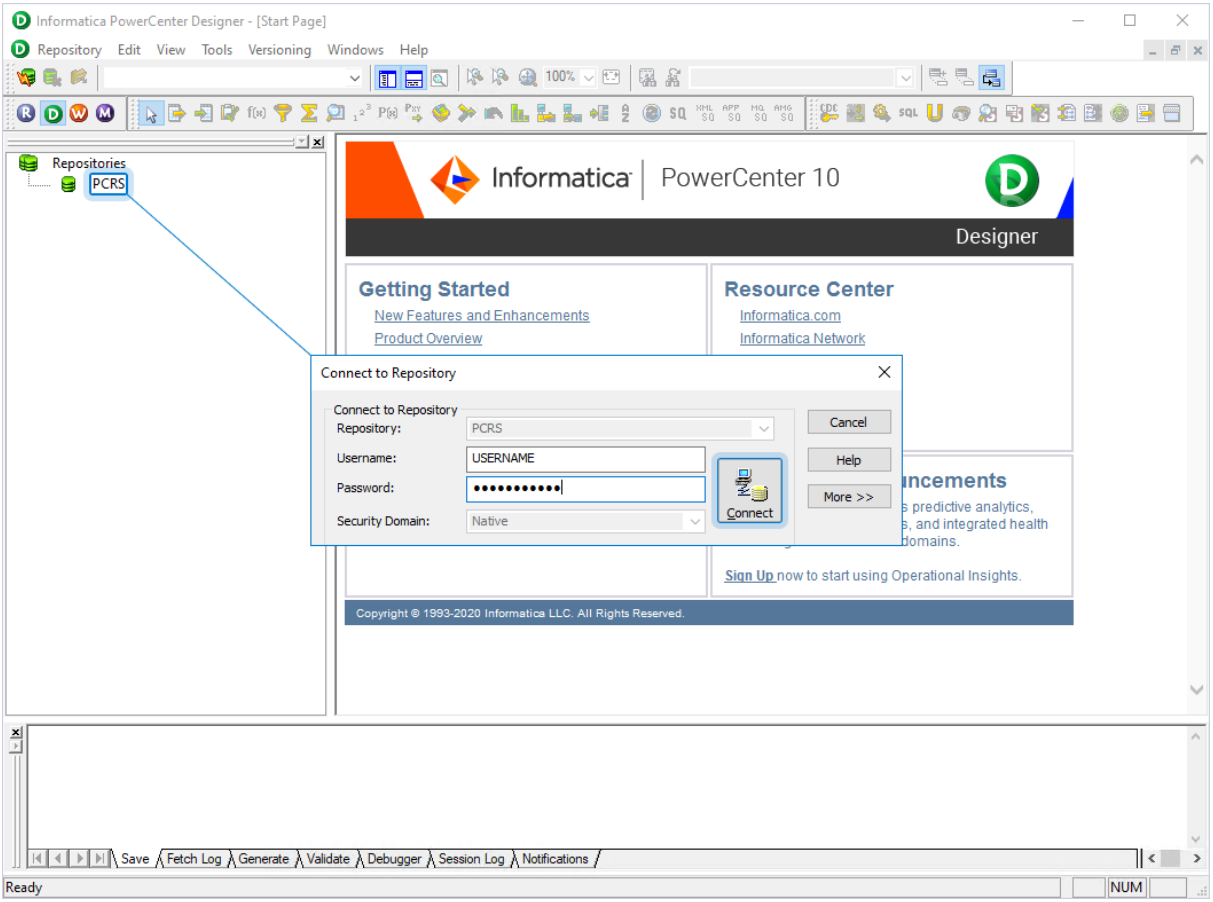
- Configure the Informatica services.
- Install the PowerCenter Client tools.
- Create a repository folder in PowerCenter Repository Manager.

- Install Devart ODBC Driver for Google BigQuery. For instructions, see Installation.
- Configure a data source name (DSN). For instructions, see Windows DSN Configuration.

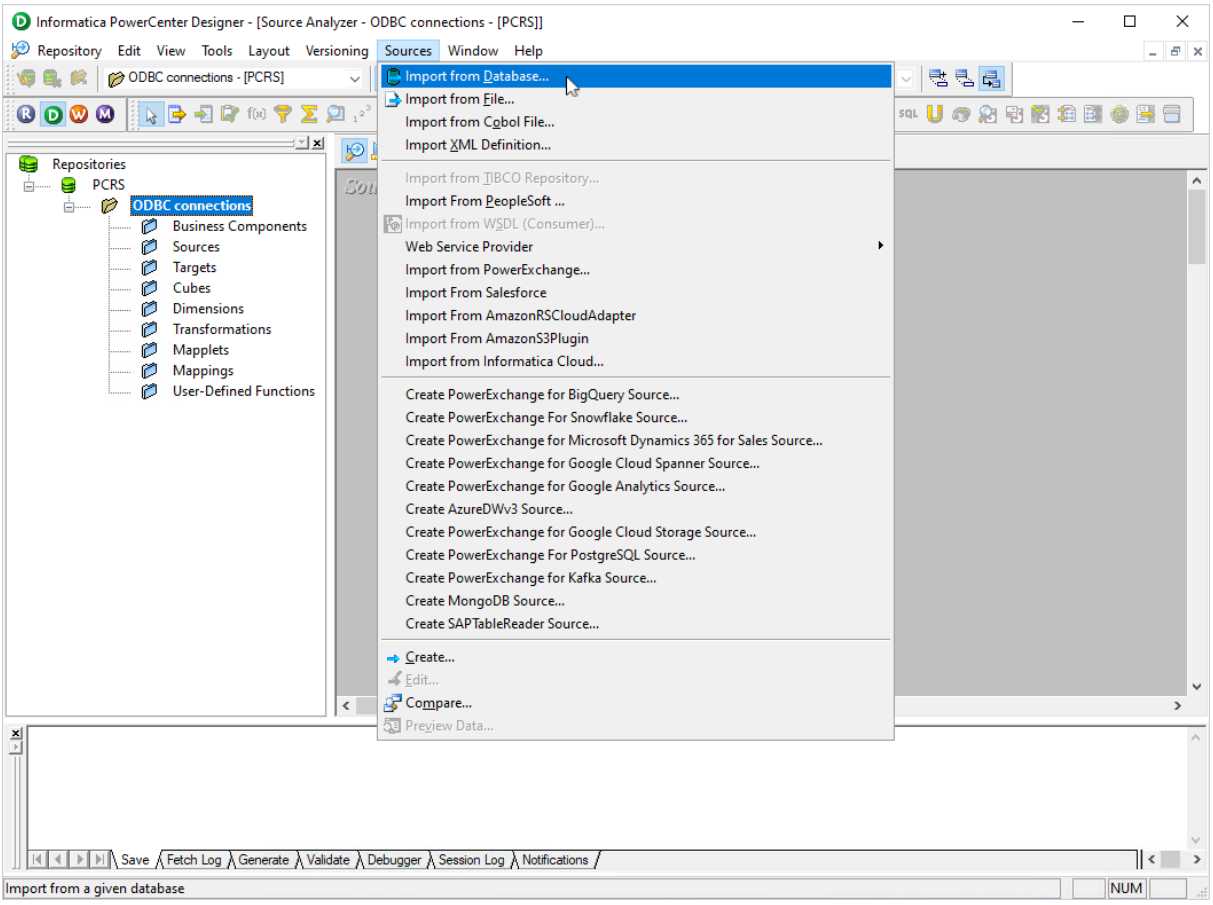
Add a data source in Informatica PowerCenter

Before you proceed, make sure PowerCenter Designer isn't running.

1. Open the `C:\Informatica\10.4.1\clients\PowerCenterClient\client\bin\powrmart.ini` file in a text editor.
2. In the `[ODBCDLL]` section, add `Google BigQuery=EXTODBC.DLL`, then save the changes.
3. Open **PowerCenter Designer**.
4. Double-click the repository name (in this example, **PCRS**), enter your Informatica credentials, then click **Connect**.

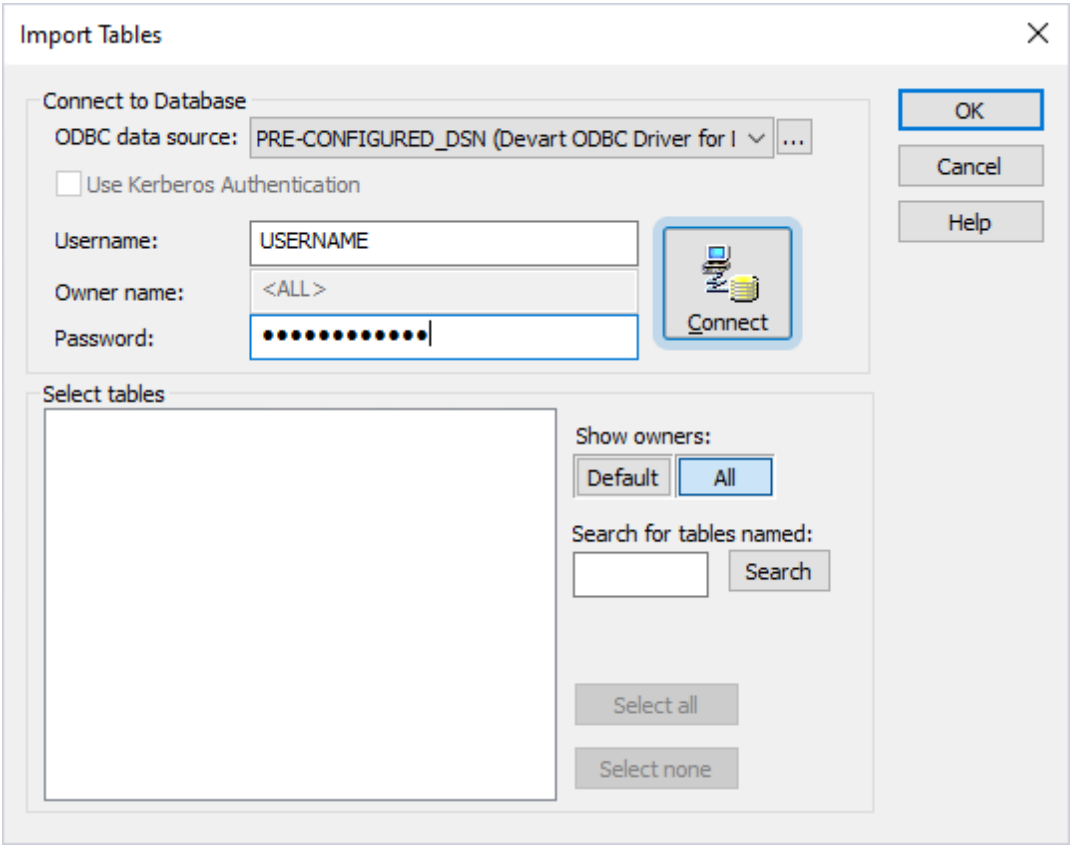


5. Double-click the repository folder (in this example, **ODBC connections**), then select **Sources** > **Import from Database**.



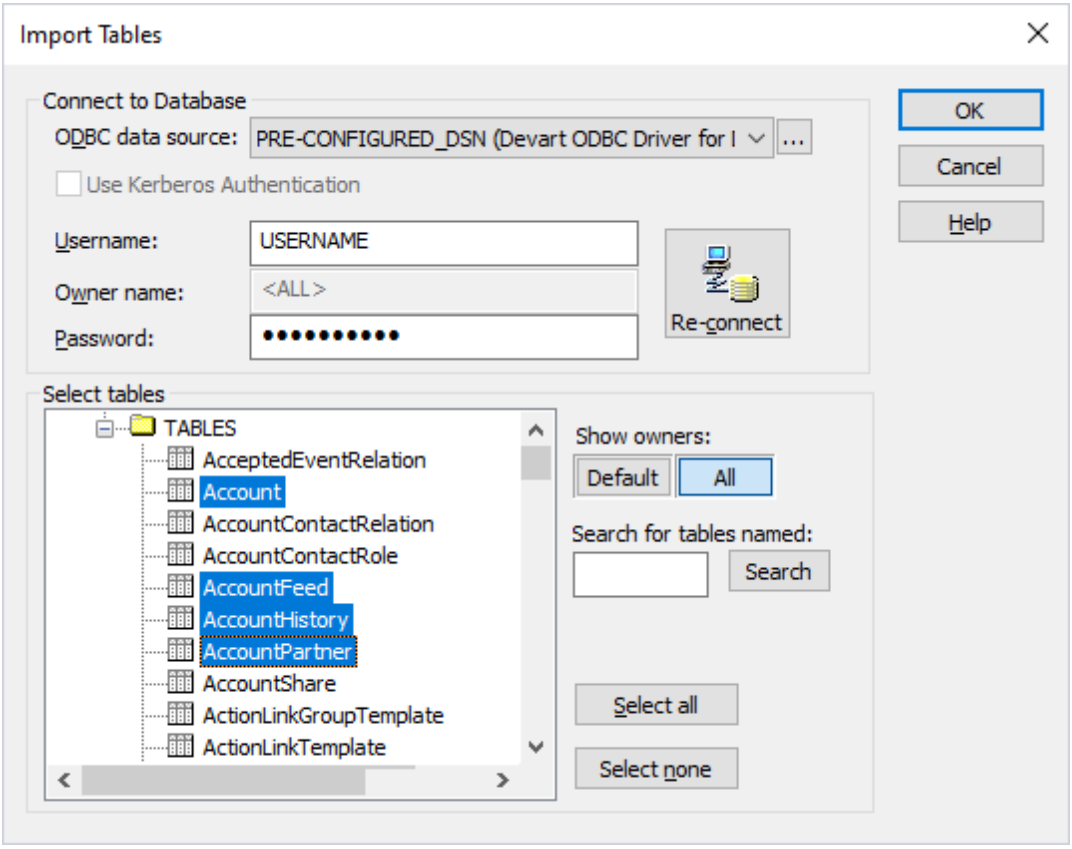
The Import Tables dialog opens.

6. From the **ODBC data source** menu, select the needed DSN.
7. In the **Username** and **Password** fields, enter your Google BigQuery credentials.
8. Under **Show owners**, select **All**.
9. Click **Connect**.

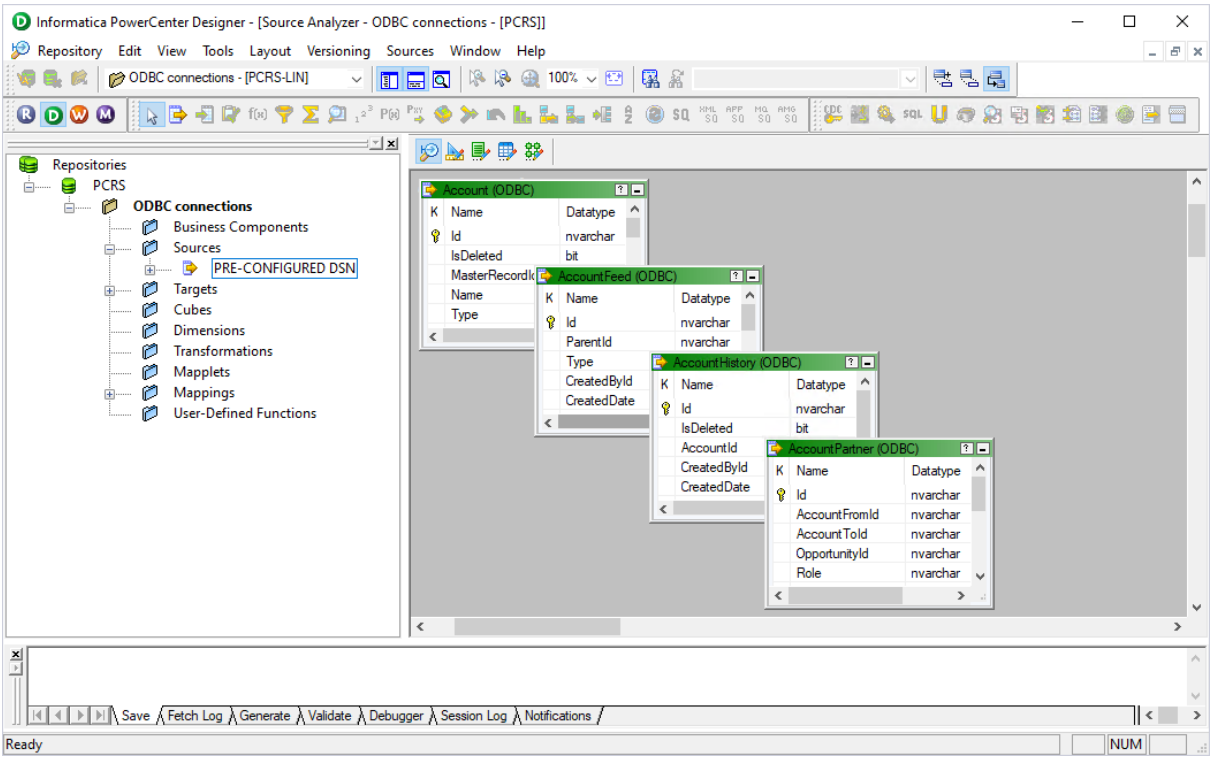


10.In the **Select tables** section, expand the tree and select the tables you want to import.

11.Click **OK**.



The table schemas appear in the Source Analyzer, and the data source is added to the **Sources** subfolder of the repository folder. You can now create mappings and work with Google BigQuery data in Informatica PowerCenter.



4.4 Using in Microsoft Access

Connecting Microsoft Access to Google BigQuery Using an ODBC Driver

This article explains how to connect Microsoft Access to Google BigQuery through the standard ODBC interface. Microsoft Access is a dababase management system that combines the relational database engine with a graphical user interface. Access can be used as a substitution for spreadsheet applications like Excel to organize, store, and retrieve large amounts of related data that can be difficult to manage in spreadsheets.

In Microsoft Access, you can connect to your Google BigQuery data either by importing it or creating a table that links to the data. Devart ODBC drivers support all modern versions of Access. It is assumed that you have already installed and configured a DSN for ODBC driver for Google BigQuery. For the purpose of this article, we tested an ODBC connection to Google BigQuery through our ODBC drivers in Microsoft Access 2003, Microsoft Access 2007, Microsoft Access 2010, Microsoft Access 2013, Microsoft Access 2016, Microsoft Access 2019. The following steps describe how to use Microsoft Access 2019 to import or link to your data in Google BigQuery.

Importing Google BigQuery Data Into Microsoft Access Through an ODBC Connection

1. Open your Microsoft Access database.
2. Select the **External Data** tab in the ribbon.
3. Expand the **New Data Source** drop-down and select **From Other Sources**, then select **ODBC Dababase**.
4. In the **Get External Data - ODBC Database** dialog box, select **Import the source data into a new table in the curent database**, and click **OK**.
5. In the **Select Data Source** dialog box, select the **Machine Data Source** tab.
6. Select the DSN that you have configured for Google BigQuery and click **OK**.
7. In the **Import Objects** dialog box, select the tables that you want to import, and click **OK**.
8. If the database objects have been successfully imported, you should the see the corresponding message in the dialog box. If you want to save the import steps to quickly repeat the process without using the wizard at a later time, select the **Save import steps** checkbox. Click **Close**.
9. The imported tables should appear in the **Tables** navigation pane on the left.
10. Double-click on the needed table to display its contents.

Linking to Google BigQuery Data in Microsoft Access Through an ODBC Connection

1. Open your Microsoft Access database.
2. Select the **External Data** tab in the ribbon.
3. Expand the **New Data Source** drop-down and select **From Other Sources**, then select **ODBC Dababase**.
4. In the **Get External Data - ODBC Database** dialog box, select **Link to the data source by creating a linked table**.
5. In the **Select Data Source** dialog box, select the **Machine Data Source** tab.
6. Select the DSN that you have configured for Google BigQuery and click **OK**.
7. In the **Link Tables** dialog box, select the table or tables that you want to link to, and click **OK**.

8. The **Select Unique Record Identifier** dialog box will prompt you to choose a field or fields that uniquely identify each record in the table. To avoid inconsistencies, it is recommended to select the primary key in the Google BigQuery table as the unique record identifier. You are linking multiple tables, you will be prompted to select unique record identifiers for each of the selected tables.
9. The linked tables should appear in the **Tables** navigation pane on the left.
10. Double-click on the needed table to display its contents.

4.5 Using in Microsoft Excel

Connecting to Google BigQuery from Microsoft Excel using ODBC Driver for Google BigQuery

You can use Microsoft Excel to access data from a Google BigQuery database using ODBC connector. With ODBC Driver, you can import the data directly into an Excel Spreadsheet and present it as a table. Make sure that you use matching Excel and ODBC Driver, e.g. if you have installed a 64-bit ODBC Driver, you will need to use the 64-bit version of Excel.

