Simba Athena ODBC Driver with SQL Connector

Installation and Configuration Guide

Simba Technologies Inc.

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About This Guide

Purpose

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

Audience

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

Knowledge Prerequisites

To use the Simba Athena ODBC Driver, the following knowledge is helpful:

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

Document Conventions

*Italics* are used when referring to book and document titles.

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

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

✏️ Note:

A text box with a pencil icon indicates a short note appended to a paragraph.
Important:
A text box with an exclamation mark indicates an important comment related to the preceding paragraph.
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About Amazon Athena

Amazon Athena is a serverless interactive query service capable of querying data from Amazon Simple Storage Service (S3) using SQL. It is designed for short, interactive queries that are useful for data exploration. Athena enables you to run ad-hoc queries and quickly analyze data that is stored in S3 without ETL processes. Query results are stored in an S3 bucket and made available for analysis in BI tools.

The data formats that Athena supports include CSV, JSON, Parquet, Avro, and ORC. Unlike traditional RDBMS or SQL-on-Hadoop solutions that require centralized schema definitions, Athena can query self-describing data as well as complex or multi-structured data that is commonly seen in big data systems. Moreover, Athena does not require a fully structured schema and can support semi-structured or nested data types such as JSON.

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

📝 Note:

- Access from Athena to your S3 data store is configured through Amazon Web Services (AWS). For information about enabling Athena to access S3 data stores, see the Amazon Athena documentation: http://docs.aws.amazon.com/athena/latest/ug/what-is.html.
- When using Athena, you are charged for each query that you run. The amount that you are charged is based on the amount of data scanned by the query. For more information, see Amazon Athena Pricing: https://aws.amazon.com/athena/pricing/.

About the Driver

The Simba Athena ODBC Driver enables organizations to connect their BI tools to the Amazon Athena query service, enabling Business Intelligence, analytics, and reporting on the data that Athena returns from Amazon S3 databases. If the AWS glue service is available in the region and Athena has been migrated to use AWS Glue to manage the data catalog, then the driver retrieves catalog metadata via the AWS Glue service. Otherwise, the driver retrieves catalog metadata from the Athena-managed data catalog.
The driver complies with the ODBC 3.80 data standard, including important functionality such as Unicode and 32- and 64-bit support for high-performance computing environments on all platforms.

ODBC is one of the most established and widely supported APIs for connecting to and working with databases. At the heart of the technology is the ODBC driver, which connects an application to the database. For more information about ODBC, see Data Access Standards on the Simba Technologies website: https://www.simba.com/resources/data-access-standards-glossary. For complete information about the ODBC specification, see the ODBC API Reference from the Microsoft documentation: https://docs.microsoft.com/en-us/sql/odbc/reference/syntax/odbc-api-reference.

The Simba Athena ODBC Driver is available for Microsoft® Windows®, Linux, and macOS platforms.

The Simba Athena ODBC Driver with SQL Connector Installation and Configuration Guide is suitable for users who are looking to access data returned by the Athena query service from their desktop environment. Application developers may also find the information helpful. Refer to your application for details on connecting via ODBC.

Note:

For information about how to use the driver in various BI tools, see the Simba ODBC Drivers Quick Start Guide for Windows: http://cdn.simba.com/docs/ODBC_QuickstartGuide/content/quick_start/intro.htm.
Windows System Requirements

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

- One of the following operating systems:
  - Windows 7, 8.1, or 10
  - Windows Server 2008 or later
- 150 MB of available disk space
- Visual C++ Redistributable for Visual Studio 2013 installed (with the same bitness as the driver that you are installing).


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

Installing the Driver on Windows

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

- Simba Athena 1.0 32-bit.msi for 32-bit applications
- Simba Athena 1.0 64-bit.msi for 64-bit applications

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

To install the Simba Athena ODBC Driver on Windows:

1. Depending on the bitness of your client application, double-click to run Simba Athena 1.0 32-bit.msi or Simba Athena 1.0 64-bit.msi.
2. Click Next.
3. Select the check box to accept the terms of the License Agreement if you agree, and then click Next.
4. To change the installation location, click Change, then browse to the desired folder, and then click OK. To accept the installation location, click Next.
5. Click Install.
6. When the installation completes, click Finish.
Creating a Data Source Name on Windows

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

Alternatively, for information about DSN-less connections, see Using a Connection String on page 39.

To create a Data Source Name on Windows:

1. Open the ODBC Administrator:
   - If you are using Windows 7 or earlier, click Start > All Programs > Simba Athena ODBC Driver 1.0 > ODBC Administrator.
   - Or, if you are using Windows 8 or later, on the Start screen, type ODBC administrator, and then click the ODBC Administrator search result.

   \[\text{Note:}\]
   Make sure to select the ODBC Data Source Administrator that has the same bitness as the client application that you are using to connect to Athena.

2. In the ODBC Data Source Administrator, click the Drivers tab, and then scroll down as needed to confirm that the Simba Athena ODBC Driver appears in the alphabetical list of ODBC drivers that are installed on your system.

3. Choose one:
   - To create a DSN that only the user currently logged into Windows can use, click the User DSN tab.
   - Or, to create a DSN that all users who log into Windows can use, click the System DSN tab.

   \[\text{Note:}\]
   It is recommended that you create a System DSN instead of a User DSN. Some applications load the data using a different user account, and might not be able to detect User DSNs that are created under another user account.

4. Click Add.

5. In the Create New Data Source dialog box, select Simba Athena ODBC Driver and then click Finish. The Simba Athena ODBC Driver DSN Setup dialog box opens.

6. In the Data Source Name field, type a name for your DSN.

7. Optionally, in the Description field, type relevant details about the DSN.
8. In the **AWS Region** field, type the AWS region of the Athena instance that you want to connect to.

> **Note:**
> For a list of valid regions, see the "Athena" section in the *AWS Regions and Endpoints* documentation:

9. In the **Schema** field, type the name of the database schema to use when a schema is not explicitly specified in a query. You can still issue queries on other schemas by explicitly specifying the schema in the query.

10. In the **S3 Output Location** field, type the path of the Amazon S3 location where you want to store query results, prefixed by `s3://`. For example, to store results in a folder named "test-folder-1" inside an S3 bucket named "query-results-bucket", you would type `s3://query-results-bucket/test-folder-1` in this field.

11. To configure encryption for your query results, do the following:
   a. From the **Encryption Options** drop-down list, select the encryption protocol that you want to use:

<table>
<thead>
<tr>
<th>Option Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT_SET</td>
<td>The driver does not encrypt the data.</td>
</tr>
<tr>
<td>SSE_S3</td>
<td>The driver uses server-side encryption with an Amazon S3-managed key.</td>
</tr>
<tr>
<td>SSE_KMS</td>
<td>The driver uses server-side encryption with an AWS KMS-managed key.</td>
</tr>
<tr>
<td>CSE_KMS</td>
<td>The driver uses client-side encryption with an AWS KMS-managed key.</td>
</tr>
</tbody>
</table>

   For detailed information about these encryption options, see "Configuring Encryption Options" in the *Amazon Athena User Guide*:

   b. If you selected SSE_KMS or CSE_KMS in the previous step, then in the **KMS Key** field, type the KMS customer key to use for encrypting data.

12. To configure authentication, click **Authentication Options**. For more information, see *Configuring Authentication on Windows* on page 12.
13. To configure advanced options, click **Advanced Options**. For more information, see *Configuring Advanced Options on Windows* on page 14.

14. To configure logging behavior for the driver, click **Logging Options**. For more information, see *Configuring Logging Options on Windows* on page 16.

15. To test the connection, click **Test**. Review the results as needed, and then click **OK**.

**Note:**

If the connection fails, then confirm that the settings in the Simba Athena ODBC Driver DSN Setup dialog box are correct. Contact your AWS account administrator as needed.

16. To save your settings and close the Simba Athena ODBC Driver DSN Setup dialog box, click **OK**.

17. To close the ODBC Data Source Administrator, click **OK**.

### Configuring Authentication on Windows

To access data from Athena, you must authenticate the connection. You can configure the Simba Athena ODBC Driver to provide your credentials and authenticate the connection using one of the following methods:

- Using the Default Credentials Provider Chain on Windows on page 12
- Using IAM Credentials on Windows on page 13
- Using an IAM Profile on Windows on page 13
- Using an Instance Profile on Windows on page 14

#### Using the Default Credentials Provider Chain on Windows

You can configure the driver to authenticate the connection using credentials that are stored in one of the locations in the default credentials provider chain. The driver looks for a valid access key and secret key pair by checking the following locations, in the following order:

1. The AWS credentials file stored in the `%USERPROFILE%\awscredentials` directory.
2. The AWS_ACCESS_KEY_ID and AWS_SECRET_ACCESS_KEY system environment variables.
3. The instance profile from the Amazon EC2 Instance Metadata Service.

To configure authentication using the default credentials provider chain on Windows:

1. To access authentication options, open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click **Configure**, and then click **Authentication Options**.
2. From the **Authentication Type** drop-down list, select **Default Credentials**.
3. To save your settings and close the Authentication Options dialog box, click **OK**.

### Using IAM Credentials on Windows

You can configure the driver to authenticate the connection using an access key and a secret key that is specified directly in the connection information.

If you are using temporary credentials, which are only valid for a limited amount of time, then you must also provide a session token. For more information, see "Temporary Security Credentials" in the AWS Identity and Access Management User Guide: [http://docs.aws.amazon.com/IAM/latest/UserGuide/id_credentials_temp.html](http://docs.aws.amazon.com/IAM/latest/UserGuide/id_credentials_temp.html).

To configure authentication using IAM credentials on Windows:

1. To access authentication options, open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click **Configure**, and then click **Authentication Options**.
2. From the **Authentication Type** drop-down list, select **IAM Credentials**.
3. In the **User** field, type the access key provided by your AWS account.
4. In the **Password** field, type the secret key provided by your AWS account.
5. Encrypt your credentials by clicking **Password Options** and then selecting one of the following:
   - If the credentials are used only by the current Windows user, select **Current User Only**.
   - Or, if the credentials are used by all users on the current Windows machine, select **All Users Of This Machine**.
6. If you are using temporary credentials, in the **Session Token** field, type the session token generated by the AWS Security Token Service.
7. To save your settings and close the Authentication Options dialog box, click **OK**.

### Using an IAM Profile on Windows

You can configure the driver to authenticate the connection using credentials that are associated with an IAM profile in a credentials file.

By default, the driver uses the credentials associated with a profile named **default** in the credentials file found in the `%USERPROFILE%\awscredentials` directory. To use a different profile, specify the profile name in your connection settings. To use a
different credentials file, set the AWS_SHARED_CREDENTIALS_FILE system environment variable to the full path of your credentials file.


To configure authentication using an IAM profile on Windows:

1. To access authentication options, open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click Configure, and then click Authentication Options.
2. From the Authentication Type drop-down list, select IAM Profile.
3. In the AWS Profile field, type the name of the profile to use.
4. To save your settings and close the Authentication Options dialog box, click OK.

Using an Instance Profile on Windows

You can configure the driver to authenticate the connection using credentials that have been loaded from the Amazon EC2 Instance Metadata Service into an instance profile.

Instance profiles contain authorization information such as roles, permissions, and credentials, and are automatically created by Amazon EC2 for each IAM role that is defined for an EC2 instance. For more information, see "IAM Roles for Amazon EC2" in the Amazon Elastic Compute Cloud User Guide for Windows Instances: http://docs.aws.amazon.com/AWSEC2/latest/WindowsGuide/iam-roles-for-amazon-ec2.html.

To configure authentication using an instance profile on Windows:

1. To access authentication options, open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click Configure, and then click Authentication Options.
2. From the Authentication Type drop-down list, select Instance Profile.
3. To save your settings and close the Authentication Options dialog box, click OK.

Configuring Advanced Options on Windows

You can configure advanced options to modify the behavior of the driver.
To configure advanced options on Windows:

1. To access advanced options, open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click **Configure**, and then click **Advanced Options**.
2. In the **String Column Length** field, type the maximum data length for STRING columns.
3. In the **Binary Column Length** field, type the maximum data length for BINARY columns.
4. In the **Max Catalog Name Length** field, type the maximum number of characters that catalog names contain.
5. In the **Max Schema Name Length** field, type the maximum number of characters that schema names contain.
6. In the **Max Table Name Length** field, type the maximum number of characters that table names contain.
7. In the **Max Column Name Length** field, type the maximum number of characters that column names contain.

![Note:](image)

For the options described in steps 4 to 7, you can specify 0 to indicate that there is no maximum length or that the length is unknown.

8. To enable the driver to return SQL_WVARCHAR instead of SQL_VARCHAR for ARRAY, MAP, STRING, STRUCT, and VARCHAR columns, select the **Use SQL Unicode Types** check box.
9. To save your settings and close the Advanced Options dialog box, click **OK**.

### Exporting a Data Source Name on Windows

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

#### To export a Data Source Name on Windows:

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

Your DSN is saved as a `.sdc` file in the location that you specified.
Importing a Data Source Name on Windows

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

To import a Data Source Name on Windows:

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

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

Configuring Logging Options on Windows

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

**Important:**

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

The settings for logging apply to every connection that uses the Simba Athena ODBC Driver, so make sure to disable the feature after you are done using it.

To enable driver logging on Windows:

1. To access logging options, open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click **Configure**, and then click **Logging Options**.
2. From the **Log Level** drop-down list, select the logging level corresponding to the amount of information that you want to include in log files:

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

3. In the Log Path field, specify the full path to the folder where you want to save log files. You can type the path into the field, or click Browse and then browse to select the folder.

4. In the Max Number Files field, type the maximum number of log files to keep.

Note:

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

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

Note:

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

6. Click OK.

7. Restart your ODBC application to make sure that the new settings take effect.

The Simba Athena ODBC Driver produces a log file named AthenaODBC_driver.log at the location that you specify in the Log Path field.

If you enable the UseLogPrefix connection property, the driver prefixes the log file name with the user name associated with the connection and the process ID of the
application through which the connection is made. For more information, see UseLogPrefix on page 57.

To disable driver logging on Windows:

1. Open the ODBC Data Source Administrator where you created the DSN, then select the DSN, then click Configure, and then click Logging Options.
2. From the Log Level drop-down list, select LOG_OFF.
3. Click OK.
4. Restart your ODBC application to make sure that the new settings take effect.