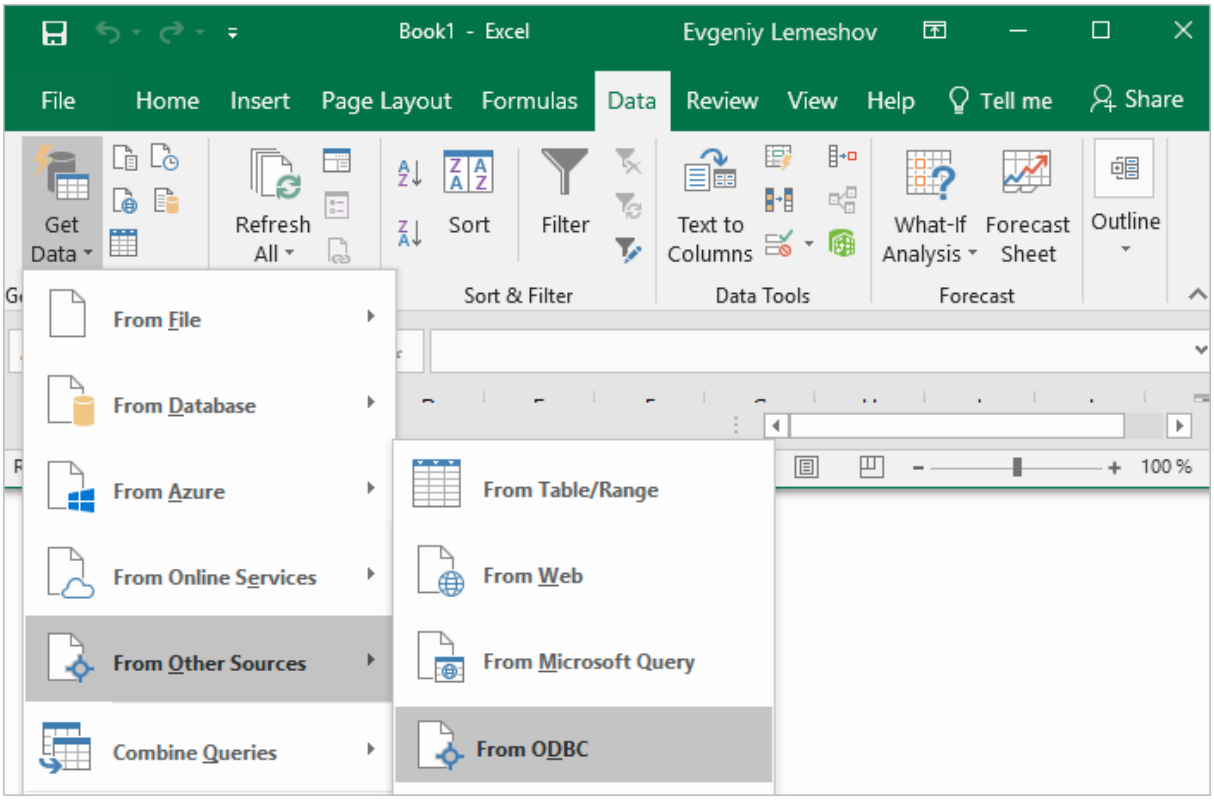
When working with Microsoft Excel, there are different ways of retrieving data from various data sources using our ODBC drivers.

- Connecting Excel to Google BigQuery with Get & Transform (Power Query)
- Connecting Excel to Google BigQuery with Data Connection Wizard (Legacy Wizard)
- Connecting Excel to Google BigQuery with the Query Wizard
- Connecting Excel to Google BigQuery with Microsoft Query
- Connecting Excel to Google BigQuery with PowerPivot

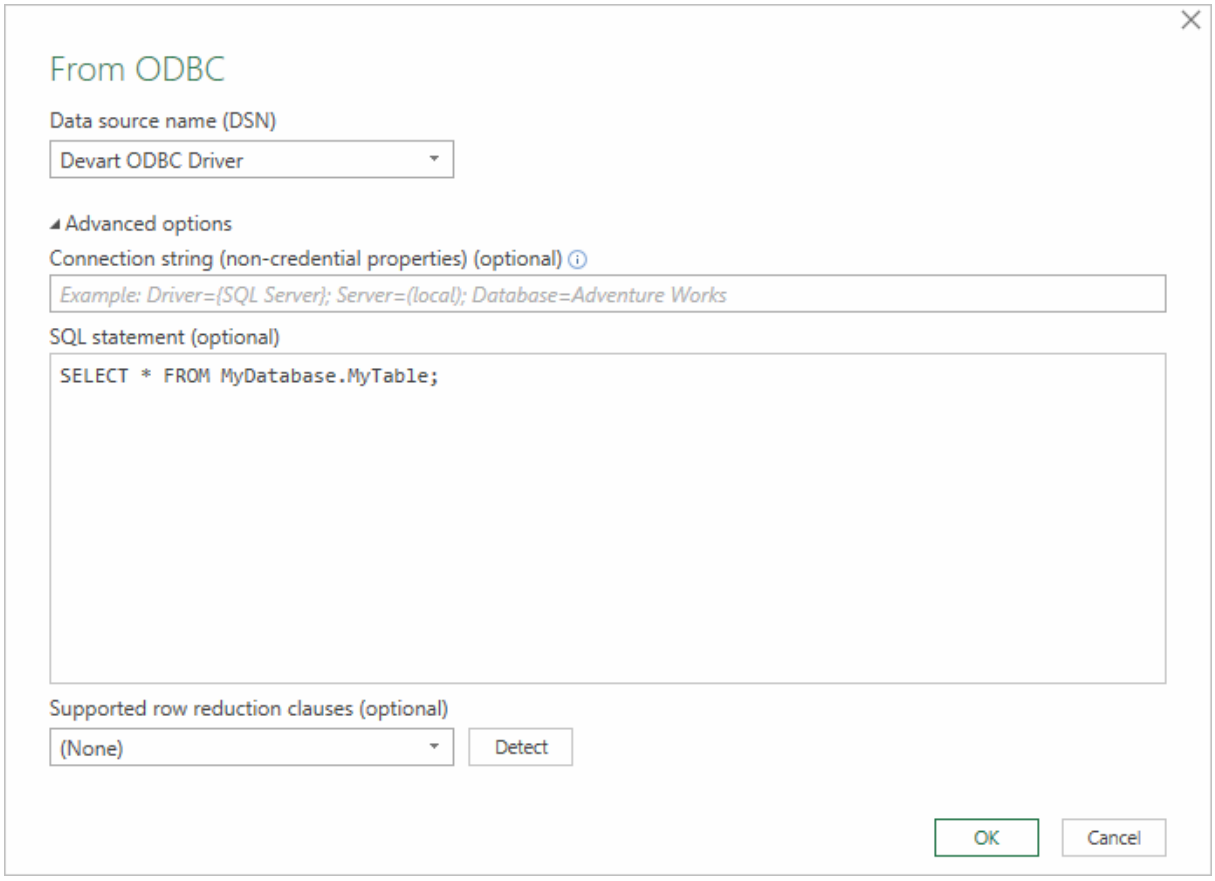
Connecting Excel to Google BigQuery with Get & Transform (Power Query)

You can use Get & Transform (Power Query) to connect to Google BigQuery from Excel with ODBC. This method assumes that you've installed an ODBC driver for Google BigQuery.

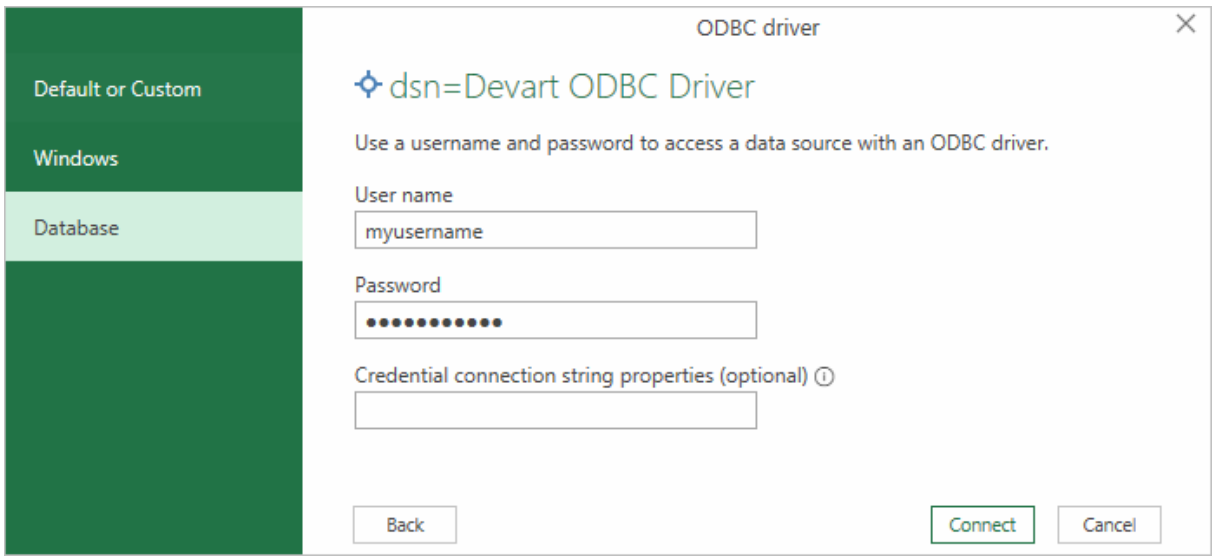
1. Click the **Data** in Excel, then expand the **Get Data** drop-down list. Click **From Other Sources** > **From ODBC**.



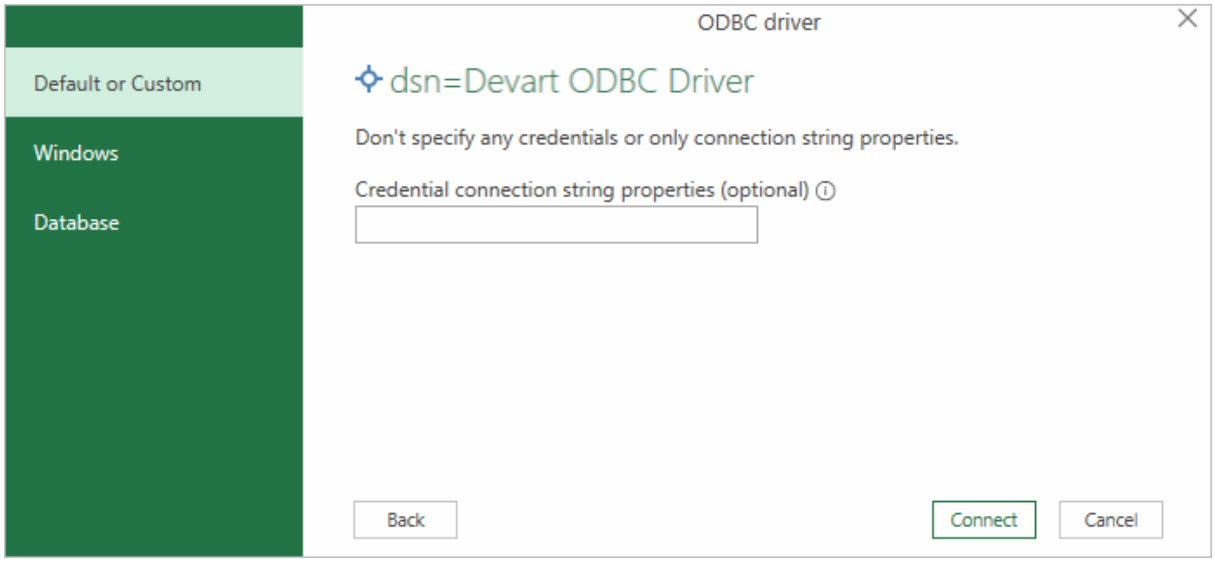
2. In the **From ODBC** dialog, choose your data source name (DSN). If you haven't configured your ODBC driver yet, you can expand the **Advanced Options** dialog box and enter the connection string for your data source (without credentials, which are defined in the credentials dialog box in the next step). Additionally, you can enter an SQL statement that will be executed right after establishing a connection to the data source. Click **OK**.



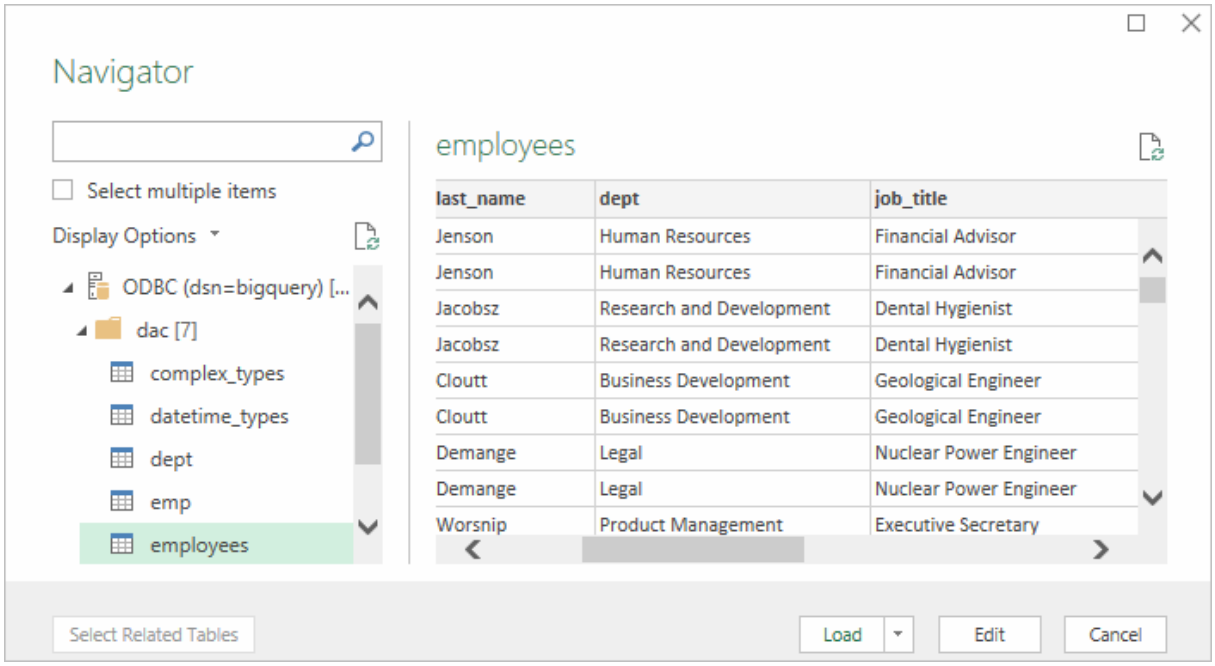
3. If you're using a database username or password, select **Database** and enter your credentials in the dialox bog, then click **Connect**.



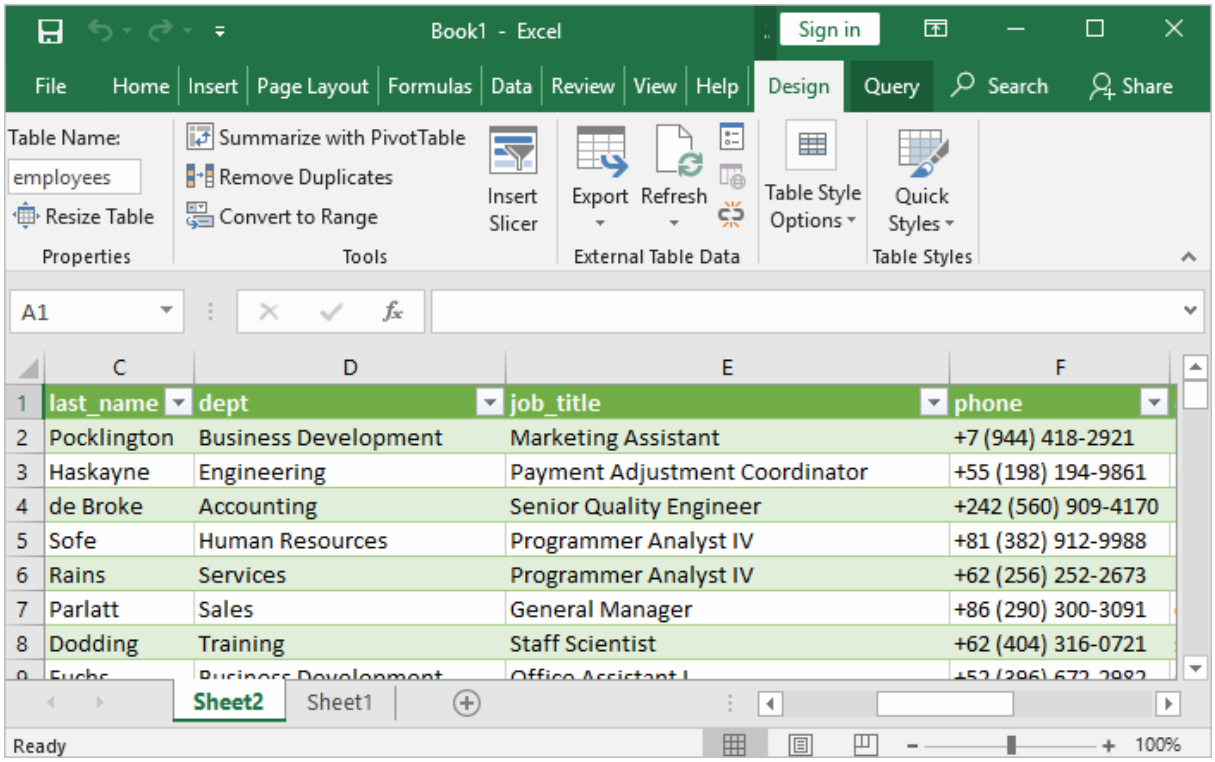
If your database is not password-protected or you've already specified your credentials in the ODBC data source settings, select **Default or Custom** and press **Connect**



4. In the window that appears, select the table you want to retrieve data from, and click **Load**.



The data from the table will be a displayed in an Excel spreadsheet where you can further work with it.



Connecting Excel to Google BigQuery with Data Connection Wizard (Legacy Wizard)

You can use this option to connect to OLE DB or ODBC external data source that has already been defined.

1. In Excel, go to the **Data** tab. Click **From Other Sources**, and then click **From Data Connection Wizard**.
2. In the opened dialog, select **ODBC DSN** and click **Next** to continue.
3. Now select a data source you want to connect to, and click **Next**.
4. To connect to the table containing the required data, select its name and click **Next** to enter and save information about your new file or click **Finish**.
5. In the **Import data** dialog, you can select the way your data will be viewed in Excel and the place where to put it in the worksheet, and click **OK**.
6. The required data is now displayed in the existing Excel worksheet.

Connecting Excel to Google BigQuery with the Query Wizard

You can use this option to create a simple query for retrieving data from Google BigQuery to Excel via ODBC driver.

1. Open Excel, in the main menu, click the **Data** tab.
2. Click the **From Other Sources** dropdown menu, and then click **From Microsoft Query**.
3. In the appeared dialog, you can choose the data source you want to connect to.
4. After a successful connection, you can select the data you want to be displayed in Excel and click **Next**.
5. The next two steps allow filtering and sorting the data. Click **Next** to skip these procedures.
6. If you plan to further use the query, you can save it by clicking the **Save** button on the right.
7. Select **Return Data To Microsoft Excel** and click **Finish**.
8. In the **Import data** dialog, you can select the way your data will be viewed in Excel and the place where to put it in the worksheet, and click **OK**.
9. The required data is successfully imported to Excel.

Connecting Excel to Google BigQuery with Microsoft Query

You can use this option to create a more complex query for retrieving Google BigQuery data to Excel via ODBC driver.

1. Start Excel, click the **Data** tab.
2. In the appeared ribbon, click **From Other Sources**, and then click **From Microsoft Query**.
3. In the next dialog, choose the data source you want to connect to (e.g., using data source name - Devart ODBC Google BigQuery). Uncheck **Use the Query Wizard to Create/Edit Queries** and click **OK**.
4. Now you can select the tables you want to add to your query. When you finish, just click the **Add** button.
5. In the graphical editor, you can filter rows or columns of data, sort data, join multiple tables, create a parameter query, etc.

Connecting Excel to Google BigQuery with PowerPivot

You can use PowerPivot - an Excel add-in to perform data analysis and create complex data models. To load the required data, do the following:

1. In Excel, click the **PowerPivot** tab, then click **Manage** to go to the PowerPivot window.
2. In the opened window, click **From Other Sources**.
3. When the **Table Import Wizard** opens, select **Others (OLEDB/ODBC)** and click **Next**.
4. In the **Specify a Connection String** window, click the **Build** button.
5. In the **Data Link Properties** dialog, specify the data source you want to connect (e.g., using data source name - Devart ODBC Google BigQuery), and then click **Next**.
6. Now you should choose how to import the data (either select a table from the list or write a query to specify the data to be imported).
7. When the Import operation succeeded, click the **Close** button. The retrieved data is inserted in the active worksheet.

4.6 Using in Microsoft Visual Studio

Importing Google BigQuery Data into Visual Studio Through an ODBC Connection

A Visual Studio is a powerful tool containing features that allow editing, debugging, and compilating the code and creating applications that can be connected to any databases product and services on a local machine and network, and any type of cloud (private, public, or hybrid). To connect Visual Studio to a data source such as Google BigQuery, you can use an appropriate ODBC driver.

This guide describes how to connect to Google BigQuery and retrieve data importing them to Visual Studio with an ODBC driver. It is assumed that you have already installed and configured a DSN for ODBC driver for Google BigQuery.

1. Run Visual Studio Desktop and click **Tool** and select **Connect to Database**.
2. In the **Add connection** dialog box, select the **Microsoft ODBC Data Source** as a data source.
3. In the **Data source specification** point expand the **Data Source Name (DSN)** drop-down

list and select the previously configured DSN for Google BigQuery. Alternatively, you can connect to the database by entering the DSN in a **Use connection string** field. To check whether your connection is successful, click **Test connection**. Click **OK**.

4. If your data source is password-protected, Visual Studio will prompt you for user credentials. Type your **Username** and **Password** in the respective fields and click **OK**.
5. In the Server Explorer you can see the database structure. Choose **Tables**, right-click the table you want to view the data of and select **Retrieve Data**. You can also preview the contents of the database objects by clicking on them.