Verifying the Driver Version Number on Windows

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

To verify the driver version number on Windows:

1. Open the ODBC Administrator:
   - If you are using Windows 7 or earlier, click Start > All Programs > Simba Athena ODBC Driver 1.0 > ODBC Administrator.
   - Or, if you are using Windows 8 or later, on the Start screen, type ODBC administrator, and then click the ODBC Administrator search result.

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

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

macOS System Requirements

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

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

Installing the Driver on macOS

The Simba Athena ODBC Driver is available for macOS as a .dmg file named Simba Athena 1.0.dmg. The driver supports both 32- and 64-bit client applications.

To install the Simba Athena ODBC Driver on macOS:

1. Double-click Simba Athena 1.0.dmg to mount the disk image.
2. Double-click Simba Athena 1.0.pkg to run the installer.
3. In the installer, click Continue.
4. On the Software License Agreement screen, click Continue, and when the prompt appears, click Agree if you agree to the terms of the License Agreement.
5. Optionally, to change the installation location, click Change Install Location, then select the desired location, and then click Continue.

Note:

By default, the driver files are installed in the /Library/simba/athenaodbc directory.

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

Next, configure the environment variables on your machine to make sure that the ODBC driver manager can work with the driver. For more information, see Configuring the ODBC Driver Manager on Non-Windows Machines on page 24.

Verifying the Driver Version Number on macOS

If you need to verify the version of the Simba Athena ODBC Driver that is installed on your macOS machine, you can query the version number through the Terminal.
To verify the driver version number on macOS:

- At the Terminal, run the following command:

```
pkgutil --info com.simba.athenaodbc
```

The command returns information about the Simba Athena ODBC Driver that is installed on your machine, including the version number.
Linux System Requirements

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

- One of the following distributions:
  - Red Hat® Enterprise Linux® (RHEL) 6 or 7
  - CentOS 6 or 7
  - SUSE Linux Enterprise Server (SLES) 11
  - Debian 7 or 8
  - Ubuntu 14.04 or 16.04
- 150 MB of available disk space
- One of the following ODBC driver managers installed:
  - iODBC 3.52.7 or later
  - unixODBC 2.3.0 or later

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

If you are installing the driver on Debian or Ubuntu, you must also have the alien utility installed. The alien utility is available on SourceForge: https://sourceforge.net/projects/alien-pkg-convert/.

Installing the Driver Using the RPM File

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

- simbaathena-[Version]-[Release].i686.rpm for the 32-bit driver
- simbaathena-[Version]-[Release].x86_64.rpm for the 64-bit driver

The placeholders in the file names are defined as follows:

- [Version] is the version number of the driver.
- [Release] is the release number for this version of the driver.

You can install both the 32-bit and 64-bit versions of the driver on the same machine.
To install the Simba Athena ODBC Driver using the RPM File:

1. Log in as the root user.
2. If you are installing the driver on a Debian or Ubuntu machine, download and install the alien utility:
   b. From the command line, run the following command:

   ```
sudo apt-get install alien
   ```

3. Navigate to the folder containing the RPM package for the driver.
4. Depending on the Linux distribution that you are using, run one of the following commands from the command line, where [RPMFileName] is the file name of the RPM package:
   - If you are using Red Hat Enterprise Linux or CentOS, run the following command:

     ```
yum --nogpgcheck localinstall [RPMFileName]
     ```
   - Or, if you are using SUSE Linux Enterprise Server, run the following command:

     ```
zypper install [RPMFileName]
     ```
   - Or, if you are using Debian or Ubuntu, run the following command:

     ```
alien -i [RPMFileName]
     ```

The Simba Athena ODBC Driver files are installed in the /opt/simba/athenaodbc directory.

Next, configure the environment variables on your machine to make sure that the ODBC driver manager can work with the driver. For more information, see Configuring the ODBC Driver Manager on Non-Windows Machines on page 24.

Verifying the Driver Version Number on Linux

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

- Depending on your package manager, at the command prompt, run one of the following commands:
  - `yum list | grep SimbaAthenaODBC`
  - `rpm -qa | grep SimbaAthenaODBC`
  - `dpkg -l | grep simbaathenaodbc`

The command returns information about the Simba Athena ODBC Driver that is installed on your machine, including the version number.
Configuring the ODBC Driver Manager on Non-Windows Machines

To make sure that the ODBC driver manager on your machine is configured to work with the Simba Athena ODBC Driver, do the following:

- Set the library path environment variable to make sure that your machine uses the correct ODBC driver manager. For more information, see Specifying ODBC Driver Managers on Non-Windows Machines on page 24.
- If the driver configuration files are not stored in the default locations expected by the ODBC driver manager, then set environment variables to make sure that the driver manager locates and uses those files. For more information, see Specifying the Locations of the Driver Configuration Files on page 25.

After configuring the ODBC driver manager, you can configure a connection and access your data store through the driver. For more information, see Configuring ODBC Connections on a Non-Windows Machine on page 27.

Specifying ODBC Driver Managers on Non-Windows Machines

You need to make sure that your machine uses the correct ODBC driver manager to load the driver. To do this, set the library path environment variable.

macOS

If you are using a macOS machine, then set the DYLD_LIBRARY_PATH environment variable to include the paths to the ODBC driver manager libraries. For example, if the libraries are installed in /usr/local/lib, then run the following command to set DYLD_LIBRARY_PATH for the current user session:

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

For information about setting an environment variable permanently, refer to the macOS shell documentation.

Linux

If you are using a Linux machine, then set the LD_LIBRARY_PATH environment variable to include the paths to the ODBC driver manager libraries. For example, if the libraries are installed in /usr/local/lib, then run the following command to set LD_LIBRARY_PATH for the current user session:
export LD_LIBRARY_PATH=$LD_LIBRARY_PATH:/usr/local/lib

For information about setting an environment variable permanently, refer to the Linux shell documentation.

**Specifying the Locations of the Driver Configuration Files**

By default, ODBC driver managers are configured to use hidden versions of the `odbc.ini` and `odbcinst.ini` configuration files (named `.odbc.ini` and `.odbcinst.ini`) located in the home directory, as well as the `simba.athenaodbc.ini` file in the `lib` subfolder of the driver installation directory. If you store these configuration files elsewhere, then you must set the environment variables described below so that the driver manager can locate the files.

If you are using iODBC, do the following:

- Set ODBCINI to the full path and file name of the `odbc.ini` file.
- Set ODBCINSTINI to the full path and file name of the `odbcinst.ini` file.
- Set SIMBA_ATHENA_ODBC_INI to the full path and file name of the `simba.athenaodbc.ini` file.

If you are using unixODBC, do the following:

- Set ODBCINI to the full path and file name of the `odbc.ini` file.
- Set ODBCINSTALLDIR to the full path of the directory that contains the `odbcinst.ini` file.
- Set SIMBA_ATHENA_ODBC_INI to the full path and file name of the `simba.athenaodbc.ini` file.

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

For iODBC:

```bash
export ODBCINI=/usr/local/odbc/odbc.ini
export ODBCINSTINI=/usr/local/odbc/odbcinst.ini
export SIMBA_ATHENA_ODBC_INI=/etc/simba.athenaodbc.ini
```

For unixODBC:

```bash
export ODBCINI=/usr/local/odbc/odbc.ini
export ODBCINSTALLDIR=/usr/local/odbc
```

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To locate the simba.athenaodbc.ini file, the driver uses the following search order:

1. If the SIMBA_ATENA_ODBC_INI environment variable is defined, then the driver searches for the file specified by the environment variable.
2. The driver searches the directory that contains the driver library files for a file named simba.athenaodbc.ini.
3. The driver searches the current working directory of the application for a file named simba.athenaodbc.ini.
4. The driver searches the home directory for a hidden file named .simba.athenaodbc.ini (prefixed with a period).
5. The driver searches the /etc directory for a file named simba.athenaodbc.ini.
Configuring ODBC Connections on a Non-Windows Machine

The following sections describe how to configure ODBC connections when using the Simba Athena ODBC Driver on non-Windows platforms:

- Creating a Data Source Name on a Non-Windows Machine on page 27
- Configuring a DSN-less Connection on a Non-Windows Machine on page 30
- Configuring Authentication on Non-Windows Machines on page 32
- Configuring Query Result Encryption on a Non-Windows Machine on page 34
- Configuring Logging Options on a Non-Windows Machine on page 35
- Testing the Connection on a Non-Windows Machine on page 37

Creating a Data Source Name on a Non-Windows Machine

When connecting to your data store using a DSN, you only need to configure the odbc.ini file. Set the properties in the odbc.ini file to create a DSN that specifies the connection information for your data store. For information about configuring a DSN-less connection instead, see Configuring a DSN-less Connection on a Non-Windows Machine on page 30.

If your machine is already configured to use an existing odbc.ini file, then update that file by adding the settings described below. Otherwise, copy the odbc.ini file from the Setup subfolder in the driver installation directory to the home directory, and then update the file as described below.

To create a Data Source Name on a non-Windows machine:

1. In a text editor, open the odbc.ini configuration file.

   ![Note:](image)
   
   If you are using a hidden copy of the odbc.ini file, you can remove the period (.) from the start of the file name to make the file visible while you are editing it.

2. In the [ODBC Data Sources] section, add a new entry by typing a name for the DSN, an equal sign (=), and then the name of the driver.

   For example, on a macOS machine:
As another example, for a 32-bit driver on a Linux machine:

3. Create a section that has the same name as your DSN, and then specify configuration options as key-value pairs in the section:
   a. Set the Driver property to the full path of the driver library file that matches the bitness of the application.

   For example, on a macOS machine:

   ```
   Driver=/Library/simba/athenaodbc/lib/libathenaodbc_sbu.dylib
   ```

   As another example, for a 32-bit driver on a Linux machine:

   ```
   Driver=/opt/simba/athenaodbc/lib/32/libathenaodbc_sb32.so
   ```

   b. Set the AwsRegion property to the AWS region of the Athena instance that you want to connect to.

   For example:

   ```
   AwsRegion=us-east-2
   ```

   ✍️ Note:

   For a list of valid regions, see the "Athena" section in the AWS Regions and Endpoints documentation:

   c. Set the S3OutputLocation property to the path of the Amazon S3 location where you want to store query results, prefixed by s3://.

   For example, to store results in a folder named "test-folder-1" inside an S3 bucket named "query-results-bucket", you would specify the following:

   ```
   S3OutputLocation=s3://query-results-bucket/test-folder-1
   ```
d. Configure authentication by specifying the authentication mechanism to use and providing your credentials. For more information, see Configuring Authentication on Non-Windows Machines on page 32.

e. Optionally, configure encryption for your query results. For more information, see Configuring Query Result Encryption on a Non-Windows Machine on page 34.

f. Optionally, set additional key-value pairs as needed to specify other optional connection settings. For detailed information about all the configuration options supported by the Simba Athena ODBC Driver, see Driver Configuration Options on page 47.

4. Save the odbc.ini configuration file.

Note:
If you are storing this file in its default location in the home directory, then prefix the file name with a period (.) so that the file becomes hidden. If you are storing this file in another location, then save it as a non-hidden file (without the prefix), and make sure that the ODBCINI environment variable specifies the location. For more information, see Specifying the Locations of the Driver Configuration Files on page 25.

For example, the following is an odbc.ini configuration file for macOS containing a DSN that connects to Athena using IAM credentials:

```ini
[ODBC Data Sources]
Sample DSN=Simba Athena ODBC Driver
[Sample DSN]
Driver=/Library/simba/athenaodbc/lib/libathenaodbc_sbu.dylib
AuthenticationType=IAM Credentials
UID=ABCABCABC123ABCABC45
PWD=bCD+E1f2Gxhi3J4klmN/OP5QrSTuvwXYzabcdEF
AwsRegion=us-east-2
S3OutputLocation=s3://simba-athena-results/
```

As another example, the following is an odbc.ini configuration file for a 32-bit driver on a Linux machine, containing a DSN that connects to Athena using IAM credentials:

```ini
[ODBC Data Sources]
Sample DSN=Simba Athena ODBC Driver 32-bit
[Sample DSN]
Driver=/opt/simba/athenaodbc/lib/32/libathenaodbc_sb32.so
AuthenticationType=IAM Credentials
UID=ABCABCABC123ABCABC45
PWD=bCD+E1f2Gxhi3J4klmN/OP5QrSTuvwXYzabcdEF
```
You can now use the DSN in an application to connect to the data store.

**Configuring a DSN-less Connection on a Non-Windows Machine**

To connect to your data store through a DSN-less connection, you need to define the driver in the odbcinst.ini file and then provide a DSN-less connection string in your application.

If your machine is already configured to use an existing odbcinst.ini file, then update that file by adding the settings described below. Otherwise, copy the odbcinst.ini file from the Setup subfolder in the driver installation directory to the home directory, and then update the file as described below.

**To define a driver on a non-Windows machine:**

1. In a text editor, open the odbcinst.ini configuration file.

   ✔️ **Note:**
   
   If you are using a hidden copy of the odbcinst.ini file, you can remove the period (.) from the start of the file name to make the file visible while you are editing it.

2. In the [ODBC Drivers] section, add a new entry by typing a name for the driver, an equal sign (=), and then Installed.

   For example:

   ```
   [ODBC Drivers]
   Simba Athena ODBC Driver=Installed
   ```

3. Create a section that has the same name as the driver (as specified in the previous step), and then specify the following configuration options as key-value pairs in the section:

   a. Set the Driver property to the full path of the driver library file that matches the bitness of the application.

   For example, on a macOS machine:

   ```
   Driver=/Library/simba/athenaodbc/lib/libathenaodbc_sbu.dylib
   ```
As another example, for a 32-bit driver on a Linux machine:

```
Driver=/opt/simba/athenaodbc/lib/32/libathenaodbc_sb32.so
```

b. Optionally, set the Description property to a description of the driver.

For example:

```
Description=Simba Athena ODBC Driver
```

4. Save the `odbcinst.ini` configuration file.

⚠️ Note:

If you are storing this file in its default location in the home directory, then prefix the file name with a period (.) so that the file becomes hidden. If you are storing this file in another location, then save it as a non-hidden file (without the prefix), and make sure that the ODBCINSTINI or ODBC SYSINI environment variable specifies the location. For more information, see Specifying the Locations of the Driver Configuration Files on page 25.