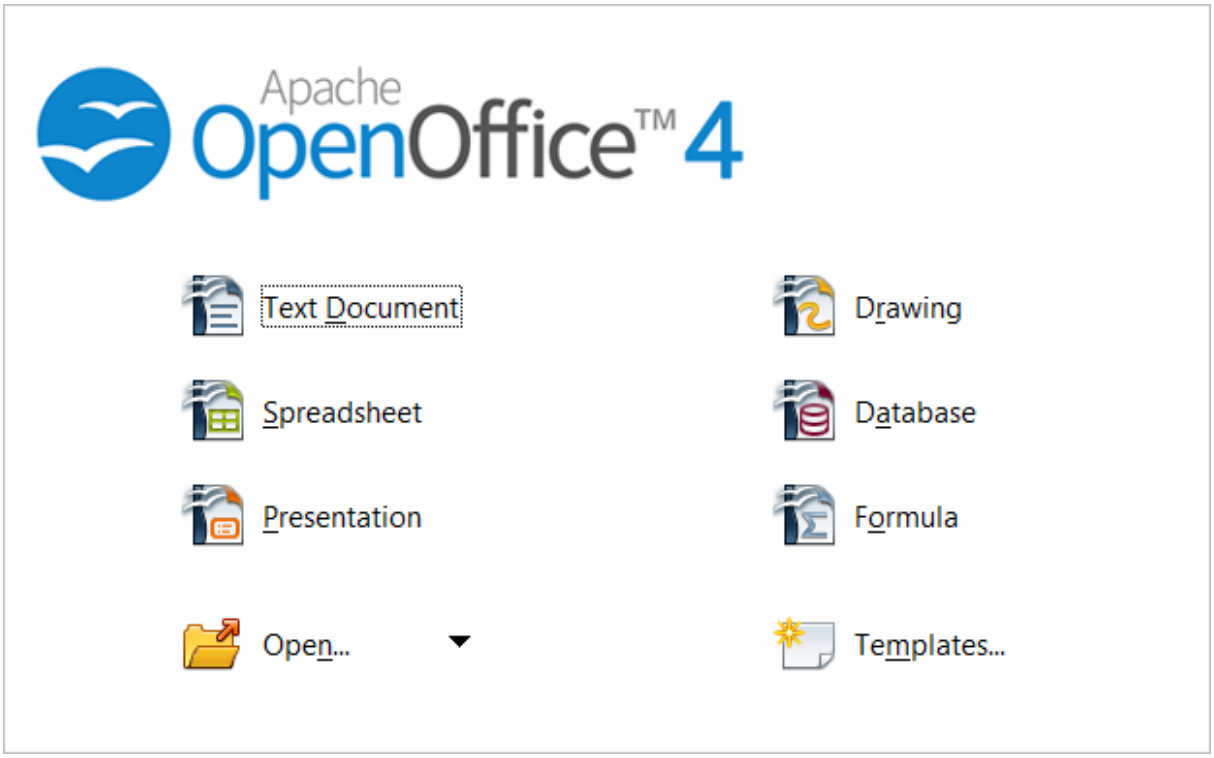
4.7 Using in OpenOffice and LibreOffice

Connecting to Google BigQuery from OpenOffice and LibreOffice using ODBC Driver for Google BigQuery

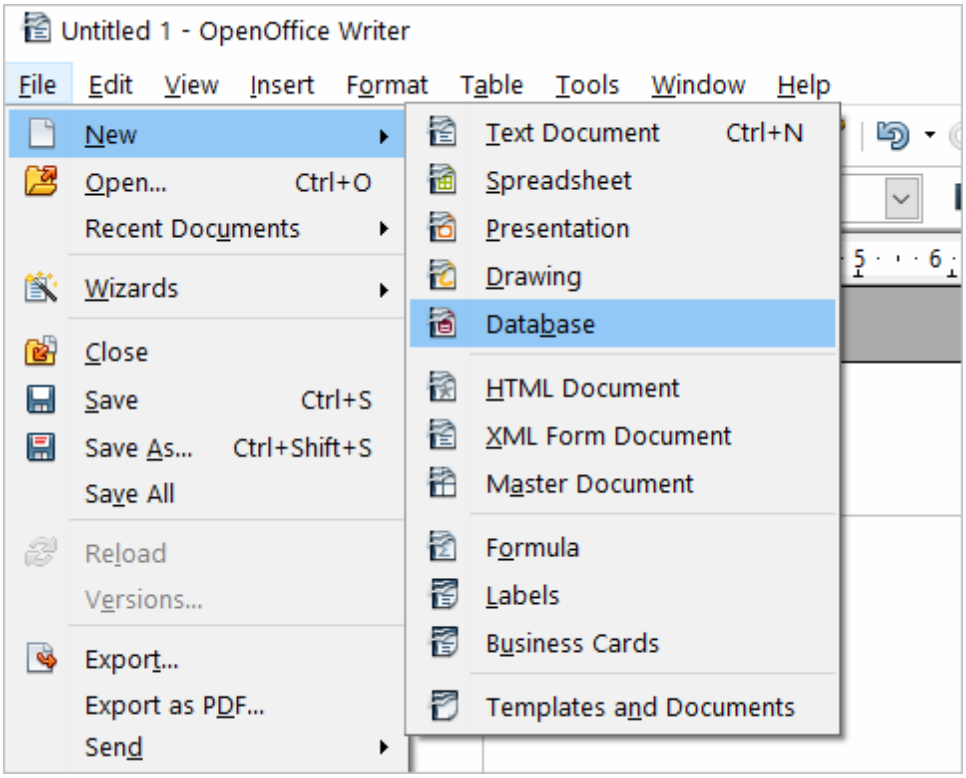
The article describes how to use Apache OpenOffice and LibreOffice to access ODBC data sources using the respective driver. You can access Google BigQuery data from Open Office Base or LibreOffice Base — desktop database management systems. Note that the Windows version of OpenOffice is 32-bit, and you may get the error “The specified DSN contains an architecture mismatch between the Driver and Application” when trying to access a data source through a 64-bit ODBC Driver. To get rid of the error message, set up the 32-bit version of the driver.

To connect to an ODBC data source from OpenOffice or LibreOffice using our driver for Google BigQuery, perform the steps below:

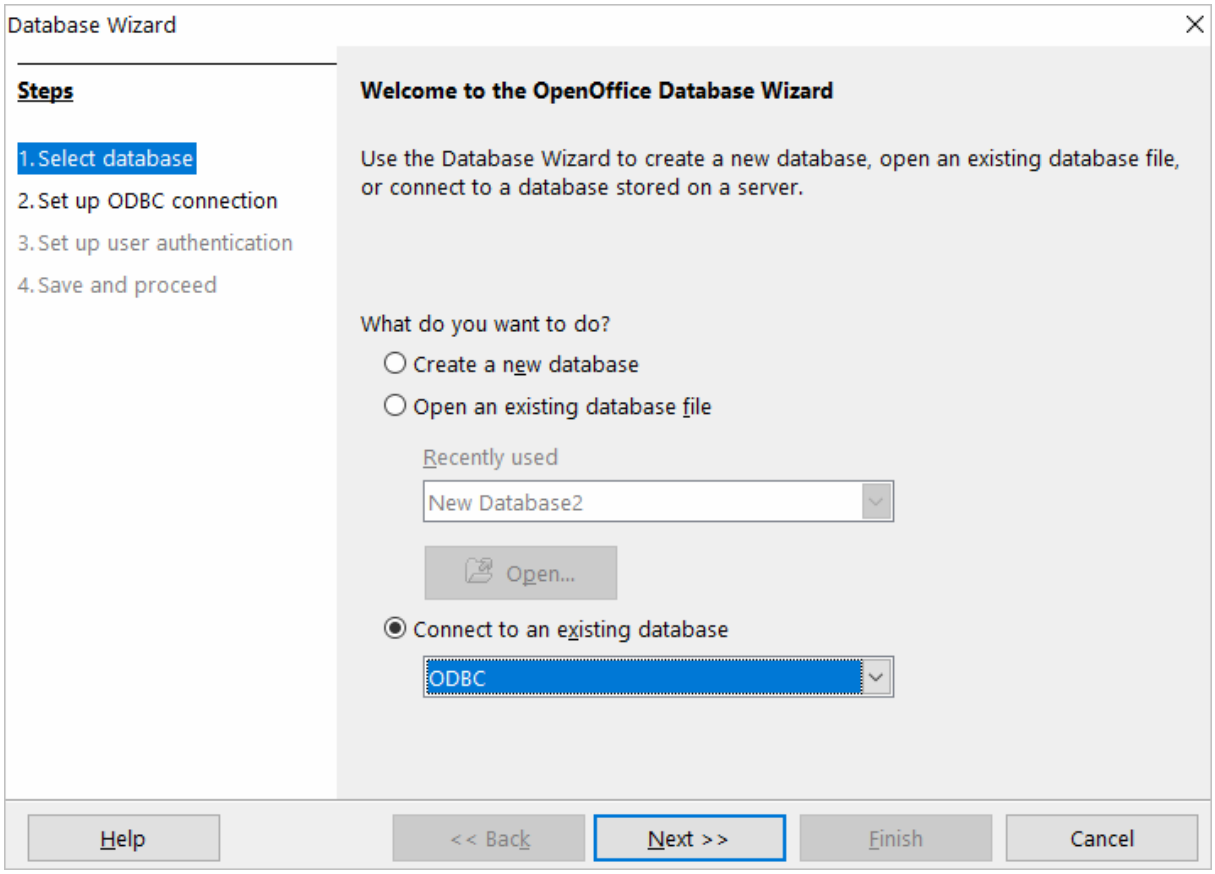
1. Start OpenOffice or LibreOffice, click **Database** to open the **Database Wizard**.



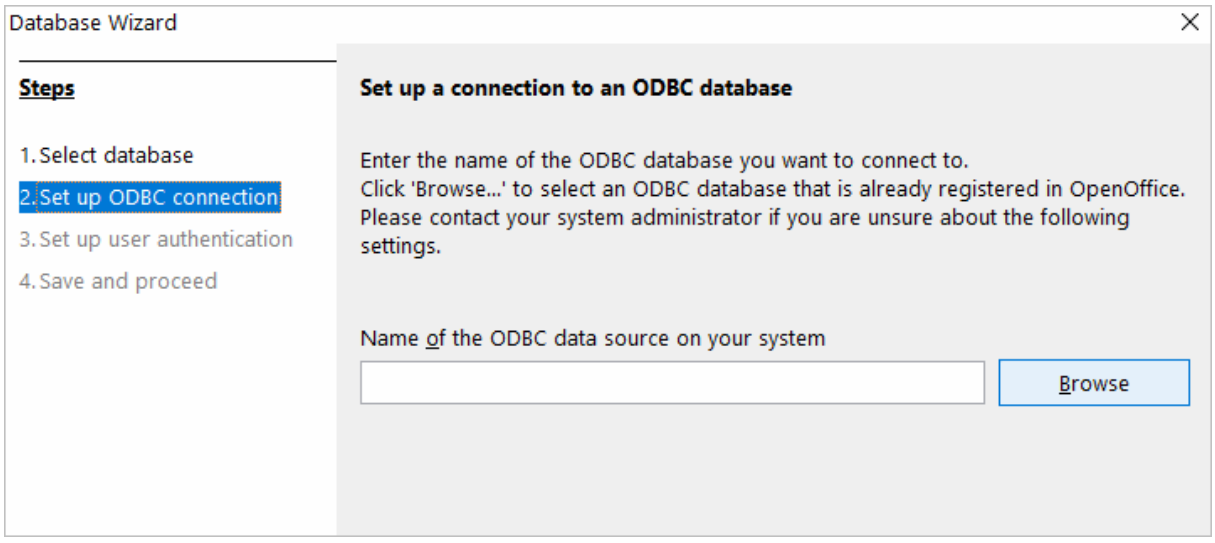
Alternatively, you can launch the **Database Wizard** from OpenOffice or LibreOffice Calc, Writer or any other tool by choosing **File > New > Database**.

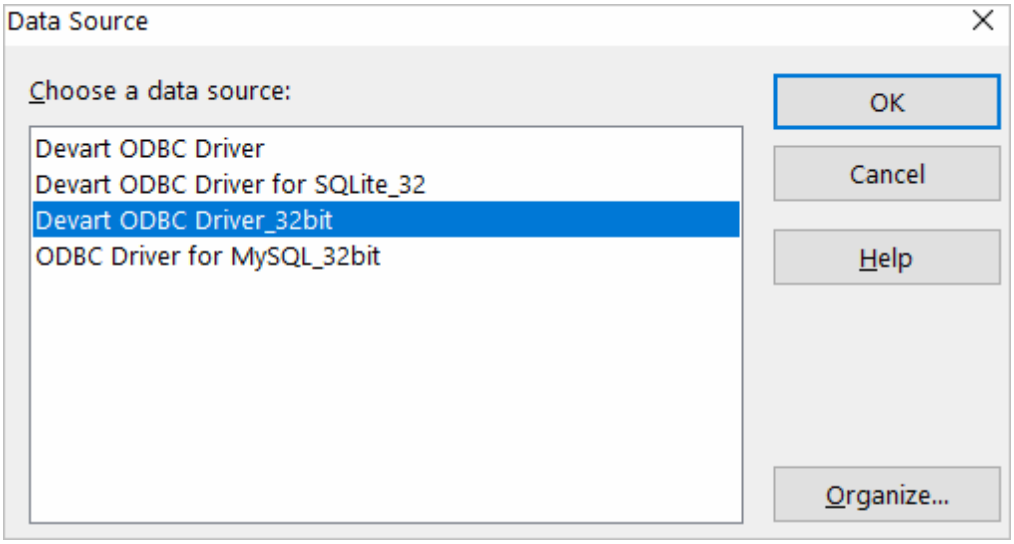


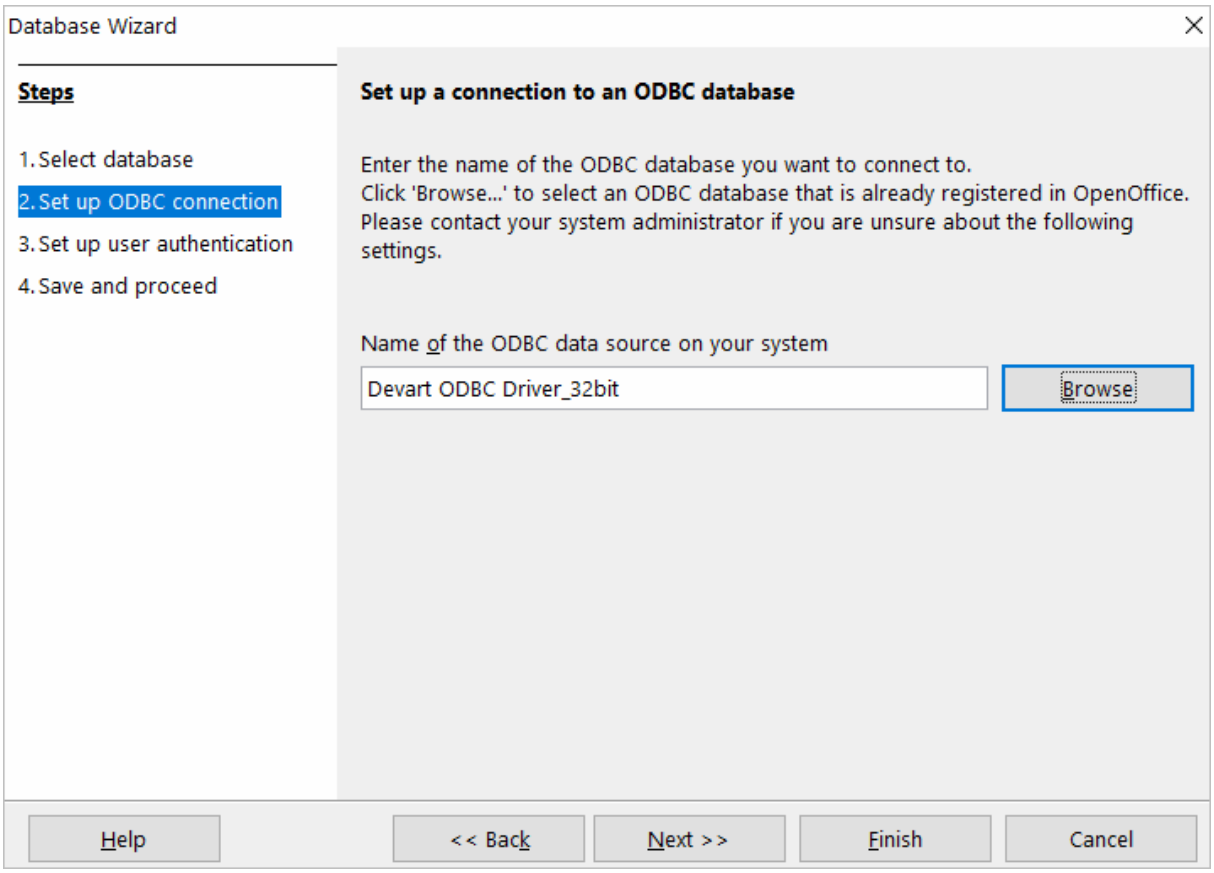
2. In the **Database Wizard dialog box**, click **Connect to an existing database**, select **ODBC** from the drop-down list, and click **Next**.



3. Specify the name of the data source you want to connect to. You can either type the name of your data source into the field, e.g. **ODBC Driver for Google BigQuery**, or you can click **Browse**, double-click the data source you need, and then click **Next**.

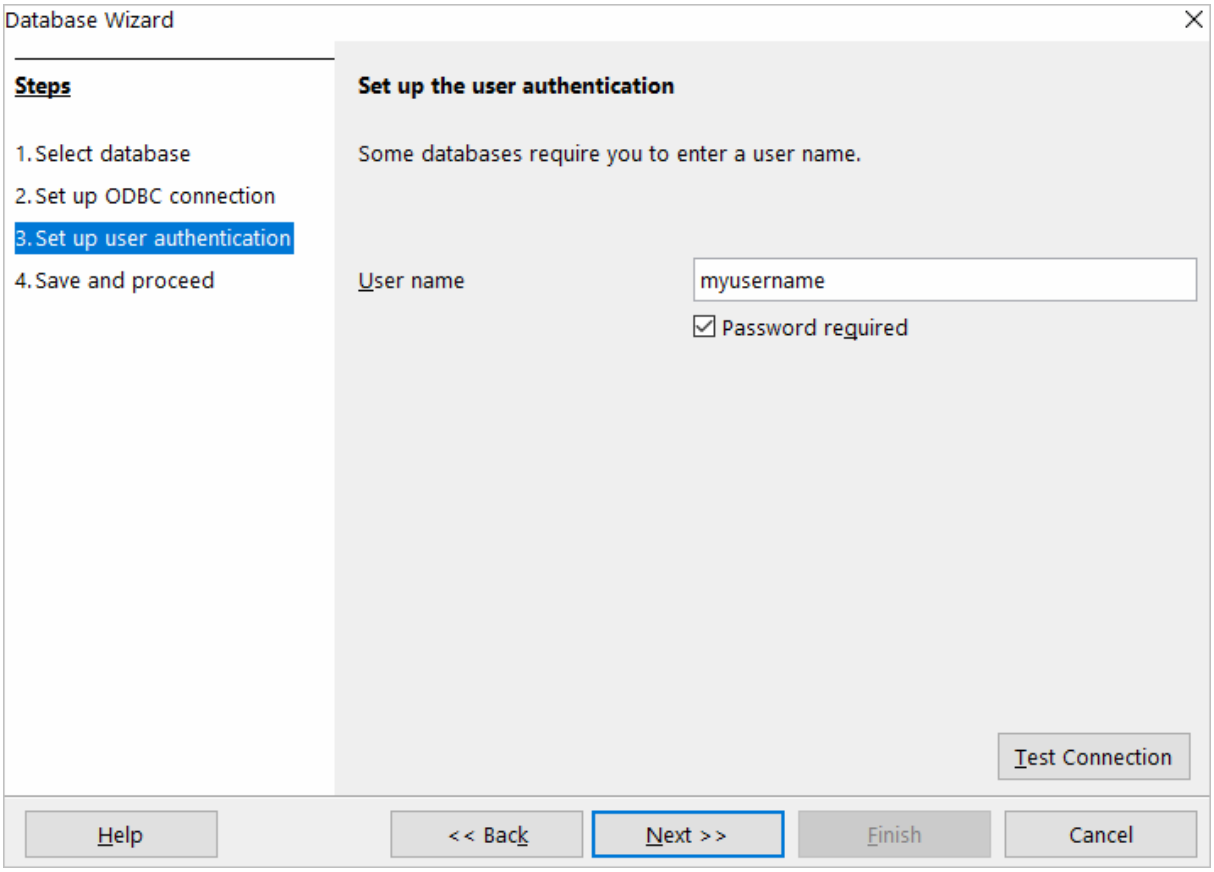




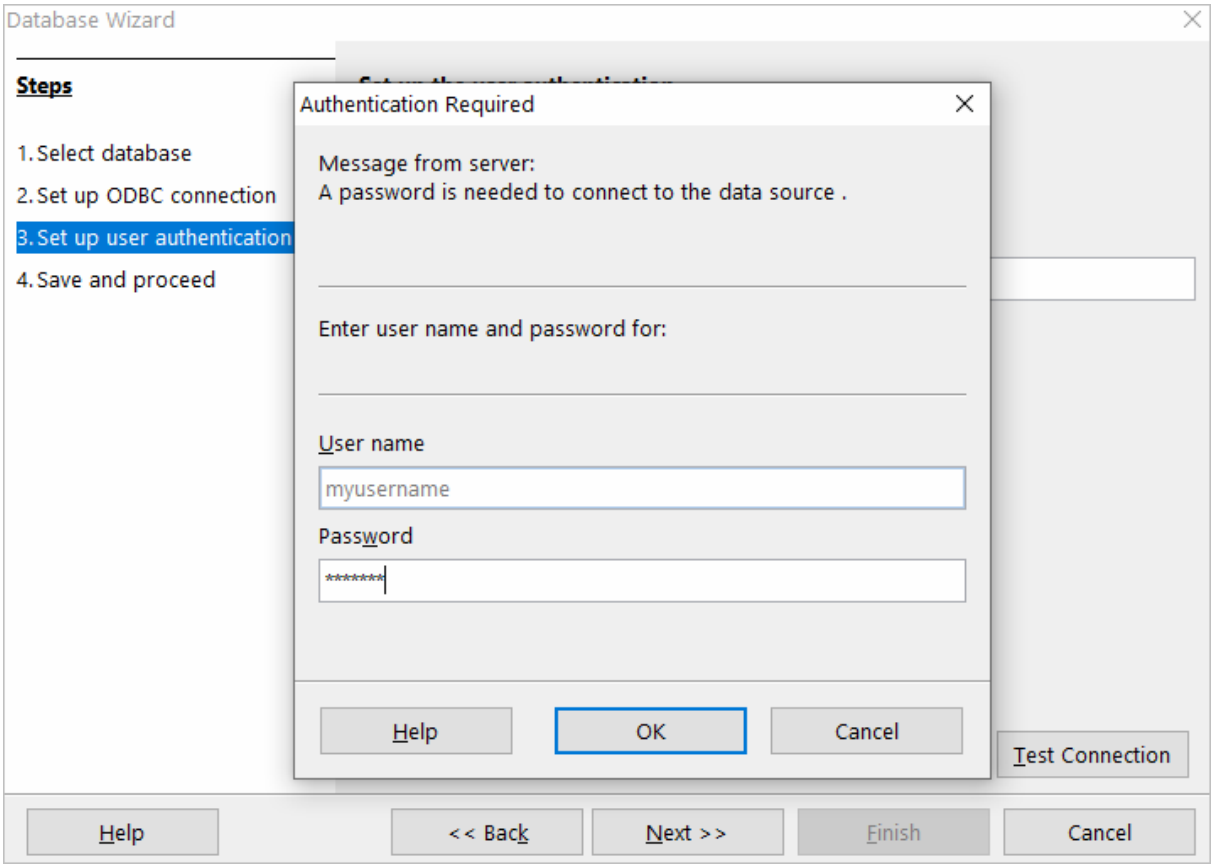


4. If your database requires a user name, type it into the **User name** field. If you are connecting to a password protected database, check the **Password required** field. Alternatively, you can specify these parameters in the data source settings of your ODBC

Driver for Google BigQuery and leave these fields empty in **Database Wizard**.

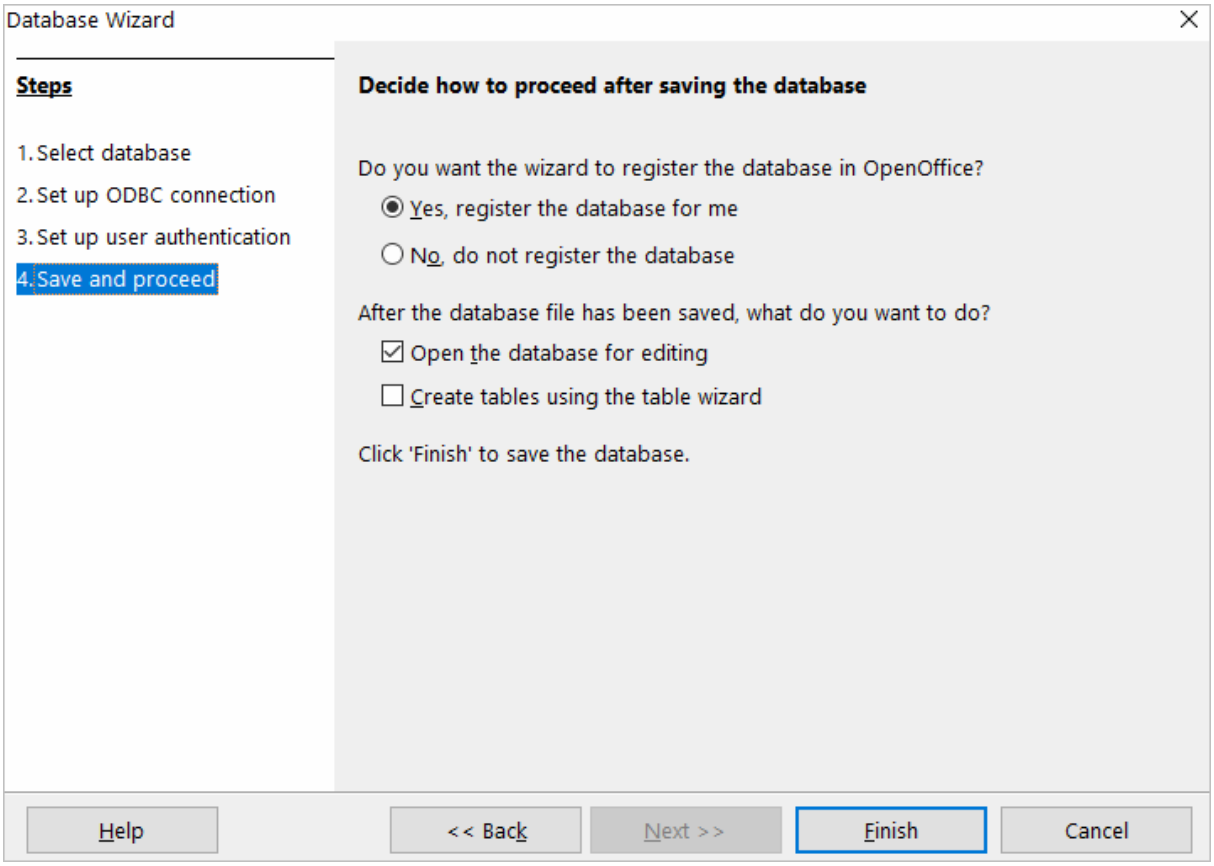


To test the connection to your data source, click **Test Connection**, input your credentials and click **OK**.

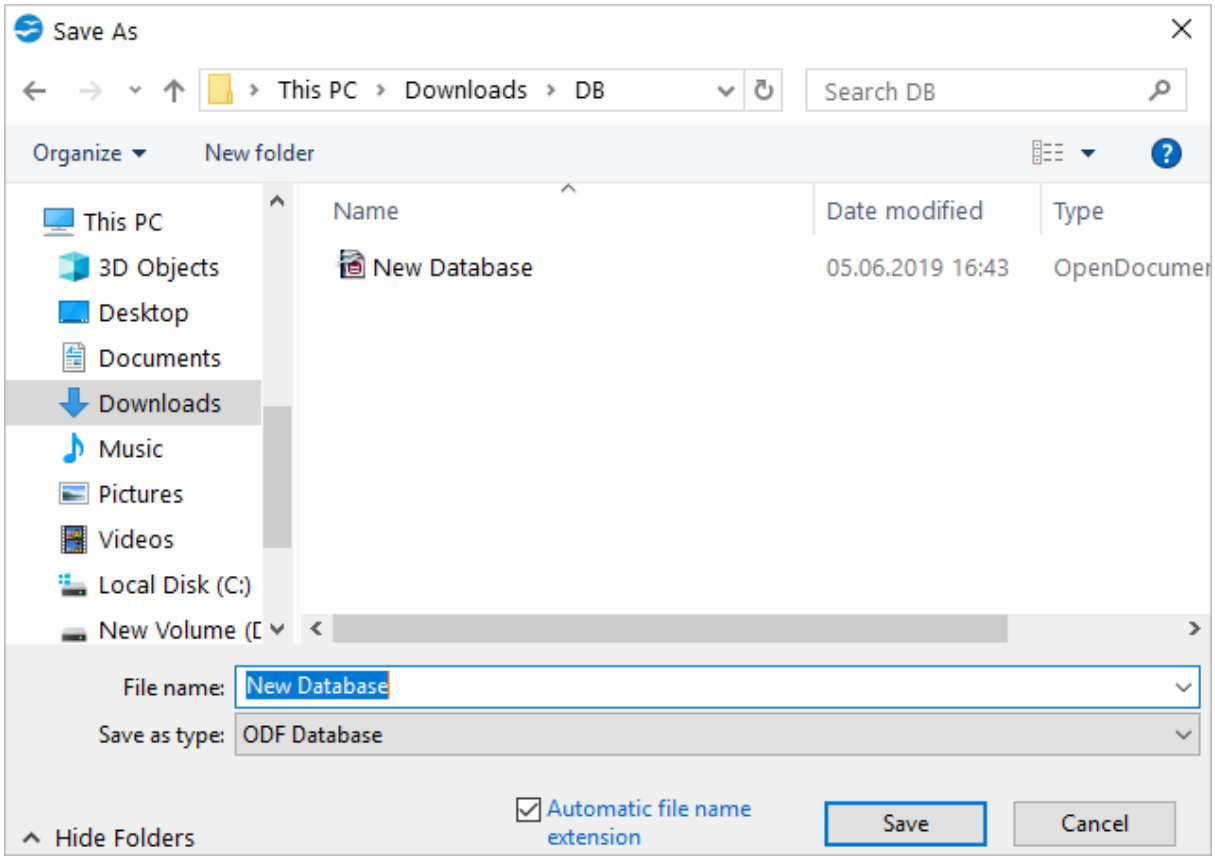


If you have entered valid credentials, you will see a success message. Click **Next** to proceed to the final step.

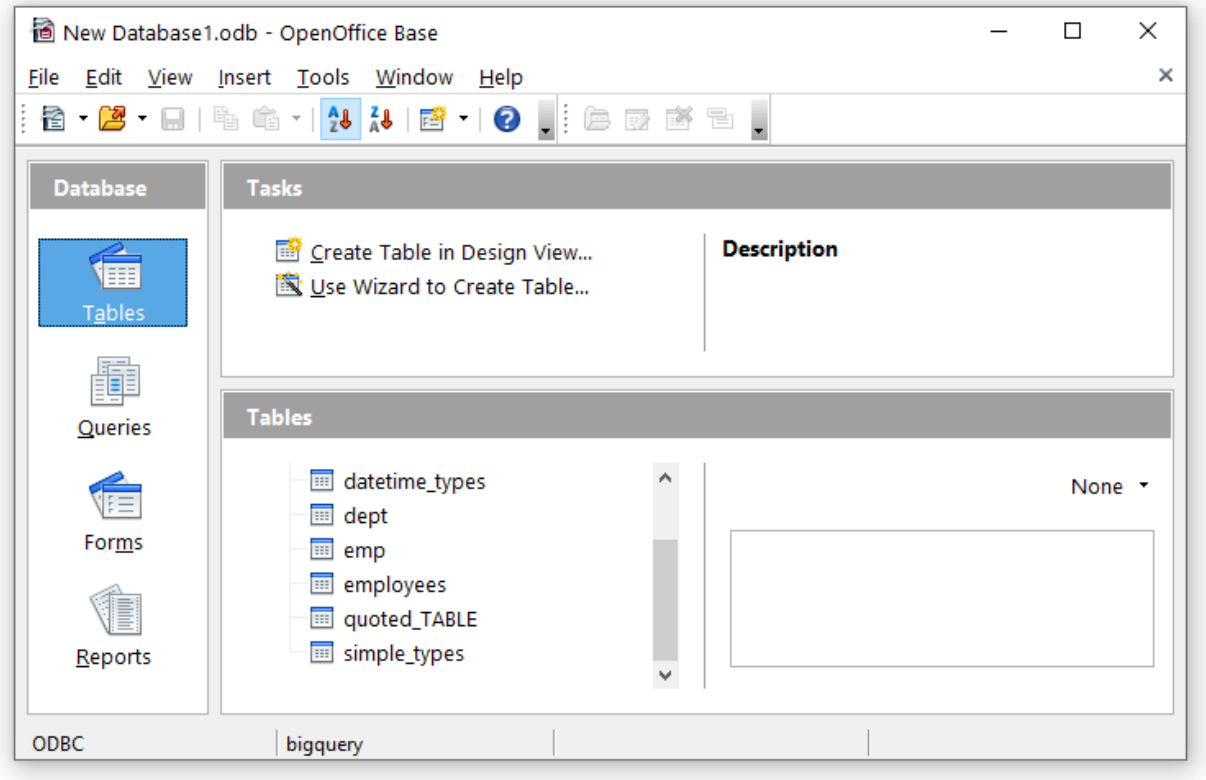
5. You can keep the default selection in this dialog box and click **Finish**.

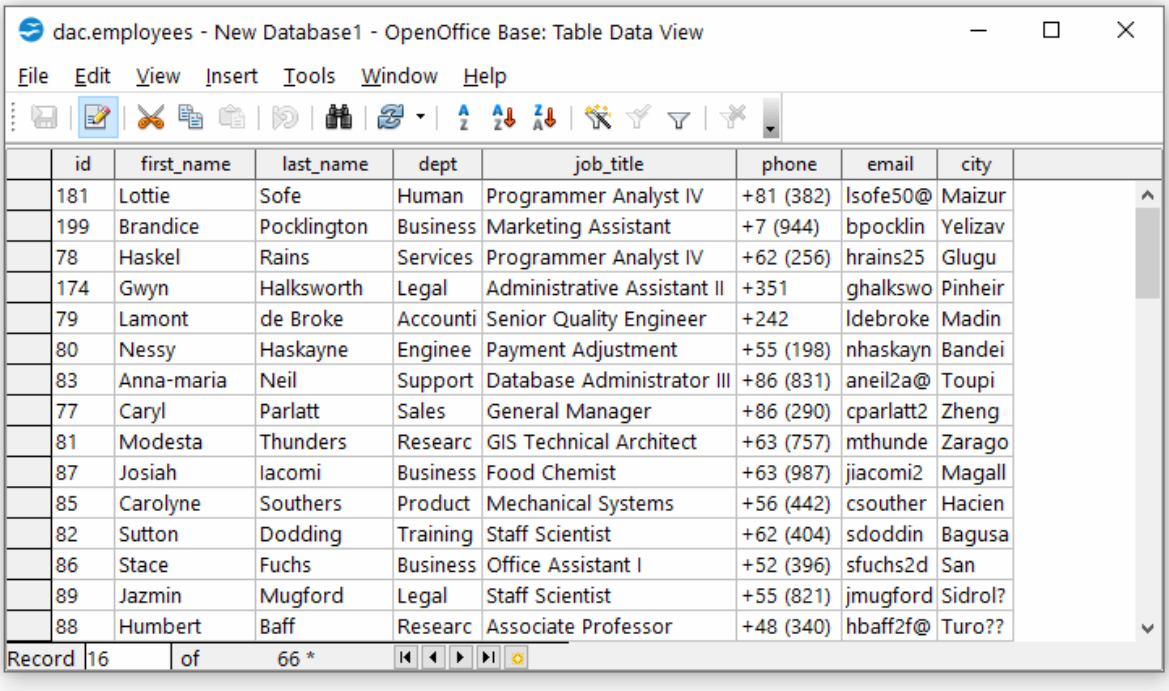


You will be prompted to give a name to your new database and select the directory where you want to store it.



6. When the database opens, you will see the list of tables from your data source diplayed in OpenOffice or LibreOffice Base workspace. To view the data from a specific table, double-click the table name.

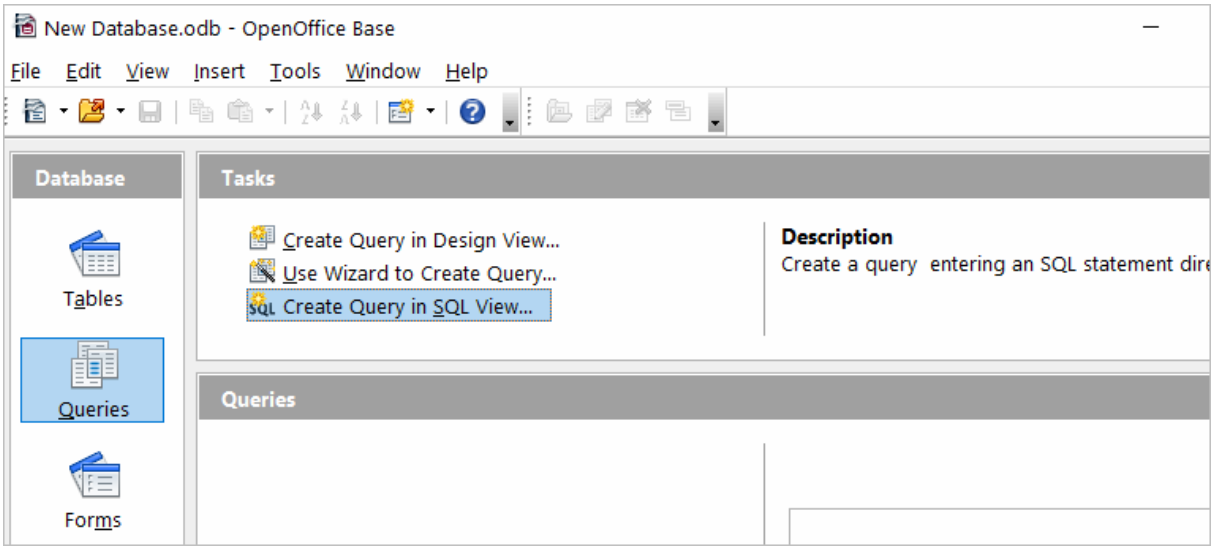




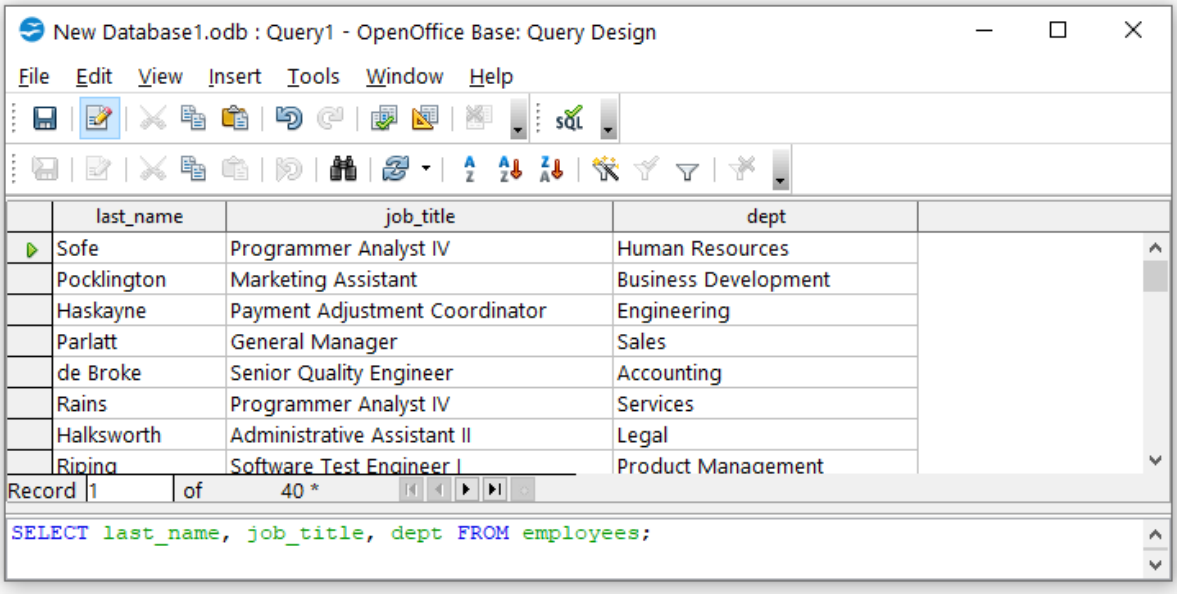
id	first_name	last_name	dept	job_title	phone	email	city
181	Lottie	Sofe	Human	Programmer Analyst IV	+81 (382)	lsofe50@	Maizur
199	Brandice	Pocklington	Business	Marketing Assistant	+7 (944)	bpocklin	Yelizav
78	Haskel	Rains	Services	Programmer Analyst IV	+62 (256)	hrains25	Glugu
174	Gwyn	Halksworth	Legal	Administrative Assistant II	+351	ghalkswo	Pinheir
79	Lamont	de Broke	Accounti	Senior Quality Engineer	+242	ldebroke	Madin
80	Nessy	Haskayne	Enginee	Payment Adjustment	+55 (198)	nhaskayn	Bandei
83	Anna-maria	Neil	Support	Database Administrator III	+86 (831)	aneil2a@	Toupi
77	Caryl	Parlatt	Sales	General Manager	+86 (290)	cparlatt2	Zheng
81	Modesta	Thunders	Researc	GIS Technical Architect	+63 (757)	mthunde	Zarago
87	Josiah	Iacomi	Business	Food Chemist	+63 (987)	jiacomi2	Magall
85	Carolyne	Southers	Product	Mechanical Systems	+56 (442)	csouther	Hacien
82	Sutton	Dodding	Training	Staff Scientist	+62 (404)	sdoddin	Bagusa
86	Stace	Fuchs	Business	Office Assistant I	+52 (396)	sfuchs2d	San
89	Jazmin	Mugford	Legal	Staff Scientist	+55 (821)	jmugford	Sidrol?
88	Humbert	Baff	Researc	Associate Professor	+48 (340)	hbaff2f@	Turo??

7. To create an SQL query, click **Queries** in the **Database** pane, then click **Create Query in**

SQL View...