For example, the following is an `odbcinst.ini` configuration file for macOS:

```ini
[ODBC Drivers]
Simba Athena ODBC Driver=Installed

[Simba Athena ODBC Driver]
Description=Simba Athena ODBC Driver
Driver=/Library/simba/athenaodbc/lib/libathenaodbc_sbu.dylib
```

As another example, the following is an `odbcinst.ini` configuration file for both the 32- and 64-bit drivers on Linux:

```ini
[ODBC Drivers]
Simba Athena ODBC Driver 32-bit=Installed
Simba Athena ODBC Driver 64-bit=Installed

[Simba Athena ODBC Driver 32-bit]
Description=Simba Athena ODBC Driver (32-bit)
Driver=/opt/simba/athenaodbc/lib/32/libathenaodbc_sb32.so

[Simba Athena ODBC Driver 64-bit]
Description=Simba Athena ODBC Driver (64-bit)
Driver=/opt/simba/athenaodbc/lib/64/libathenaodbc_sb64.so
```

You can now connect to your data store by providing your application with a connection string where the Driver property is set to the driver name specified in the `odbcinst.ini` file, and all the other necessary connection properties are also set.
For more information, see "DSN-less Connection String Examples" in Using a Connection String on page 39.

For instructions about configuring specific connection features, see the following:

- Configuring Authentication on Non-Windows Machines on page 32
- Configuring Query Result Encryption on a Non-Windows Machine on page 34

For detailed information about all the connection properties that the driver supports, see .

**Configuring Authentication on Non-Windows Machines**

To access data from Athena, you must authenticate the connection. You can configure the Simba Athena ODBC Driver to provide your credentials and authenticate the connection using one of the following methods:

- Using the Default Credentials Provider Chain on Non-Windows Machines on page 32
- Using IAM Credentials on Non-Windows Machines on page 33
- Using an IAM Profile on Non-Windows Machines on page 33
- Using an Instance Profile on Non-Windows Machines on page 34

You can set the connection properties described below in a connection string or in a DSN (in the odbc.ini file). Settings in the connection string take precedence over settings in the DSN.

**Using the Default Credentials Provider Chain on Non-Windows Machines**

You can configure the driver to authenticate the connection using credentials that are stored in one of the locations in the default credentials provider chain. The driver looks for a valid access key and secret key pair by checking the following locations, in the following order:

1. The AWS credentials file stored in the ~/.aws/credentials directory.
2. The AWS_ACCESS_KEY_ID and AWS_SECRET_ACCESS_KEY system environment variables.
3. The instance profile from the Amazon EC2 Instance Metadata Service.

To configure authentication using the default credentials provider chain on a non-Windows machine:

- Set the `AuthenticationType` property to `Default Credentials`.

Using IAM Credentials on Non-Windows Machines

You can configure the driver to authenticate the connection using an access key and a secret key that is specified directly in the connection information.

If you are using temporary credentials, which are only valid for a limited amount of time, then you must also provide a session token. For more information, see "Temporary Security Credentials" in the AWS Identity and Access Management User Guide: http://docs.aws.amazon.com/IAM/latest/UserGuide/id_credentials_temp.html.

To configure authentication using IAM credentials on a non-Windows machine:

1. Set the `AuthenticationType` property to `IAM Credentials`.
2. Set the `UID` property to the access key provided by your AWS account.
3. Set the `PWD` property to the secret key provided by your AWS account.
4. If you are using temporary credentials, set the `SessionToken` property to the session token generated by the AWS Security Token Service.

Using an IAM Profile on Non-Windows Machines

You can configure the driver to authenticate the connection using credentials that are associated with an IAM profile in a credentials file.

By default, the driver uses the credentials associated with a profile named `default` in the credentials file found in the `~/.aws/credentials` directory. To use a different profile, specify the profile name in your connection settings. To use a different credentials file, set the `AWS_SHARED_CREDENTIALS_FILE` system environment variable to the full path of your credentials file.


To configure authentication using an IAM profile on a non-Windows machine:

1. Set the `AuthenticationType` property to `IAM Profile`.
2. Set the `AWSProfile` property to the name of the profile to use.
Using an Instance Profile on Non-Windows Machines

Note:
Because Amazon EC2 instances are not available for macOS at this time, the macOS version of the Simba Athena ODBC Driver cannot use this authentication method.

You can configure the driver to authenticate the connection using credentials that have been loaded from the Amazon EC2 Instance Metadata Service into an instance profile. Instance profiles contain authorization information such as roles, permissions, and credentials, and are automatically created by Amazon EC2 for each IAM role that is defined for an EC2 instance. For more information, see "IAM Roles for Amazon EC2" in the Amazon Elastic Compute Cloud User Guide for Linux Instances: http://docs.aws.amazon.com/AWSEC2/latest/UserGuide/iam-roles-for-amazon-ec2.html.

To configure authentication using an instance profile on a non-Windows machine:

- Set the `AuthenticationType` property to `Instance Profile`.

Configuring Query Result Encryption on a Non-Windows Machine

You can configure the Simba Athena ODBC Driver to encrypt your query results using any of the encryption protocols that Athena supports.

You can set the connection properties described below in a connection string or in a DSN (in the `odbc.ini` file). Settings in the connection string take precedence over settings in the DSN.

To configure query result encryption on a non-Windows machine:

1. Set the `S3OutputEncOption` property to one of the following values.

Note:
For detailed information about these encryption options, see "Configuring Encryption Options" in the Amazon Athena User Guide: http://docs.aws.amazon.com/athena/latest/ug/encryption.html.
<table>
<thead>
<tr>
<th>Option Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>NOT_SET</td>
<td>The driver does not encrypt the data.</td>
</tr>
<tr>
<td>SSE_S3</td>
<td>The driver uses server-side encryption with an Amazon S3-managed key.</td>
</tr>
<tr>
<td>SSE_KMS</td>
<td>The driver uses server-side encryption with an AWS KMS-managed key.</td>
</tr>
<tr>
<td>CSE_KMS</td>
<td>The driver uses client-side encryption with an AWS KMS-managed key.</td>
</tr>
</tbody>
</table>

2. If you specified SSE_KMS or CSE_KMS in the previous step, then set the S3OutputEncKMSKey property to the KMS customer key to use for encrypting data.

### Configuring Logging Options on a Non-Windows Machine

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

**Important:**

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

Logging is configured through driver-wide settings in the `simba.athenaodbc.ini` file, which apply to all connections that use the driver.

**To enable logging on a non-Windows machine:**

1. Open the `simba.athenaodbc.ini` configuration file in a text editor.
2. To specify the level of information to include in log files, set the LogLevel property to one of the following numbers:

<table>
<thead>
<tr>
<th>LogLevel Value</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Disables all logging.</td>
</tr>
<tr>
<td>1</td>
<td>Logs severe error events that lead the driver to abort.</td>
</tr>
<tr>
<td>LogLevel Value</td>
<td>Description</td>
</tr>
<tr>
<td>----------------</td>
<td>-------------</td>
</tr>
<tr>
<td>2</td>
<td>Logs error events that might allow the driver to continue running.</td>
</tr>
<tr>
<td>3</td>
<td>Logs events that might result in an error if action is not taken.</td>
</tr>
<tr>
<td>4</td>
<td>Logs general information that describes the progress of the driver.</td>
</tr>
<tr>
<td>5</td>
<td>Logs detailed information that is useful for debugging the driver.</td>
</tr>
<tr>
<td>6</td>
<td>Logs all driver activity.</td>
</tr>
</tbody>
</table>

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

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

⚠️ Note:

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

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

⚠️ Note:

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

6. Optionally, to prefix the log file name with the user name and process ID associated with the connection, set the UseLogPrefix property to 1.

7. Save the simba.athenaodbc.ini configuration file.

8. Restart your ODBC application to make sure that the new settings take effect.

The Simba Athena ODBC Driver produces a log file named AthenaODBC_driver.log at the location you specify using the LogPath key.

If you set the UseLogPrefix property to 1, then each file name is prefixed with [UserName]_[ProcessID]_, where [UserName] is the user name associated with the connection and [ProcessID] is the process ID of the application through which the connection is made. For more information, see UseLogPrefix on page 57.

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To disable logging on a non-Windows machine:

1. Open the simba.athenaodbc.ini configuration file in a text editor.
2. Set the LogLevel key to 0.
3. Save the simba.athenaodbc.ini configuration file.
4. Restart your ODBC application to make sure that the new settings take effect.

Testing the Connection on a Non-Windows Machine

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

Using the iODBC Driver Manager

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

Note:

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

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

To test your connection using the iODBC driver manager:

1. Run iodbctest or iodbctestw.
2. Optionally, if you do not remember the DSN, then type a question mark (?) to see a list of available DSNs.
3. Type the connection string for connecting to your data store, and then press ENTER. For more information, see Using a Connection String on page 39.

If the connection is successful, then the SQL> prompt appears.
Using the unixODBC Driver Manager

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

Note:

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

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

To test your connection using the unixODBC driver manager:

- Run isql or iusql by using the corresponding syntax:
  
  - `isql [DataSourceName]`
  - `iusql [DataSourceName]`

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

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

Note:

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

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

The connection strings in the following sections are examples showing the minimum set of connection attributes that you must specify to successfully connect to the data source. Depending on the configuration of the data source and the type of connection you are working with, you might need to specify additional connection attributes. For detailed information about all the attributes that you can use in the connection string, see Driver Configuration Options on page 47.

DSN Connection String Example

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

```
DSN=[DataSourceName]
```

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

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

DSN-less Connection String Examples

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

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

- `[S3Path]` is the path of the Amazon S3 location where you want to store query results, prefixed by s3://.
- `[Region]` is the AWS region of the Athena instance that you want to connect to.
- `[YourAccessKey]` is the access key provided by your AWS account.
- `[YourProfileName]` is the name of the IAM profile to use for authentication.
- `[YourSecretKey]` is the secret key provided by your AWS account.
Connecting to Athena Using the Default Credentials Provider Chain

The following is the format of a DSN-less connection string for connecting to Athena using the default credentials provider chain:

```
Driver=Simba Athena ODBC Driver;AwsRegion=[Region];S3OutputLocation=[S3Path];AuthenticationType=Default Credentials;
```

For example:

```
Driver=Simba Athena ODBC Driver;AwsRegion=us-east-2;S3OutputLocation=s3://query-results-bucket/test-folder-1;AuthenticationType=Default Credentials;
```

Connecting to Athena Using IAM Credentials

The following is the format of a DSN-less connection string for connecting to Athena using IAM credentials:

```
Driver=Simba Athena ODBC Driver;AwsRegion=[Region];S3OutputLocation=[S3Path];AuthenticationType=IAM Credentials;UID=[YourAccessKey];PWD=[YourSecretKey];
```

For example:

```
Driver=Simba Athena ODBC Driver;AwsRegion=us-east-2;S3OutputLocation=s3://query-results-bucket/test-folder-1;AuthenticationType=IAM Credentials;UID=ABCABCABC123ABCABC45;PWD=abCD+E1f2Gxhi3J4klmN/OP5QrSTuvwXYzabcdEF;
```

Connecting to Athena Using an IAM Profile

The following is the format of a DSN-less connection string for connecting to Athena using an IAM profile:

```
Driver=Simba Athena ODBC Driver;AwsRegion=[Region];S3OutputLocation=[S3Path];AuthenticationType=IAM Profile;AWSProfile=[YourProfileName];
```

For example:
Connecting to Athena Using an Instance Profile

The following is the format of a DSN-less connection string for connecting to Athena using an instance profile from the Amazon EC2 Instance Metadata Service:

Driver=Simba Athena ODBC Driver;AwsRegion=[Region];S3OutputLocation=[S3Path];AuthenticationType=Instance Profile;

For example:

Driver=Simba Athena ODBC Driver;AwsRegion=us-east-2;S3OutputLocation=s3://query-results-bucket/test-folder-1;AuthenticationType=Instance Profile;
Features

For more information on the features of the Simba Athena ODBC Driver, see the following:

- Catalog and Schema Support on page 42
- File Formats on page 42
- Data Types on page 42
- Security and Authentication on page 45

Catalog and Schema Support

The Simba Athena ODBC Driver supports both catalogs and schemas to make it easy for the driver to work with various ODBC applications. Amazon Athena organizes tables into schemas/databases, and lists them under the default catalog named AwsDataCatalog. The driver provides access to all of the schemas/databases that are listed under this catalog, ensuring compatibility with standard BI tools.

File Formats

The Simba Athena ODBC Driver supports all the file formats that Athena supports, which include the following:

- Avro
- Comma-Separated Values (CSV)
- JavaScript Object Notation (JSON)
- Optimized Row Columnar (ORC)
- Parquet

Data Types

The Simba Athena ODBC Driver supports many common data formats, converting between Athena data types and SQL data types.

The following table lists the supported data type mappings.
<table>
<thead>
<tr>
<th>Athena Type</th>
<th>SQL Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARRAY</td>
<td></td>
</tr>
</tbody>
</table>
|             | · SQL VARCHAR if the Use SQL Unicode Types option (the UseUnicodeSqlCharacterTypes property) is disabled.  
|             | · SQL WCHAR if the Use SQL Unicode Types option (the UseUnicodeSqlCharacterTypes property) is enabled.  
| BIGINT      | SQL_BIGINT |
| BINARY      | SQL_VARBINARY |
| BOOLEAN     | SQL_BIT |
| DATE        |          |
|             | · SQL_TYPE_DATE if the application uses ODBC version 3.00 or later.  
|             | · SQL_DATE if the application uses an ODBC version earlier than 3.00.  
| DECIMAL (p, s) | SQL_DECIMAL |
| DOUBLE      | SQL_DOUBLE |
| INTEGER     | SQL_INTEGER |