Enter your query in the query text box and click **Run Query (F5)**. The date will be fetched from the database and displayed in Open Office or LibreOffice, respectively.



4.8 Using in Oracle BI

Importing Data from Google BigQuery into Oracle BI

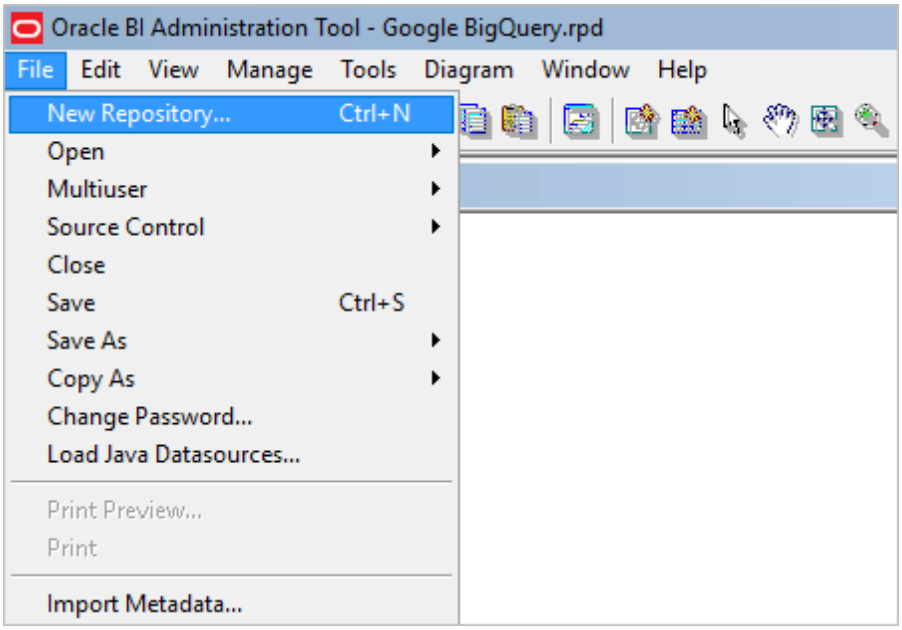
Through an ODBC Connection

Oracle BI is a set of analytical tools by the Oracle Corporation that support many different data sources, including relational databases, OLAP systems, and files, and combine data from these sources in a single report. Using a corresponding ODBC driver, you can fast connect to Google BigQuery to gain access to relevant information.

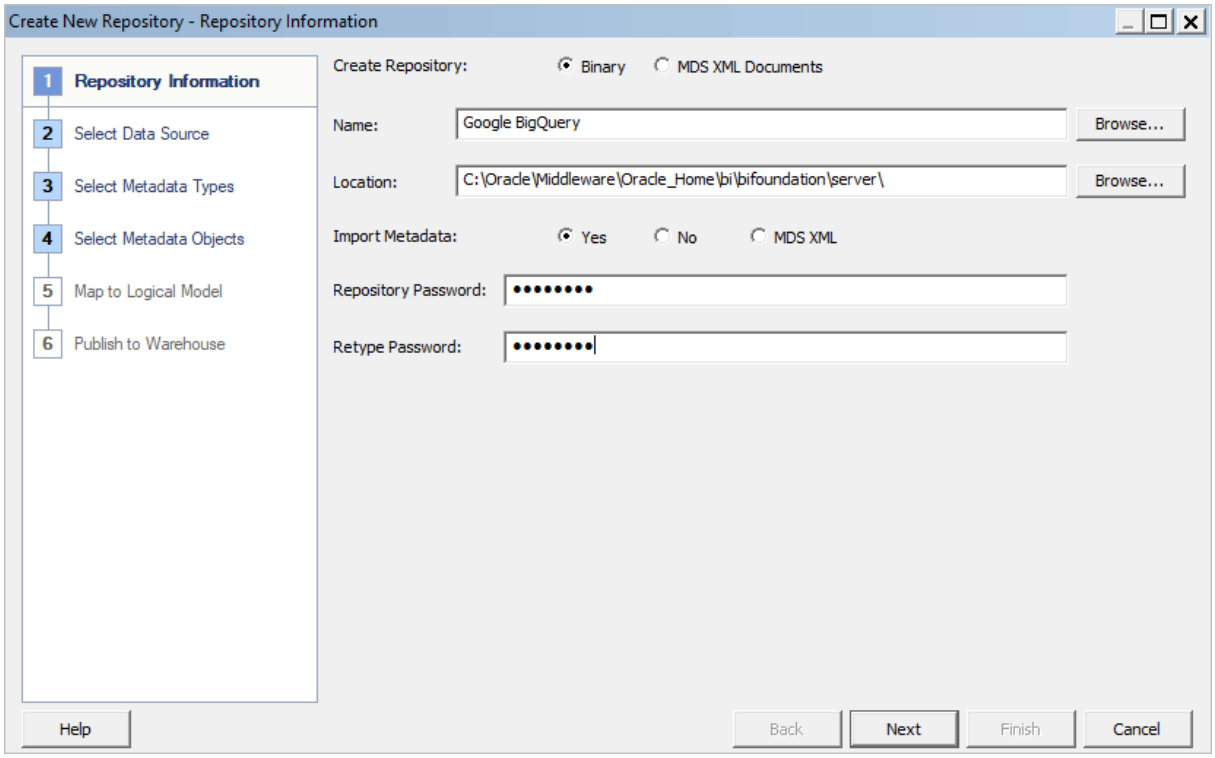
This article explains how to connect to Google BigQuery and import data into Oracle BI Administration Tool using an ODBC driver. It is assumed that you have already installed and configured a DSN for the ODBC driver for Google BigQuery.

To connect to an ODBC data source from Oracle BI using our Google BigQuery driver, follow the next steps:

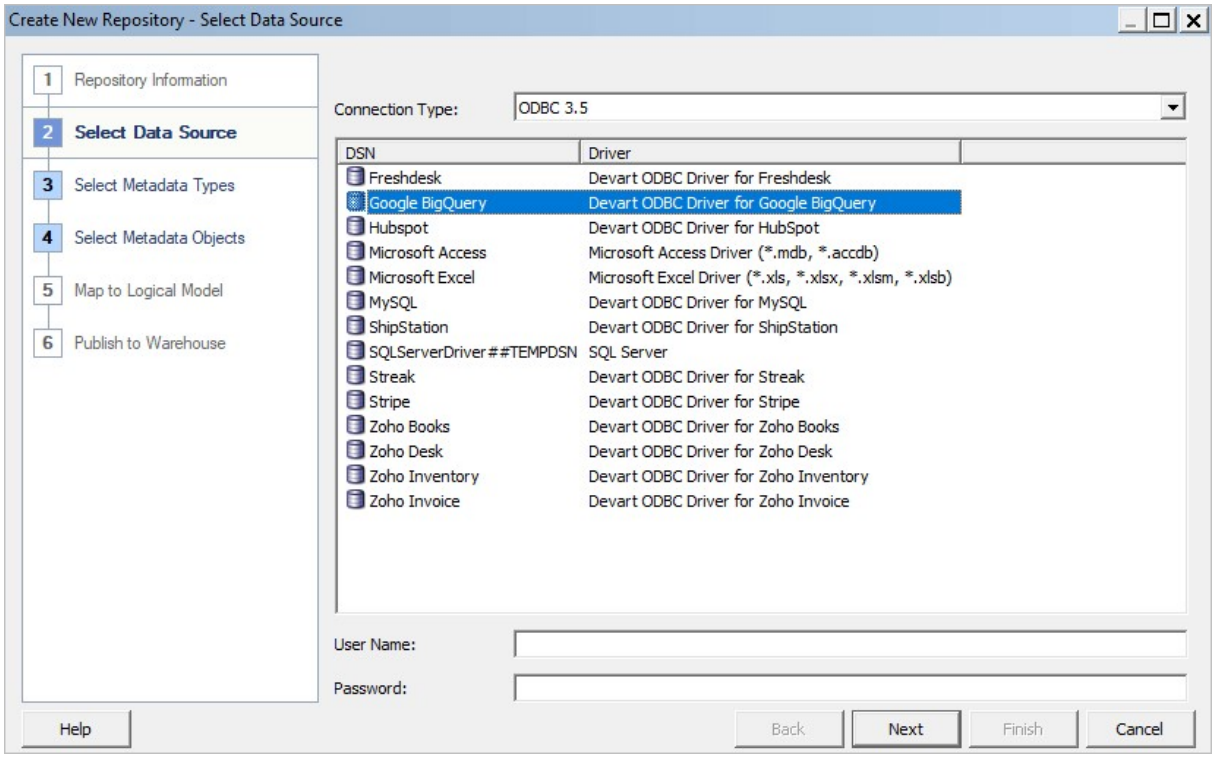
1. Run Oracle BI Administration Tool and click **File**>**New Repository**.



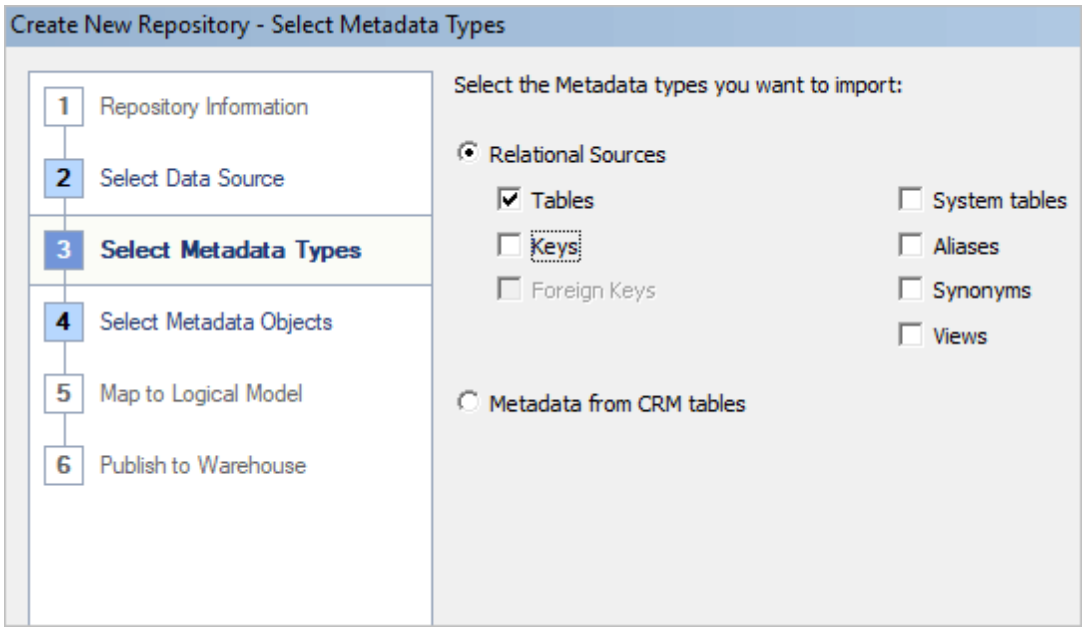
2. In the **Repository Information** tab, provide a name for your connection and create a password for repository. Click **Next**.



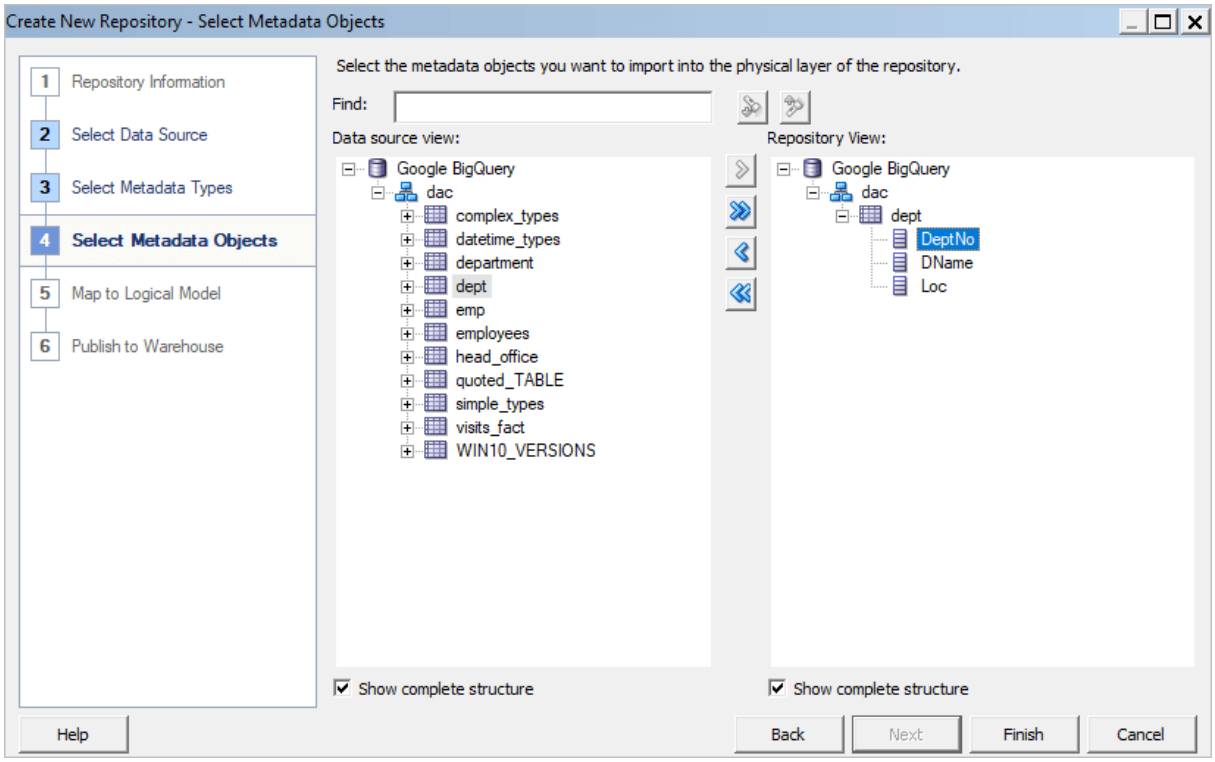
3. Choose a previously configured DSN and click **Next**.



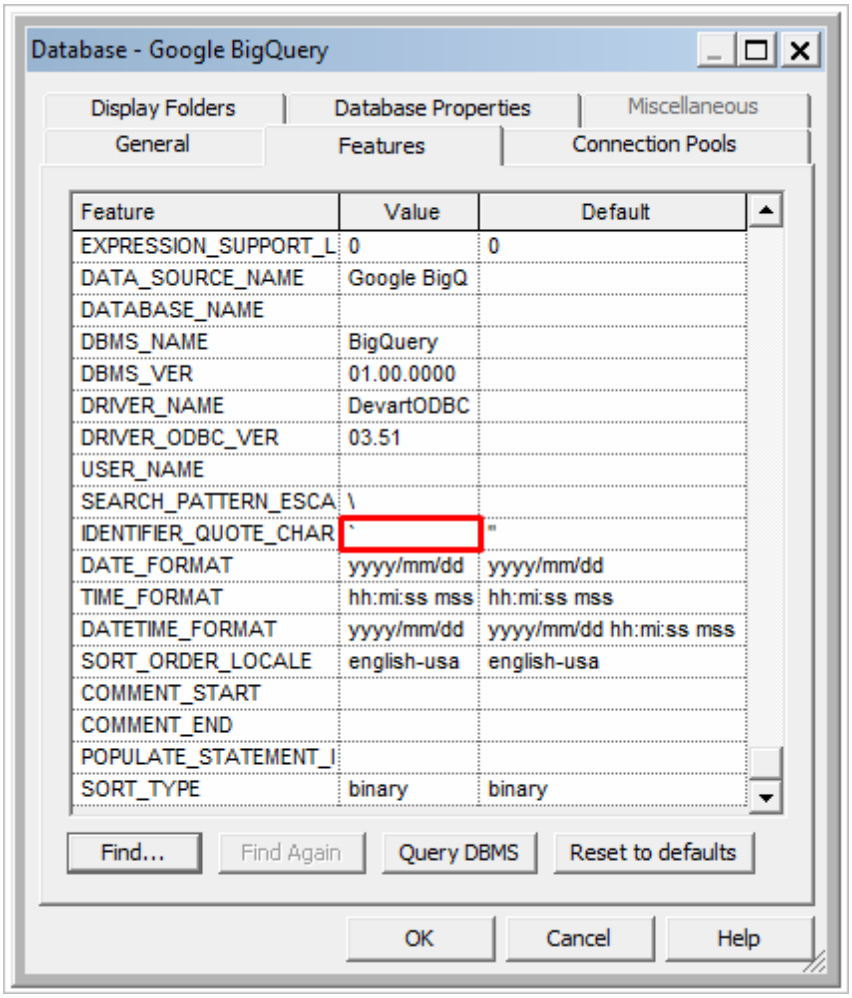
4. Select **Tables** as Relational Source.



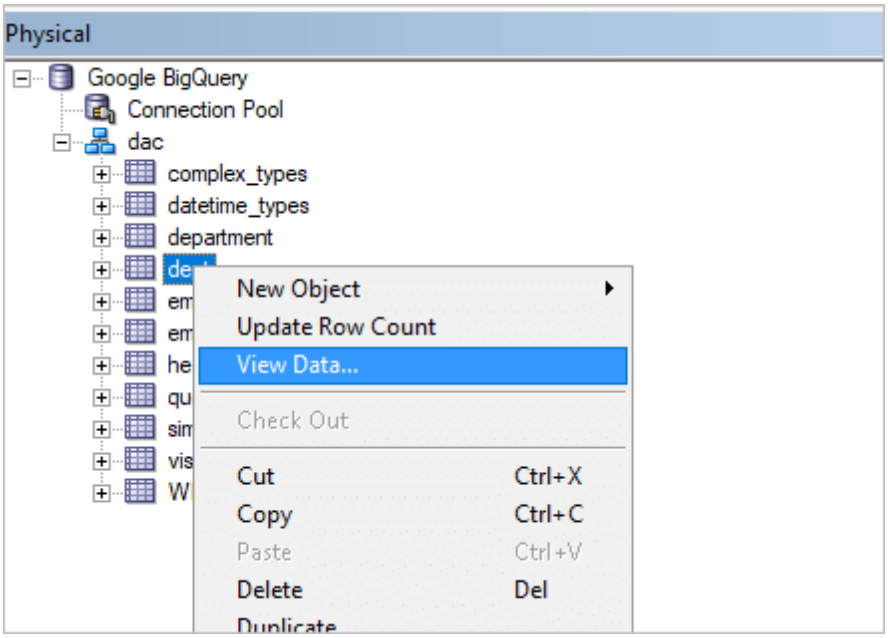
5. Select the table you want to get the data from and click **Import** button. Click **Finish**.

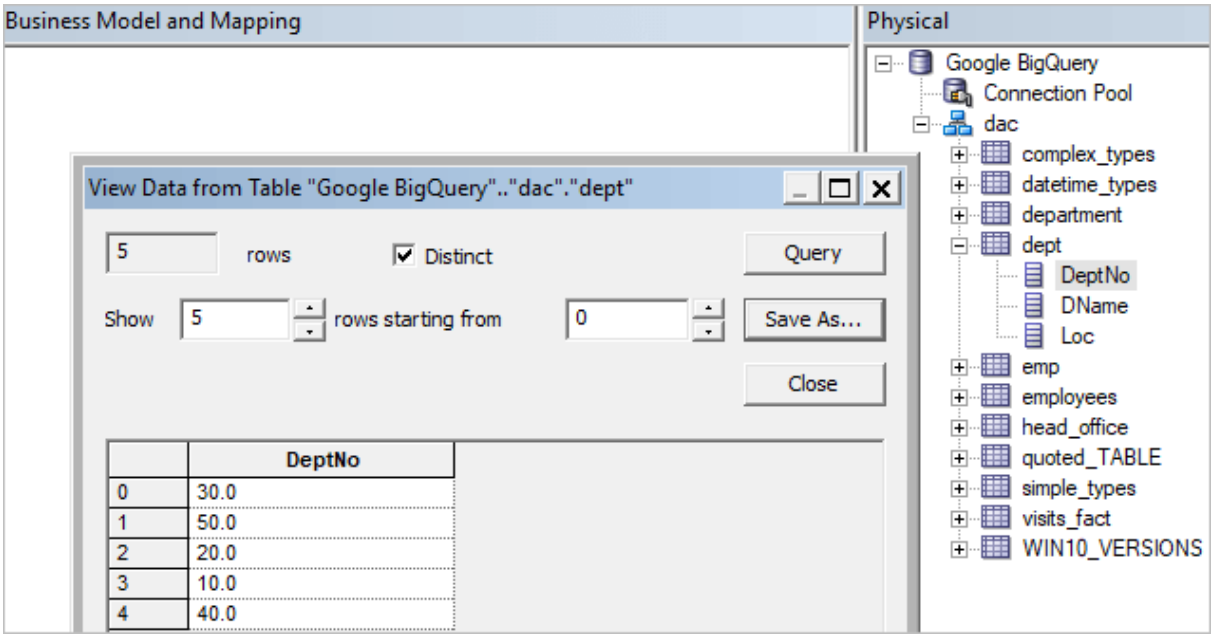


6. Now, to view data from the selected table, you need to specify the backtick sign (`) as a value for the **Identifier Quote Char** field. To do this, double-click on the installed DSN and go to **Features**.