**Note:**

Although Athena reports integer data as type INT, the driver reports integer data as type INTEGER to ensure compatibility with standard BI tools. For more information, see Integer Support on page 45.
<table>
<thead>
<tr>
<th>Athena Type</th>
<th>SQL Type</th>
</tr>
</thead>
</table>
| MAP         | SQL_VARCHAR if the Use SQL Unicode Types option (the UseUnicodeSqlCharacterTypes property) is disabled.  
              SQL_WVARCHAR if the Use SQL Unicode Types option (the UseUnicodeSqlCharacterTypes property) is enabled. |
| SMALLINT    | SQL_SMALLINT |
| STRING      | SQL_VARCHAR if the Use SQL Unicode Types option (the UseUnicodeSqlCharacterTypes property) is disabled.  
              SQL_WVARCHAR if the Use SQL Unicode Types option (the UseUnicodeSqlCharacterTypes property) is enabled. |
| STRUCT      | SQL_VARCHAR if the Use SQL Unicode Types option (the UseUnicodeSqlCharacterTypes property) is disabled.  
              SQL_WVARCHAR if the Use SQL Unicode Types option (the UseUnicodeSqlCharacterTypes property) is enabled. |
| TIMESTAMP   | SQL_TYPE_TIMESTAMP if the application uses ODBC version 3.00 or later.  
              SQL_TIMESTAMP if the application uses an ODBC version earlier than 3.00. |
| TINYINT     | SQL_TINYINT |```
<table>
<thead>
<tr>
<th>Athena Type</th>
<th>SQL Type</th>
</tr>
</thead>
</table>
| VARCHAR     | • SQL_VARCHAR if the Use SQL Unicode Types option (the UseUnicodeSqlCharacterTypes property) is disabled.  
|             | • SQL_WVARCHAR if the Use SQL Unicode Types option (the UseUnicodeSqlCharacterTypes property) is enabled. |

**Integer Support**

Athena combines two different implementations of the integer data type:

- In Data Definition Language (DDL) queries, Athena uses the INT data type from Apache Hive.
- In all other queries, Athena uses the INTEGER data type from Presto.

To support the CAST queries that are used in many BI tools, the driver reports integer data as type INTEGER even though Athena reports the data as type INT.

Be aware that, when executing DDL queries, you must specify integer data using INT as the data type.

⚠️ **Note:**

Athena supports some but not all DDL statements. For a list of the supported DDL statements, see "SQL and HiveQL Reference" in the Amazon Athena API Reference: [http://docs.aws.amazon.com/athena/latest/ug/language-reference.html](http://docs.aws.amazon.com/athena/latest/ug/language-reference.html).

**Security and Authentication**

To protect data from unauthorized access, Athena requires all connections to be authenticated using an access key and a secret key, and uses the SSL protocol that is implemented in Amazon Web Services. The Simba Athena ODBC Driver protects your data by providing support for these authentication protocols and further obscuring data from unwanted access by providing encryption options for your query results.

The driver provides mechanisms that enable you to authenticate your connection using a default credentials provider chain, an IAM profile, an instance profile, or IAM credentials that are specified directly in the connection. For detailed configuration
instructions, see Configuring Authentication on Windows on page 12 or Configuring Authentication on Non-Windows Machines on page 32.

Additionally, the driver automatically applies SSL encryption to all connections. SSL encryption protects data and credentials when they are transferred over the network, and provides stronger security than authentication alone.

For query results, the Simba Athena ODBC Driver supports all the encryption options that Athena supports. For detailed information about the supported encryption options, see "Configuring Encryption Options" in the Amazon Athena User Guide: http://docs.aws.amazon.com/athena/latest/ug/encryption.html. For information about configuring encryption in the driver, see Creating a Data Source Name on Windows on page 10 or Configuring Query Result Encryption on a Non-Windows Machine on page 34.
Driver Configuration Options

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

When creating or configuring a connection from a Windows machine, the fields and buttons described below are available in the following dialog boxes:

- Simba Athena ODBC Driver DSN Setup
- Authentication Options
- Advanced Options
- Logging Options

When using a connection string or configuring a connection from a Linux or macOS machine, use the key names provided below.

Configuration Options Appearing in the User Interface

The following configuration options are accessible via the Windows user interface for the Simba Athena ODBC Driver, or via the key name when using a connection string or configuring a connection from a Linux or macOS computer:

- Authentication Type on page 48
- AWS Profile on page 48
- AWS Region on page 49
- Binary Column Length on page 49
- Encryption Options on page 49
- KMS Key on page 50
- Log Level on page 50
- Log Path on page 51
- Max Catalog Name Length on page 51
- Max Column Name Length on page 52
- Max File Size on page 52
- Max Number Files on page 53
- Max Schema Name Length on page 53
- Max Table Name Length on page 53
- Password on page 54
- S3 Output Location on page 54
- Schema on page 54
- Session Token on page 55
- String Column Length on page 55
- Use SQL Unicode Types on page 55
- User on page 56
# Authentication Type

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>AuthenticationType</td>
<td>IAM Credentials</td>
<td>Yes</td>
</tr>
<tr>
<td></td>
<td>(IAM Credentials)</td>
<td></td>
</tr>
</tbody>
</table>

## Description

This option specifies how the driver authenticates the connection to Athena.

- **Default Credentials (Default Credentials):** The driver authenticates the connection using credentials that are stored in one of the locations in the default credentials provider chain. The driver looks for a valid access key and secret key pair by checking the following locations, in the following order: the AWS credentials file stored in the default location (%USERPROFILE%.awscredentials for Windows, ~/.aws/credentials for non-Windows).

- **IAM Credentials (IAM Credentials):** The driver authenticates the connection using an access key and a secret key that is specified directly in the connection information.

- **IAM Profile (IAM Profile):** The driver authenticates the connection using credentials that are associated with an IAM profile in a credentials file.

- **Instance Profile (Instance Profile):** The driver authenticates the connection using credentials that have been loaded from the Amazon EC2 Instance Metadata Service into an instance profile.

## AWS Profile

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>AwsProfile</td>
<td>default</td>
<td>No</td>
</tr>
</tbody>
</table>

## Description

The name of the profile to use from the credentials file. This setting is applicable only when Authentication Type is set to IAM Profile (the AuthenticationType property is set to IAM Profile).
AWS Region

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>AwsRegion</td>
<td>None</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Description

The AWS region of the Athena instance that you want to connect to.

For a list of valid regions, see the "Athena" section in the AWS Regions and Endpoints documentation: http://docs.aws.amazon.com/general/latest/gr/rande.html#athena.

Binary Column Length

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>BinaryColumnLength</td>
<td>32767</td>
<td>No</td>
</tr>
</tbody>
</table>

Description

The maximum data length for BINARY columns.

Encryption Options

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>S3OutputEncOption</td>
<td>NOT_SET (NOT_SET)</td>
<td>Yes</td>
</tr>
</tbody>
</table>

Description

The encryption protocol that the driver uses to encrypt your query results.

- NOT_SET (NOT_SET): The driver does not encrypt the data.
- SSE_S3 (SSE_S3): The driver uses server-side encryption with an Amazon S3-managed key.
- SSE_KMS (SSE_KMS): The driver uses server-side encryption with an AWS KMS-managed key.
- CSE_KMS (CSE_KMS): The driver uses client-side encryption with an AWS KMS-managed key.
For detailed information about these encryption options, see "Configuring Encryption Options" in the Amazon Athena User Guide:

### KMS Key

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>S3OutputEncKMSKey</td>
<td>None</td>
<td>Yes, if using SSE_KMS or CSE_KMS encryption.</td>
</tr>
</tbody>
</table>

**Description**

The KMS customer key to use when encrypting query results using SSE_KMS or CSE_KMS encryption.