7. Expand the drop-down list, right click on table and select **View data**.





4.9 Using in Oracle DBLink

Configuring Oracle Database Gateway for ODBC

This article explains how to configure Oracle Database Gateway for ODBC. If your data is stored in a non-Oracle database system or cloud application, and you need to access it from

an Oracle Database server, you can create a database link to an Oracle Database Gateway for ODBC. The gateway works with an ODBC driver to access non-Oracle systems or other, remote Oracle servers. Any ODBC-compatible data source can be accessed using the gateway and the appropriate ODBC driver. The driver must be installed on the same machine as the gateway. The non-Oracle system can run on the same machine as the Oracle server or on a different machine. The gateway can be installed on the machine running the non-Oracle system, the machine running the Oracle database or on a third machine as a standalone.

Configure the Initialization File

After installing the gateway and the ODBC driver for Google BigQuery, create an initialization file for your Oracle Database Gateway for ODBC. The sample file `initdg4odbc.ora` is stored in the `ORACLE_HOME\hs\admin` directory. To create an initialization file for the gateway, copy the sample initialization file and rename it. The name must be prefixed with init — for example, `initGoogle BigQuery.ora`. You need a separate initialization file for each ODBC data source. After creating the file, set the `HS_FDS_CONNECT_INFO` parameter to the system DSN that you created earlier, for example:

```
HS_FDS_CONNECT_INFO=Google BigQuery
```

Configure Oracle Net Listener

After configuring the gateway, you need to configure Oracle Net Listener to communicate with the Oracle database. Information about the gateway must be added to the `listener.ora` configuration file which is located in the `ORACLE_HOME\NETWORK\ADMIN\` directory. The following example is the address on which the Oracle Net Listener listens (`HOST` is the address of the machine on which the gateway is installed):

```
LISTENER =
    (DESCRIPTION_LIST =
        (DESCRIPTION =
          (ADDRESS = (PROTOCOL = TCP)(HOST = localhost)(PORT = 1521))
        )
    )
```

Add an entry to the `listener.ora` file to start the gateway in response to connection requests. The SID of the gateway (`SID_NAME`) must be the same in `listener.ora` and `tnsnames.ora`. `ORACLE_HOME` is the Oracle home directory where the gateway resides. To apply the new settings, stop and restart the Oracle Net Listener service.

```
SID_LIST_LISTENER=
```

```
   (SID_LIST=
      (SID_DESC=
         (SID_NAME=Google BigQuery)
         (ORACLE_HOME=D:\ORACLE_HOME)
         (PROGRAM=dg4odbc)
      )
   )
```

Configure Oracle for Gateway Access

Add a connect descriptor for the gateway to the `tnsnames.ora file`, which is located in `ORACLE_HOME\NETWORK\ADMIN` directory. The `SID` must match the value specified in the `listener.ora` file.

```
Google BigQuery =
  (DESCRIPTION =
    (ADDRESS = (PROTOCOL = tcp)(HOST = localhost)(PORT = 1521))
    (CONNECT_DATA =
      (SID = Google BigQuery)
    )
    (HS = OK)
  )
```

Create Database Links

To access an ODBC data source, you must create a database link using a database tool like SQL Plus or dbForge Studio for Oracle: connect to your database server and execute the `CREATE DATABASE LINK` statement, as follows:

```
CREATE DATABASE LINK dblink CONNECT TO "username"  IDENTIFIED BY "password"
```

`dblink` is the complete database link name. `tns_name_entry` is the Oracle Net connect descriptor specified in the `tnsnames.ora` file.

When you create the database link in dbForge Studio for Oracle, you can see your newly created link in Database Links on the left panel. After creating the database link, you can run a query against the ODBC data source using the following syntax:

```
SELECT * FROM table_name@"dblink_name"
```

See also

Configuring Oracle Database Gateway for ODBC

4.10 Using in PHP

Connecting to Google BigQuery from PHP using ODBC

Driver for Google BigQuery

PHP is one of the most popular programming languages for website development. ODBC drivers are connectors that make PHP development database agnostic — your software written in PHP will function with any vendor's database management system. You can use functions like odbc_exec() to prepare and execute SQL statements against any databases like MySQL, SQLite, PostgreSQL, etc.

PHP-based projects usually require a data storage, whether a traditional database or a cloud-based database. You can establish a connection to them using ODBC interface. With our ODBC drivers, you can access various data sources and retrieve tables and fields from a database.

Below is a sample PHP script for accessing Google BigQuery via ODBC. The script connects to Google BigQuery database and fetches all records from a table:

Step 1: Connect to ODBC data source

The *odbc_connect()* function is used to connect to an ODBC data source. Note that the function takes three mandatory parameters: the data source name, username and password. If your database is not password-protected or doesn't require a username, leave these parameters empty. In the following example, a connection is established using the *odbc_connect()* function in PHP.

```
<?php
    $user = "myusername";
    $password = "mypassword";
    $ODBCConnection = odbc_connect("DRIVER={Devart ODBC Driver for Google Bi
```

Step 2: Execute an SQL statement

If connection is successful, the *odbc_exec()* function is used to execute a SELECT statement against the *dept* table in the *autotest* database.

```
$SQLQuery = "SELECT * FROM autotest.dept";
    $RecordSet = odbc_exec($ODBCConnection, $SQLQuery);
```

Step 3: Print the result set

The *odbc_fetch_row()* function is used to return records from the result set. While *odbc_fetch_row()* returns rows, the *odbc_result_set()* function prints a set of result in HTML table. After all rows from the result set have been printed, the *odbc_close()* function closes the connection.

```
    $result = odbc_result_all($RecordSet, "border=1");
    odbc_close($ODBCConnection);
?>
```

You can modify this script by specifying general settings for each Devart ODBC driver to use any of them with your PHP projects.

4.11 Using in Power BI

Importing Google BigQuery Data into Power BI Through an ODBC Connection

Power BI is a popular business intelligence solution that is comprised of services, apps, and connectors that allow you to pull raw data from various sources and create meaningful reports. To connect Power BI to a data source such as Google BigQuery, you can use a corresponding ODBC driver.

This tutorial explores how to connect to Google BigQuery and import data into Power BI Desktop using an ODBC driver. It is assumed that you have already installed and configured a DSN for ODBC driver for Google BigQuery.

1. Run Power BI Desktop and click **Get Data**.
2. Select the **Other** category in the **Get Data** dialog box, then select **ODBC**. Click **Connect** to confirm the choice.
3. In the **From ODBC** dialog box, expand the **Data Source Name (DSN)** drop-down list and select the previously configured DSN for Google BigQuery
4. If you would like to enter a SQL statement to narrow down the returned results, click the **Advanced options** arrow, which expands the dialog box, and type or paste your SQL statement.
5. Click **OK**. If your data source is password-protected, Power BI will prompt you for user credentials. Type your **Username** and **Password** in the respective fields and click.
6. Now you should see the data structures in your data source. You can preview the contents of the database objects by clicking on them.
7. To load the Google BigQuery data into Power BI for analysis, select the needed table and click **Load**.

4.12 Using in Python

Installing the ODBC Driver for Google BigQuery

One of the most convenient methods to connect to an external database or access cloud data from Python is via ODBC. Devart has developed a range of ODBC Drivers for Python to work with databases and cloud services.

If you don't have Python installed on your machine, go to the Python official website, download the appropriate installer and run it. You will also need to install the **pyodbc** module — the easiest way to do that is by using the *pip install pyodbc* command in the Python interactive mode. Next, you need to download the ODBC Driver for Google BigQuery. To use the ODBC driver as a translation layer between the application and the database, you need to configure it by following the installation instructions.

Connecting to Google BigQuery from Python using ODBC Driver for Google BigQuery

Here's an example to show you how to connect to Google BigQuery via Devart ODBC Driver in Python. First we import the pyodbc module, then create a connection to the database, insert a new row and read the contents of the EMP table while printing each row to the Python interactive console. To execute the script, you can type the code directly in the interactive console or add the code to a file with the .py extension and run the file from the command prompt.

Step 1: Connect

```
import pyodbc
cnxn = pyodbc.connect('DRIVER={Devart ODBC Driver for Google BigQuery};Proje
```

Step 2: Insert a row

Here's a simple example of how to execute an *insert* statement to test the connection to the database. The script inserts a new record to the EMP table.

```
cursor = cnxn.cursor()
cursor.execute("INSERT INTO EMP (EMPNO, ENAME, JOB, MGR) VALUES (535, 'Scott
```

Step 3: Execute query

The *cursor.execute()* function retrieves rows from the *select* query on a dataset. The

cursor.fetchone() function iterates over the result set returned by *cursor.execute()* while the *print()* function prints out all records from the table to the console.

```
cursor = cnxn.cursor()
cursor.execute("SELECT * FROM EMP")
row = cursor.fetchone()
while row:
 print (row)
 row = cursor.fetchone()
cursor.close()
cnxn.close()
```

4.13 Using in QlikView

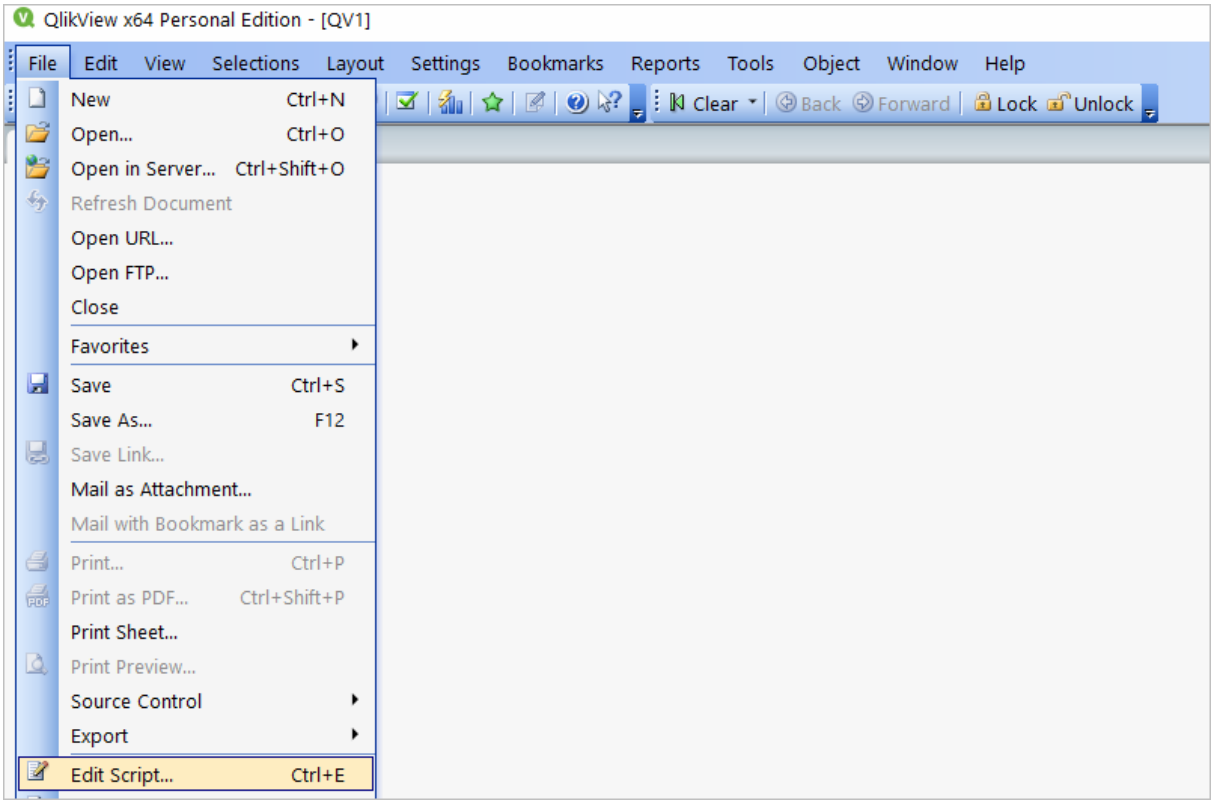
Connecting to Google BigQuery from QlikView using ODBC Driver for Google BigQuery

This tutorial describes how to connect and configure QlikView to retrieve data from Google BigQuery for further analysis. QlikView is a data visualization tool that connects and pulls data from different popular databases like MySQL, MongoDB, Oracle, SQL Server, Postgres, etc. to present it in a single view. The business intelligence platform identifies relationships in your data and discovers patterns and opportunities to support your decision making.

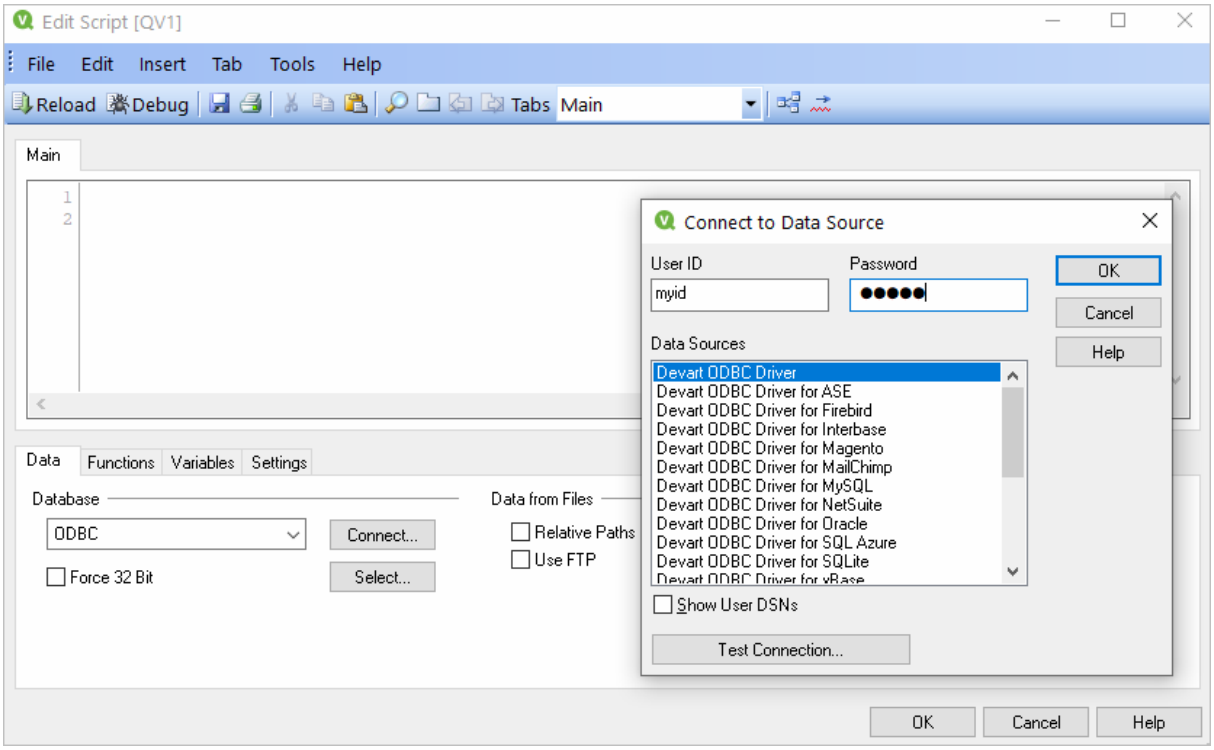
QlikView supports the ODBC connectivity interface for communication with external data sources. An ODBC data source must be configured for the database you want to access. You can create an ODBC connection using a DSN during the ODBC driver installation or later.

To connect to an ODBC data source from QlikView using our driver for Google BigQuery, perform the steps below:

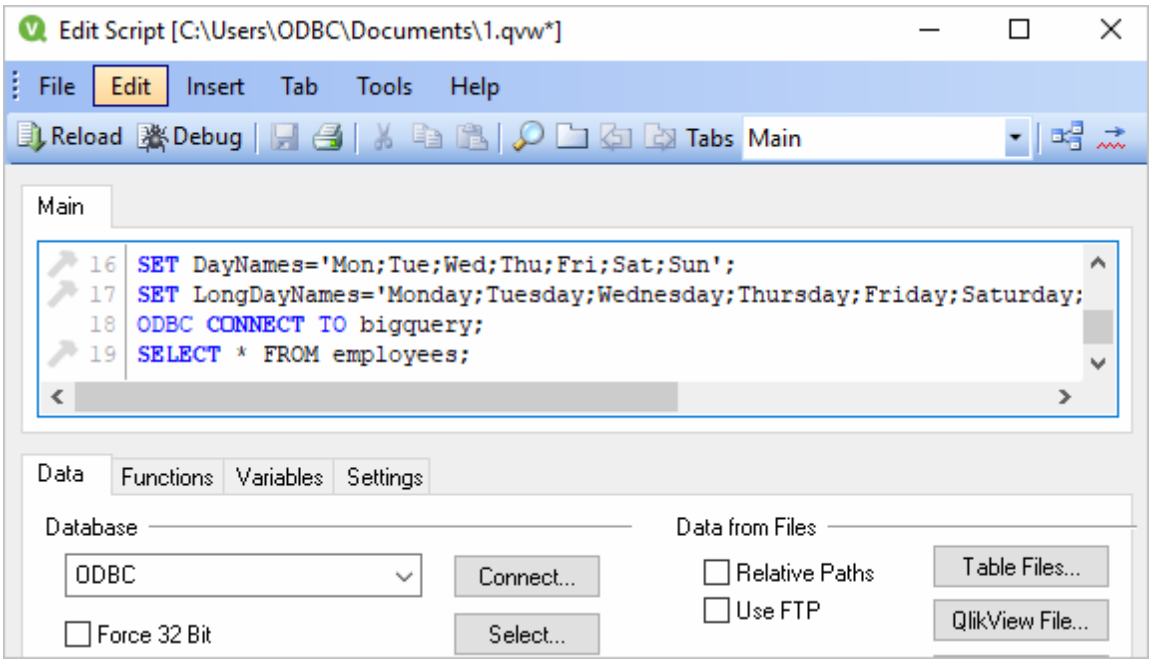
1. Open the QlikView client application and click **File > New**. Close the **Getting Started** wizard and open **File > Edit Script (CTRL+E)**.

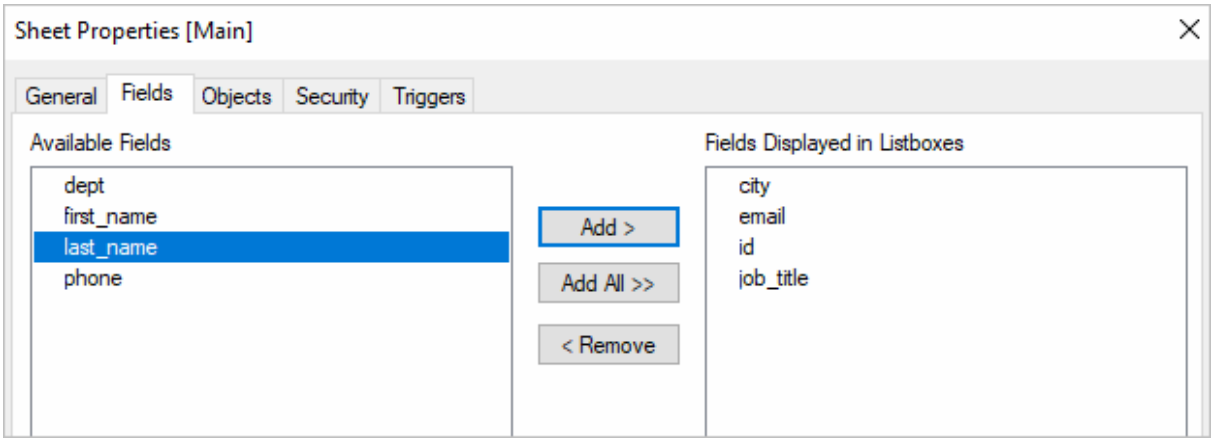


2. In the **Data** tab, choose **ODBC** from the **Database** drop-down and click **Connect**. Select the **Data Source** you created earlier, type in the **User ID** and **Password** if your database is password-protected. You can test the connection by choosing **Test Connection**. The **Connection Test succeeded** message should appear. Click **OK** to connect to your data source.

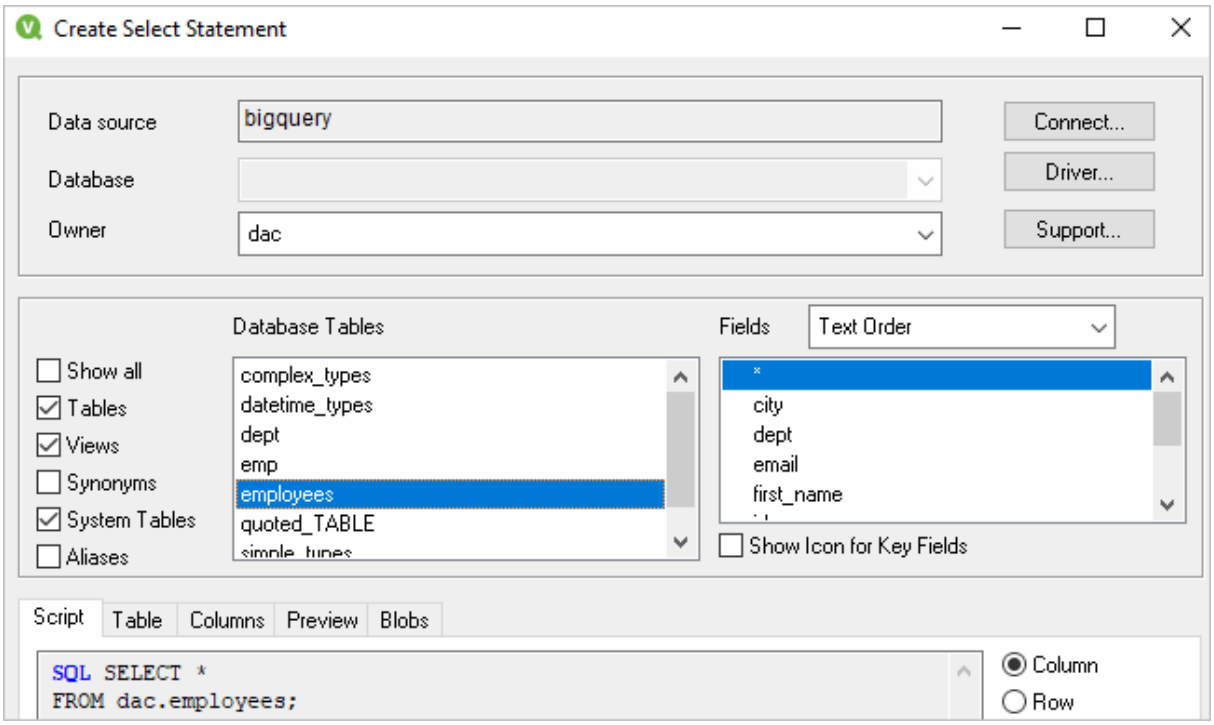


3. To retrieve the data from your data source, you can enter an SQL query and press **F5**. You will be suggested to choose fields to be displayed.