For detailed information about the supported encryption options, see "Configuring Encryption Options" in the Amazon Athena User Guide: http://docs.aws.amazon.com/athena/latest/ug/encryption.html.

### Log Level

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>LogLevel</td>
<td>OFF (0)</td>
<td>No</td>
</tr>
</tbody>
</table>

**Description**

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

**Important:**

- Only enable logging long enough to capture an issue. Logging decreases performance and can consume a large quantity of disk space.
- The settings for logging apply to every connection that uses the Simba Athena ODBC Driver, so make sure to disable the feature after you are done using it.
- This option is not supported in connection strings. To configure logging for the Windows driver, you must use the Logging Options dialog box. To configure logging for a non-Windows driver, you must use the simba.athenaodbc.ini file.
Set the property to one of the following values:

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

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

If you enable the UseLogPrefix connection property, the driver prefixes the log file name with the user name associated with the connection and the process ID of the application through which the connection is made. For more information, see UseLogPrefix on page 57.

### Log Path

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>LogPath</td>
<td>None</td>
<td>Yes, if logging is enabled.</td>
</tr>
</tbody>
</table>

### Description

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

**Important:**

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

### Max Catalog Name Length

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaxCatalogNameLength</td>
<td>0</td>
<td>No</td>
</tr>
</tbody>
</table>
Description

The maximum number of characters that catalog names contain.

This option can be set to any integer from 0 to 65535, inclusive. To indicate that there is no maximum length or that the length is unknown, set this option to 0.

Max Column Name Length

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaxColumnNameLength</td>
<td>0</td>
<td>No</td>
</tr>
</tbody>
</table>

Description

The maximum number of characters that column names contain.

This option can be set to any integer from 0 to 65535, inclusive. To indicate that there is no maximum length or that the length is unknown, set this option to 0.

Max File Size

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>LogFileSize</td>
<td>20</td>
<td>No</td>
</tr>
</tbody>
</table>

Description

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

⚠️ Important:

This option is not supported in connection strings. To configure logging for the Windows driver, you must use the Logging Options dialog box. To configure logging for a non-Windows driver, you must use the simba.athenaodbc.ini file.
Max Number Files

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>LogFileCount</td>
<td>50</td>
<td>No</td>
</tr>
</tbody>
</table>

Description

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

⚠️ Important:

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

Max Schema Name Length

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaxSchemaNameLength</td>
<td>256</td>
<td>No</td>
</tr>
</tbody>
</table>

Description

The maximum number of characters that schema names contain.

This option can be set to any integer from 0 to 65535, inclusive. To indicate that there is no maximum length or that the length is unknown, set this option to 0.

Max Table Name Length

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>MaxTableNameLength</td>
<td>0</td>
<td>No</td>
</tr>
</tbody>
</table>

Description

The maximum number of characters that table names contain.
This option can be set to any integer from 0 to 65535, inclusive. To indicate that there is no maximum length or that the length is unknown, set this option to 0.

**Password**

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>PWD</td>
<td>None</td>
<td>Yes, if Authentication Type is set to IAM Credentials.</td>
</tr>
</tbody>
</table>

**Description**

The secret key provided by your AWS account. This setting is applicable only when Authentication Type is set to IAM Credentials (the AuthenticationType property is set to IAM Credentials).

**S3 Output Location**

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>S3OutputLocation</td>
<td>None</td>
<td>Yes</td>
</tr>
</tbody>
</table>

**Description**

The path of the Amazon S3 location where you want to store query results, prefixed by s3://.

For example, to store Athena query results in a folder named "test-folder-1" inside an S3 bucket named "query-results-bucket", you would set this property to s3://query-results-bucket/test-folder-1.

**Schema**

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Schema</td>
<td>default</td>
<td>No</td>
</tr>
</tbody>
</table>
Description

The name of the database schema to use when a schema is not explicitly specified in a query. You can still issue queries on other schemas by explicitly specifying the schema in the query.

Session Token

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>SessionToken</td>
<td>None</td>
<td>Yes, if you are using temporary security credentials.</td>
</tr>
</tbody>
</table>

Description

The session token generated by the AWS Security Token Service. This setting is applicable only when Authentication Type is set to IAM Credentials (the AuthenticationType property is set to IAM Credentials).

String Column Length

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>StringColumnLength</td>
<td>255</td>
<td>No</td>
</tr>
</tbody>
</table>

Description

The maximum data length for STRING columns.

Use SQL Unicode Types

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>UseSQLUnicodeTypes</td>
<td>Clear (0)</td>
<td>No</td>
</tr>
</tbody>
</table>

Description

This option specifies the SQL types to be returned for string data types.
- **Enabled (1):** The driver returns SQL_WVARCHAR for ARRAY, MAP, STRING, STRUCT, and VARCHAR columns.
- **Disabled (0):** The driver returns SQL_VARCHAR for for ARRAY, MAP, STRING, STRUCT, and VARCHAR columns.

### User

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>UID</td>
<td>None</td>
<td>Yes, if Authentication Type is set to IAM Credentials.</td>
</tr>
</tbody>
</table>

### Description

The access key provided by your AWS account. This setting is applicable only when Authentication Type is set to IAM Credentials (the `AuthenticationType` property is set to IAM Credentials).

### Configuration Options Having Only Key Names

The Driver configuration option does not appear in the Windows user interface for the Simba Athena ODBC Driver. It is accessible only when you use a connection string or configure a connection on macOS or Linux.

- The `UseLogPrefix` property must be configured as a Windows Registry key value, or as a driver-wide property in the `simba.athenaodbc.ini` file for macOS or Linux.

  - **UseLogPrefix** on page 57

### Driver

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>Driver</td>
<td>Simba Athena ODBC Driver when installed on Windows, or the absolute path of the driver shared object file when installed on a non-Windows machine.</td>
<td>Yes</td>
</tr>
</tbody>
</table>
Description

On Windows, the name of the installed driver (Simba Athena ODBC Driver).

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

UseLogPrefix

<table>
<thead>
<tr>
<th>Key Name</th>
<th>Default Value</th>
<th>Required</th>
</tr>
</thead>
<tbody>
<tr>
<td>UseLogPrefix</td>
<td>0</td>
<td>No</td>
</tr>
</tbody>
</table>

Description

This option specifies whether the driver includes a prefix in the names of log files so that the files can be distinguished by user and application.

⚠️ Important:

To configure this option for the Windows driver, you create a value for it in one of the following registry keys:

- For a 32-bit driver installed on a 64-bit machine: `HKEY_LOCAL_MACHINE\SOFTWARE\Wow6432Node\Simba\Simba Athena ODBC Driver\Driver\UseLogPrefix`
- Otherwise: `HKEY_LOCAL_MACHINE\SOFTWARE\Simba\Simba Athena ODBC Driver\Driver\UseLogPrefix`

Use `UseLogPrefix` as the value name, and either 0 or 1 as the value data.

To configure this option for a non-Windows driver, you must use the `simba.athenaodbc.ini` file.

Set the property to one of the following values:

- 1: The driver prefixes log file names with the user name and process ID associated with the connection that is being logged.
  
  For example, if you are connecting as a user named "jdoe" and using the driver in an application with process ID 7836, the generated log file would be named `jdoe_7836_AthenaODBC_driver.log`.

- 0: The driver does not include the prefix in log file names.
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