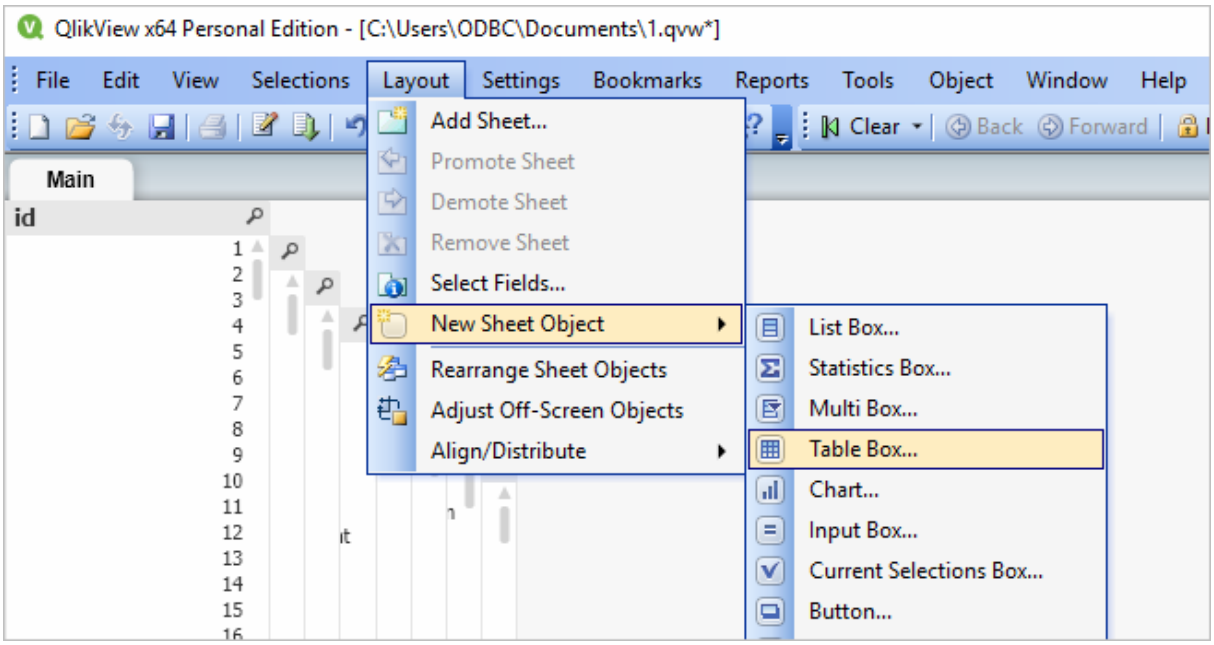


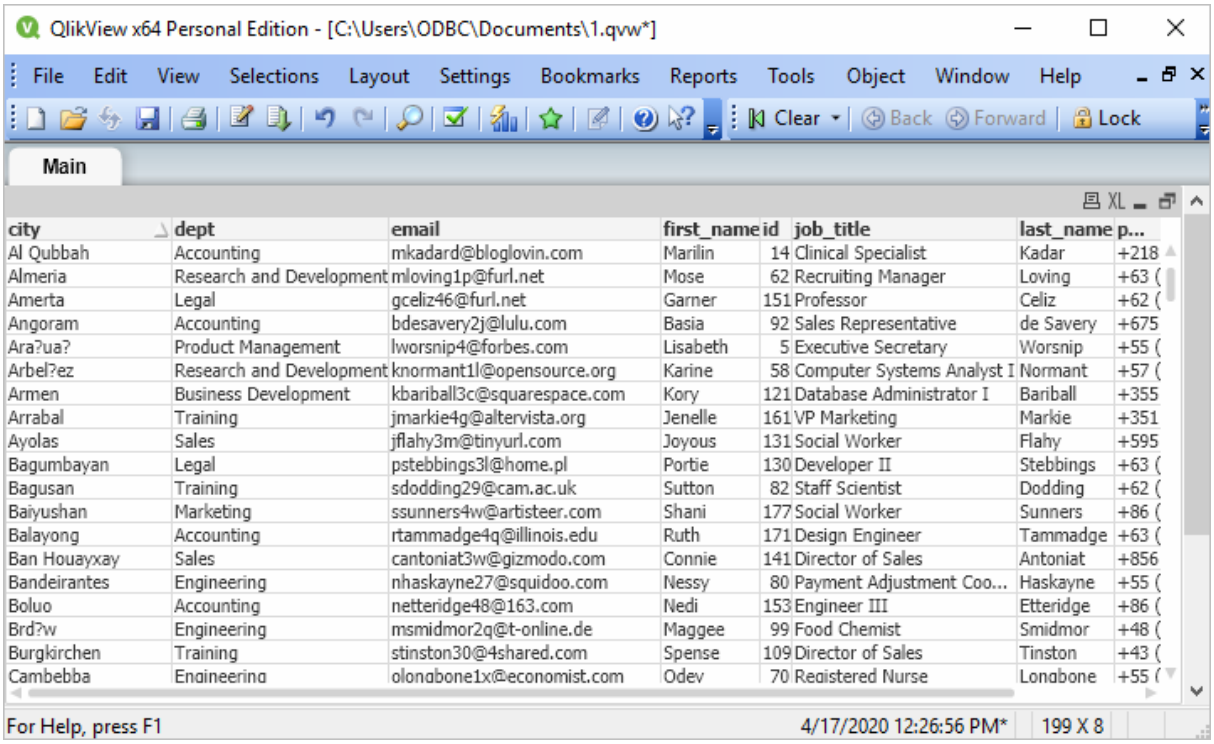


4. Alternatively, you can click **Select**, and QlikView will show you the database structure window where you can compose a SELECT statement for the data to be fetched. You can choose a different database from the database drop-down list. Select the necessary tables and fields. You can retrieve date from multiple tables and fields by selecting them and clicking **Add**. When you are ready with your SELECT statement, click **OK**. You will get back to the main script editor with your SQL statement. Press **F5** to execute the script and select the fields to be displayed in QlikView.



5. Once the data has been fetched, you can choose a table layout to present the data in a table. Choose **Layout > New Sheet Object > Table Box**. Select the fields to be added to the tablebox and click **OK**.





4.14 Using in SQL Server Management Studio

This section describes how to establish and troubleshoot a connection to Google BigQuery from SQL Server Management Studio using ODBC Driver for Google BigQuery.

- Creating a Linked Server
- Troubleshooting in SSMS

4.14.1 Creating a Linked Server

Requirements

In order to avoid incorrect integration with MS SSMS, the working environment must meet the following conditions:

- The data source must be a configured system DSN. Refer to the Driver Configuration article to learn how to configure a System DSN.
- The driver, studio, and SQL Server must be of the same bitness. For example, if you are using 64-bit SQL Server Management Studio on 64-bit Windows platform, then configure the 64-bit version of the driver using ODBC Administrator launched from %windir%\system32\odbcad32.exe. Otherwise, configure the driver using the 32-bit version of ODBC Administrator - launch it from %windir%\SysWOW64\odbcad32.exe.
- ODBC Driver for Google BigQuery and SQL Server must be installed on the same computer.
- .NET Framework 4.5 must be installed on the computer.

Connecting to Google BigQuery from SQL Server Management Studio using ODBC Driver for Google BigQuery

You can use the Microsoft SQL Server Management Studio to connect your Google BigQuery data to an SQL Server instance. Linked Server is a tool of MS SQL Server that allows to execute distributed queries to refer tables stored on non-SQL Server datbase in a single query. With linked servers, you can execute commands against different data sources such as Google BigQuery and merge them with your SQL Server database. You can create a

linked server with one of these methods: by using the options in the Object Explorer or by executing stored procedures.

Below are major advantages of using SQL Server Linked Servers to connect to Google BigQuery:

1. The ability to connect other database instances on the same or remote server.
2. The ability to run distributed queries on heterogeneous data sources across the organization.
3. The ability to work with diverse data sources in the same way.

How to configure a SQL Server Linked Server to connect to Google BigQuery

You can follow the steps to create a linked server for Google BigQuery in SQL Server Management Studio by using Object Explorer:

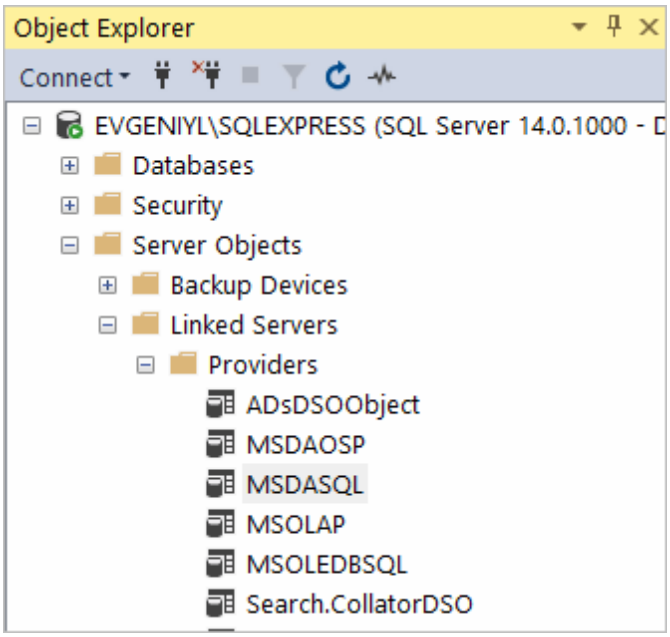
1. Start your Management Studio and choose your SQL Server instance.
2. In the **Object Explorer pane**, expand the **Server Objects**, right-click on **Linked Servers** and then click on **New Linked Server**.
3. Configure your linked server in the dialog box:
   - Give a name for your server in the **Linked server** field.
   - Under **Server type**, select **Other data source** .
   - Choose **Microsoft OLE DB Provider for ODBC Drivers** in the **Provider** drop-down list.
   - In the **Data source** field, enter the name of your DSN, e.g. Devart ODBC Driver for Google BigQuery. Alternatively, you can input the ODBC Driver connection string in the **Provider** field.

The linked server will appear under the Linked Servers in the Object Explorer Pane. You can now issue distributed queries and access Google BigQuery databases through SQL Server.

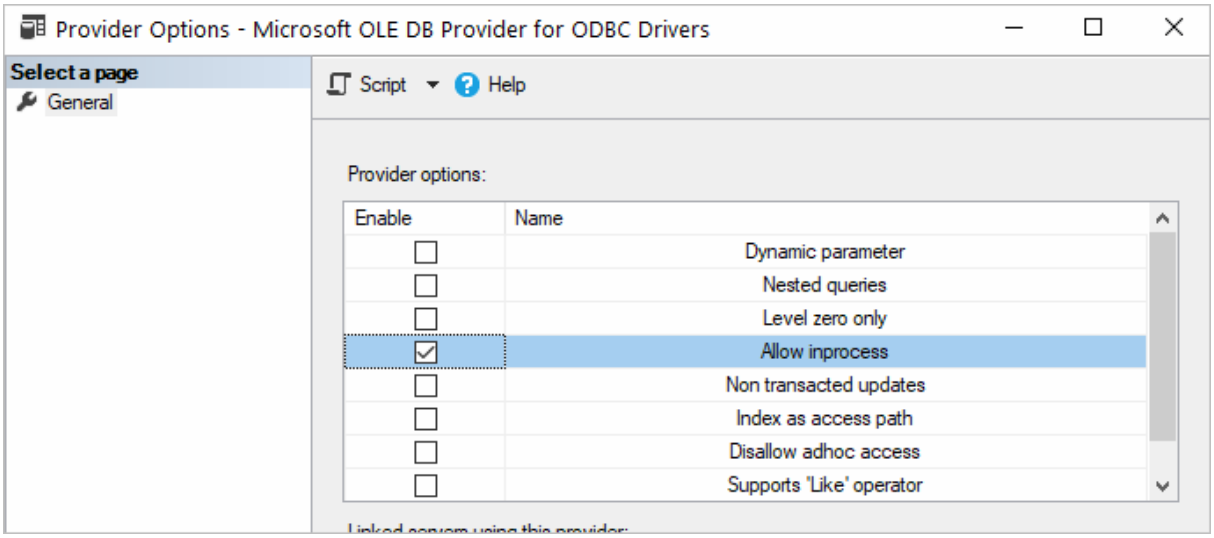
Retrieving Data From Google BigQuery

Ensure the **Allow inprocess option** of MSDASQL OLE DB Provider for ODBC Drivers is enabled. For this, find the **MSDASQL** provider in the list of Linked Servers and double-click on

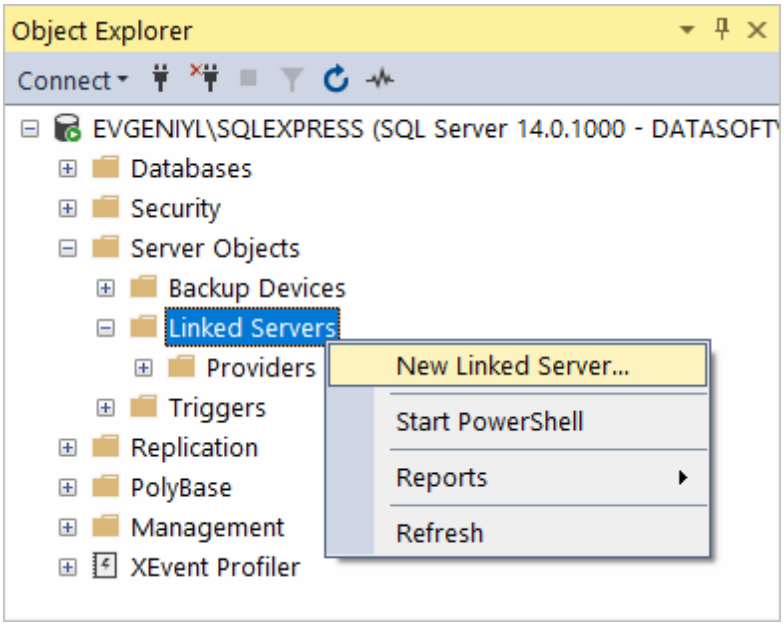
it



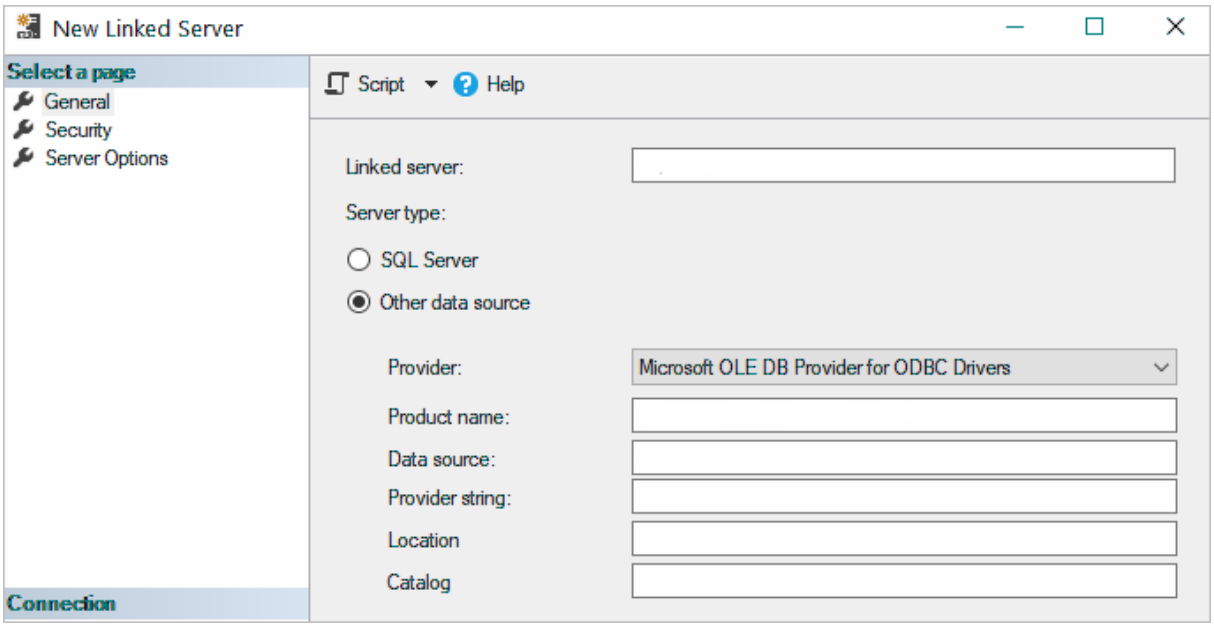
In the appeared **Provider Options** window, enable the **Allow inprocess** checkbox:



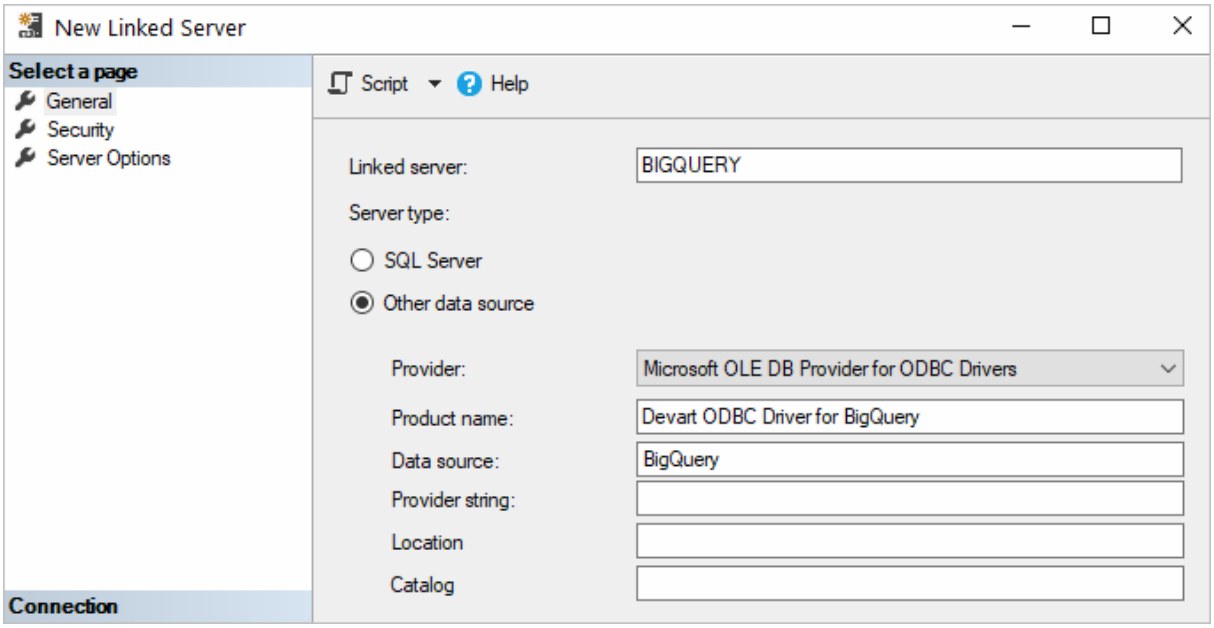
Create a new **Linked Server**



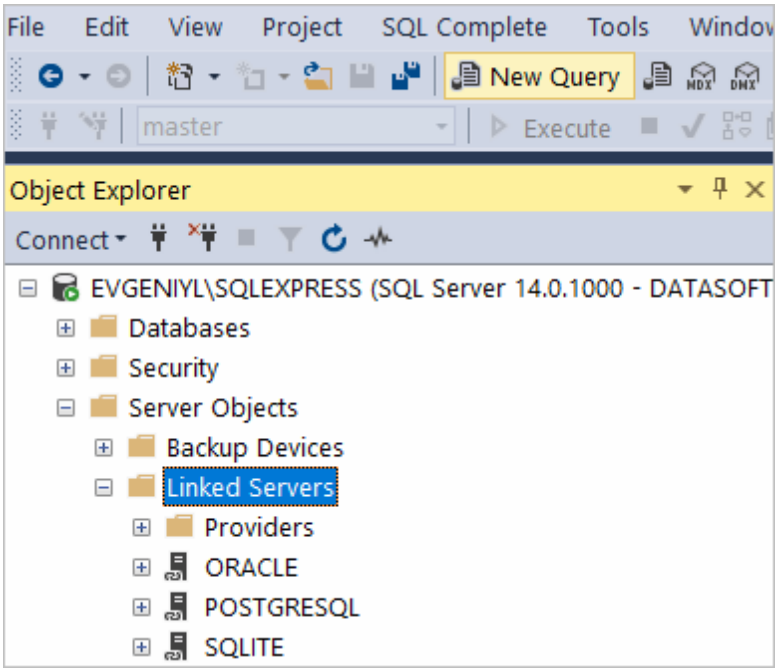
Make sure to select **Microsoft OLE DB Provider for ODBC Drivers**:



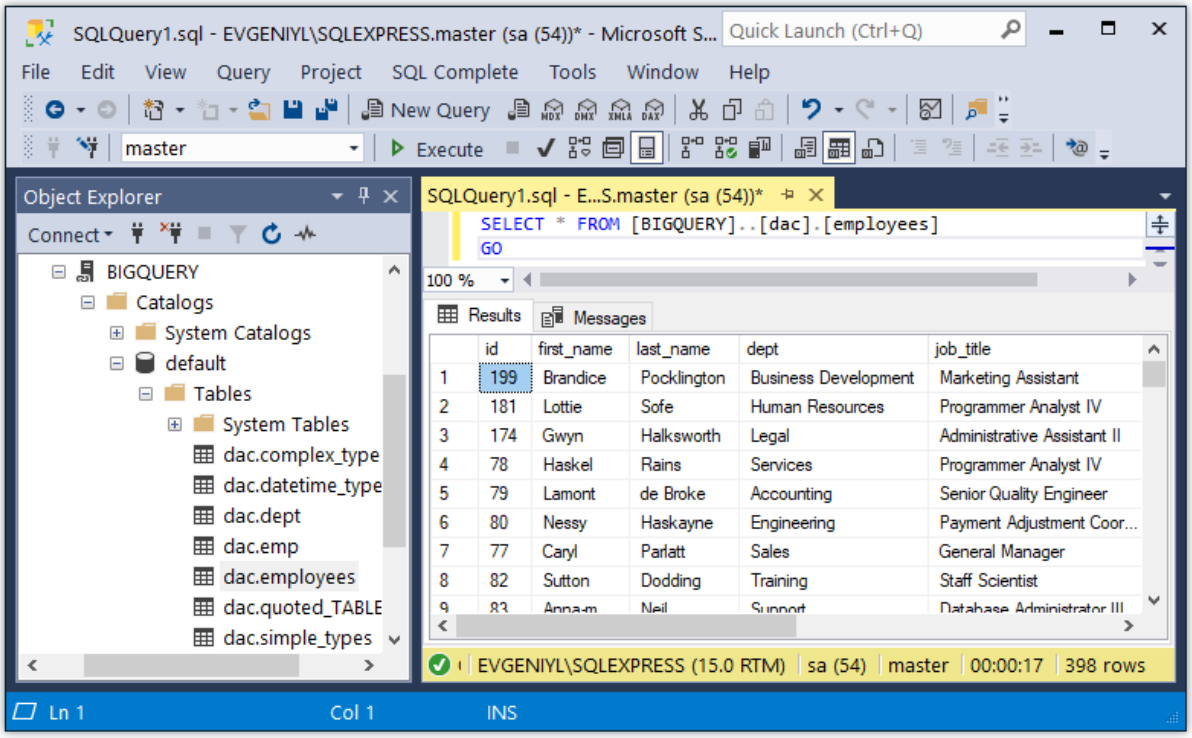
Now you need to input the Linked Server name, e.g. BIGQUERY. In the Product Name and Data Source fields you need to indicate the System DSN that you've previously created - more info on System DSN setup can be found here.



The Google BigQuery tables are already available to be fetched. To query the linked server, click **New Query** in the toolbar:



Enter your SQL query in the editor window and click **Execute** to run the query:



As a result, you can see the contents of the selected table retrieved directly from the Google BigQuery account you are connected to.

See also

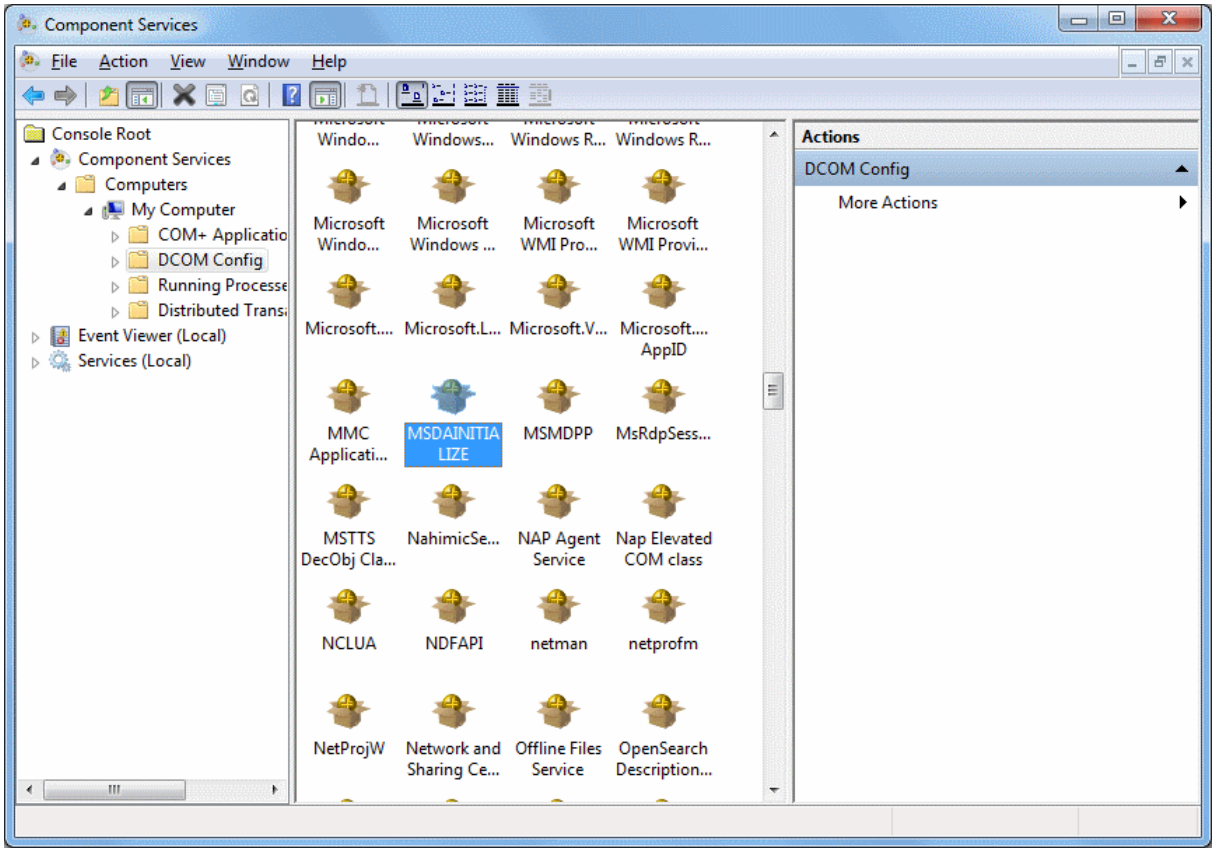
- Troubleshooting SSMS

4.14.2 Troubleshooting in SSMS

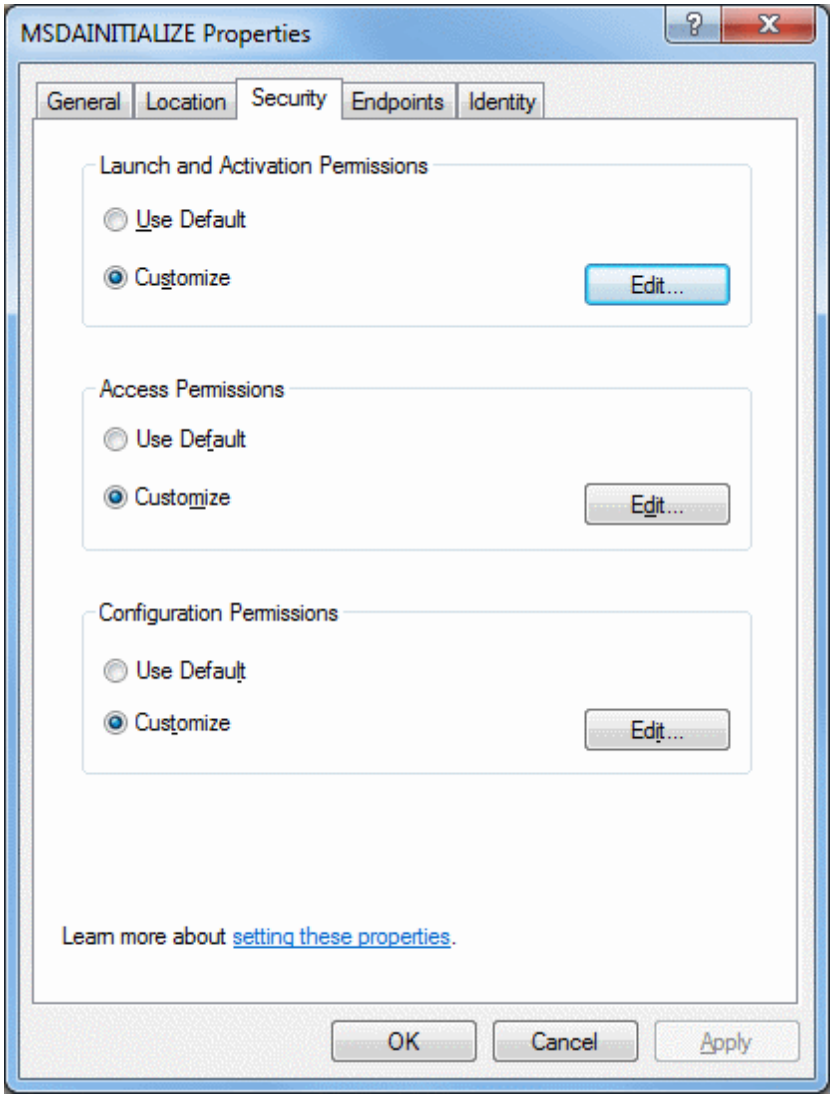
When creating a linked server in SSMS, most errors happen due to security issues with DCOM class MSDAINITIALIZE. We need to alter the DCOM Class MSDAINITIALIZE security settings to make it work.

Following are the steps:

1. Open Component Services (Start>Run>DCOMCNFG)
2. Expand Component Services>Computers>My Computer>DCOM Config
3. From the list of DCOM components on the right side, select **MSDAINITIALIZE** and go to its properties:



4. Go to the Security Tab, Choose ‘Customize’ and click on the ‘Edit’ Button:

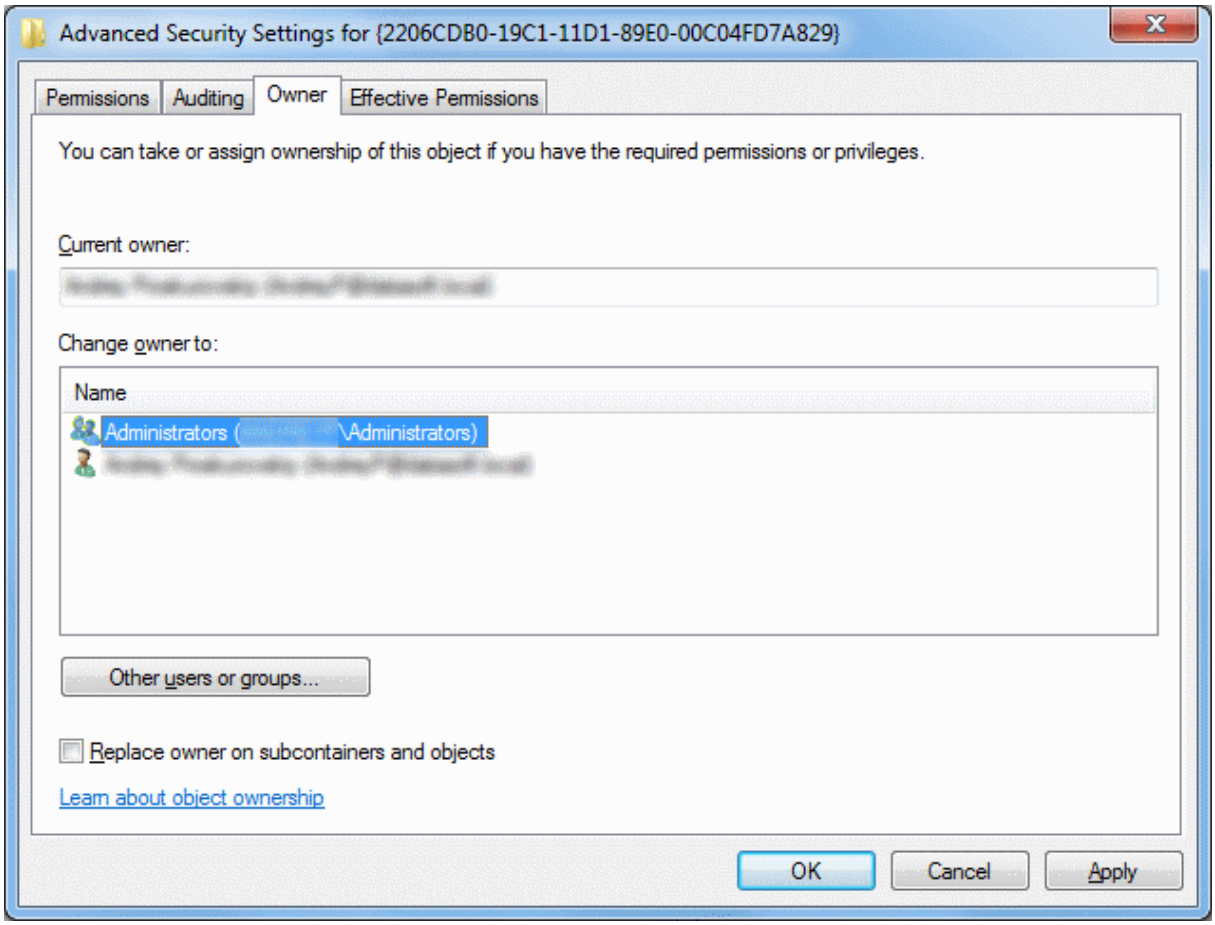


5. Add the Domain User who is accessing the linked server and 'Allow' all the permissions available (Local Launch, Remote Launch, Local Activation, Remote Activation). If you are connecting to SQL server using SQL account, you need to provide this permission to the account under which the SQL service is running.
6. Do this for all the 3 sections in the above screenshot.

To edit the Security settings, we followed the below steps:

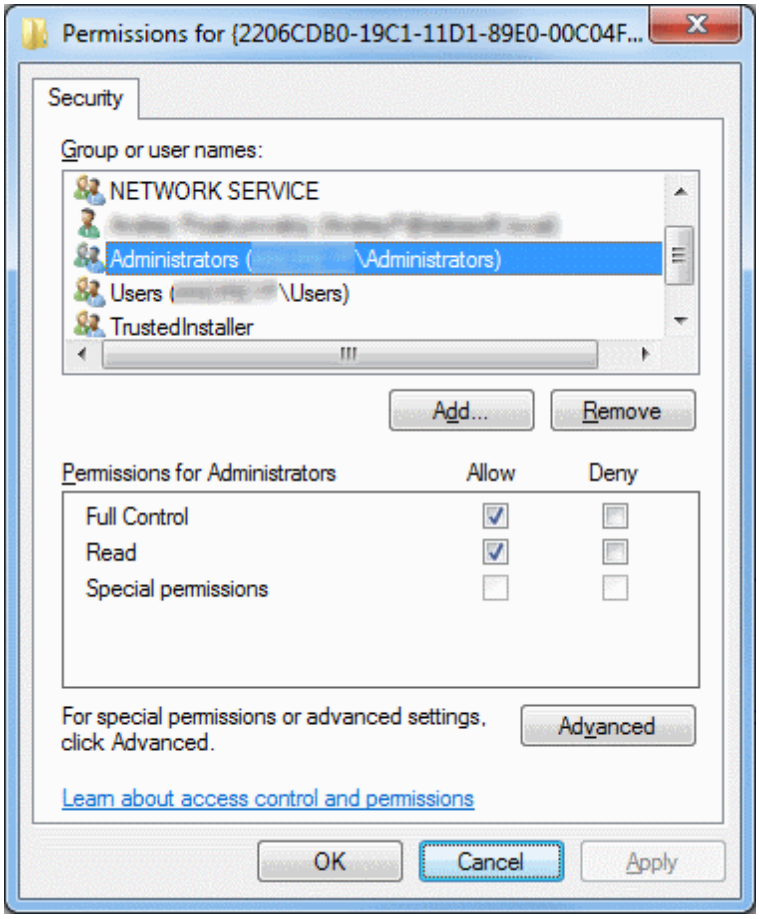
1. Start > Run > Regedit
2. Find the Key: HKEY_LOCAL_MACHINE\SOFTWARE\Classes\AppID\{2206CDB0-19C1-11D1-89E0-00C04FD7A829}

3. Right Click>Permissions>Advanced>Owner Tab:



4. Change the owner to Administrators.

5. Now, grant ‘Full Control’ to Administrators:



After this you should be able to edit MSDAINITIALIZE security settings.

See also

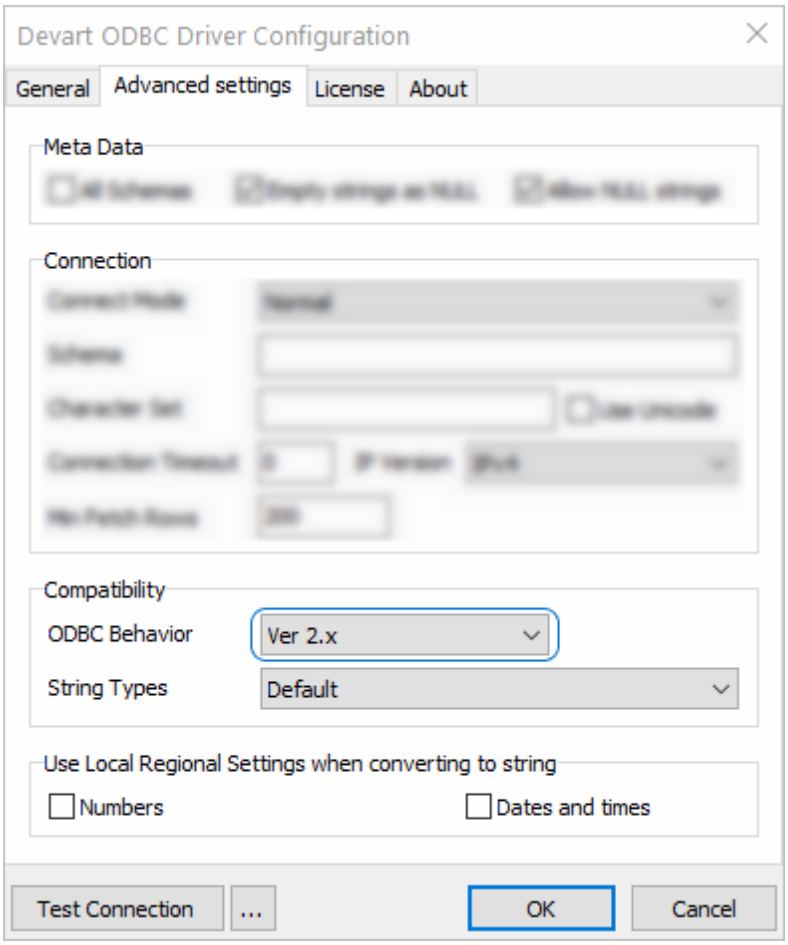
- Error message when you try to create an instance of an OLE DB provider in SQL Server: "Cannot create an instance of OLE DB provider"

4.15 Using in SSIS

SQL Server Integration Services (SSIS) is a component of SQL Server that is designed to perform various data migration tasks. When using Devart ODBC Driver for Google BigQuery as a translation layer between the data source and SSIS, the driver and SSIS communicate via Microsoft ODBC version 3.x.

Note that when you extract data from an ODBC data source using the `SQLExecDirect` function,

an issue may occur: SSIS expects the ODBC 2.x behavior, while the ODBC driver continues to fetch data from a data source via ODBC version 3.x. To prevent any issues when using SQLExecDirect, you should force the ODBC 2.x behavior in the DSN settings: open the `Advanced Settings` tab and select `Ver 2.x` from the `ODBC Behavior` dropdown.



4.16 Using in Tableau

Importing Google BigQuery Data Into Tableau Through an ODBC Connection

This article explains to establish and ODBC connection to Google BigQuery from Tableau Desktop. Tableau is a data visualization tool that allows you to pull in raw data, perform analysis on it, and create meaningful reports to get actionable insights. With Tableau Desktop and our suite of ODBC drivers, you can connect to various relational and non-relational databases, both cloud and on-premise.

1. Run Tableau Desktop.
2. On the start page, select **More...** in the **Connect** pane.
3. Choose **Other Databases (ODBC)**.
4. Expand the **DSN** drop-down list and select the DSN that you have created and configured for Google BigQuery. Alternatively, if you have not created a DSN, you can choose the **Driver** option and select Devart ODBC Driver for Google BigQuery from the drop-down.
5. Click **Connect**.
6. After a successful connection, click **Sign in**.
7. Select the needed database and schema in Google BigQuery.
8. You should see the list of all tables you have access to in the connected data source.
9. Drag-and-drop the table name to the area where it says **Drag tables here** to retrieve the data, or click **New Custom SQL** to write a query that will select only specific data from the table.
10. Hit **Update Now** to retrieve and display the data.