

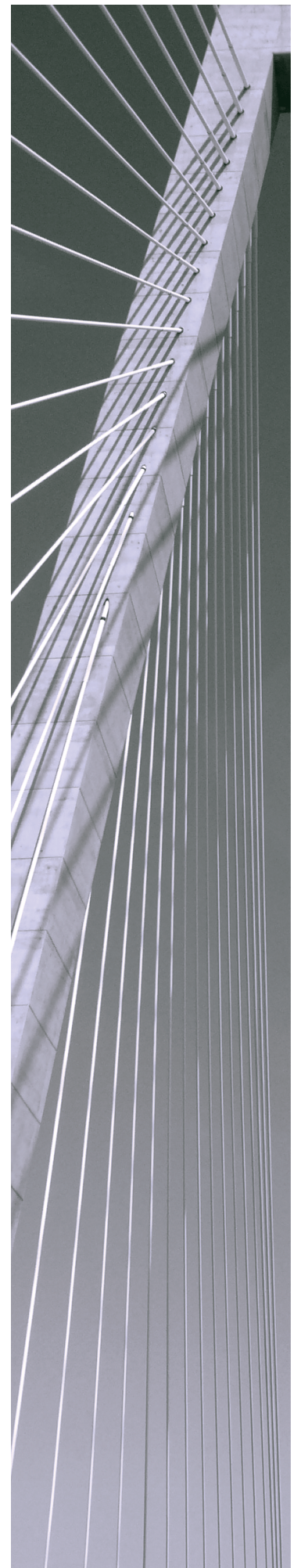


Simba Athena ODBC Driver with SQL Connector

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.

Table of Contents

About the Simba Athena ODBC Driver	7
About Amazon Athena	7
About the Driver	7
Windows Driver	9
Windows System Requirements	9
Installing the Driver on Windows	9
Creating a Data Source Name on Windows	10
Configuring Authentication on Windows	12
Configuring Advanced Options on Windows	14
Exporting a Data Source Name on Windows	15
Importing a Data Source Name on Windows	16
Configuring Logging Options on Windows	16
Verifying the Driver Version Number on Windows	18
macOS Driver	19
macOS System Requirements	19
Installing the Driver on macOS	19
Verifying the Driver Version Number on macOS	19
Linux Driver	21
Linux System Requirements	21
Installing the Driver Using the RPM File	21
Verifying the Driver Version Number on Linux	22
Configuring the ODBC Driver Manager on Non-Windows Machines	23
Specifying ODBC Driver Managers on Non-Windows Machines	23
Specifying the Locations of the Driver Configuration Files	24
Configuring ODBC Connections on a Non-Windows Machine	26
Creating a Data Source Name on a Non-Windows Machine	26
Configuring a DSN-less Connection on a Non-Windows Machine	29
Configuring Authentication on Non-Windows Machines	31
Configuring Query Result Encryption on a Non-Windows Machine	33
Configuring Logging Options on a Non-Windows Machine	34
Testing the Connection on a Non-Windows Machine	36
Using a Connection String	38
DSN Connection String Example	38

Installation and Configuration Guide

DSN-less Connection String Examples	38
Features	41
Catalog and Schema Support	41
File Formats	41
Data Types	41
Security and Authentication	44
Driver Configuration Options	46
Configuration Options Appearing in the User Interface	46
Configuration Options Having Only Key Names	55
Third-Party Trademarks	57
Third-Party Licenses	58

About the Simba Athena ODBC Driver

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 Driver

Windows System Requirements

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

- One of the following operating systems:
 - Windows 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).
You can download the installation packages at <https://www.microsoft.com/en-ca/download/details.aspx?id=40784>.

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

Installing the Driver on Windows

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

- `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 38.

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.

 **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.

 **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:

<http://docs.aws.amazon.com/general/latest/gr/rande.html#athena>.

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:


Option Name	Description
NOT_SET	The driver does not encrypt the data.
SSE_S3	The driver uses server-side encryption with an Amazon S3-managed key.
SSE_KMS	The driver uses server-side encryption with an AWS KMS-managed key.
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*:

<http://docs.aws.amazon.com/athena/latest/ug/encryption.html>.

- 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.

For detailed information about configuring default credentials, see "Providing AWS Credentials" in the *AWS SDK for C++ Developer Guide*:
<http://docs.aws.amazon.com/sdk-for-cpp/v1/developer-guide/credentials.html>.

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.

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.

For information about the format of a credentials file, see the "AWS Credentials File Format" section from the "Working with AWS Credentials" page in the *AWS SDK for Java Developer Guide*: <http://docs.aws.amazon.com/sdk-for-java/v1/developer-guide/credentials.html>.

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:**

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:

Logging Level	Description
OFF	Disables all logging.

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

- 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.
- 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.

- 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.

- Click **OK**.
- 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 56.


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 23.

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 Driver

Linux System Requirements

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

- One of the following distributions:
 - Red Hat® Enterprise Linux® (RHEL) 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.

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

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

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.

To install the Simba Athena ODBC Driver using the RPM File:

1. Log in as the root user, and then navigate to the folder containing the RPM package for the driver.

2. Depending on the Linux distribution that you are using, run one of the following commands from the command line, where *[RPMFileName]* is the file name of the RPM package:

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

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

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

```
zypper install [RPMFileName]
```

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 23.

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`

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 23.
- 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 24.

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 26.

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 `ODBCSYSINI` 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:

```
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:

```
export ODBCINI=/usr/local/odbc/odbc.ini
export ODBCSYSINI=/usr/local/odbc
```



```
export SIMBA_ATHENA_ODBC_INI=/etc/simba.athenaodbc.ini
```

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

1. If the `SIMBA_ATHENA_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 26
- [Configuring a DSN-less Connection on a Non-Windows Machine](#) on page 29
- [Configuring Authentication on Non-Windows Machines](#) on page 31
- [Configuring Query Result Encryption on a Non-Windows Machine](#) on page 33
- [Configuring Logging Options on a Non-Windows Machine](#) on page 34
- [Testing the Connection on a Non-Windows Machine](#) on page 36


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 29.

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:**

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:

```
[ODBC Data Sources]
Sample DSN=Simba Athena ODBC Driver
```

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

```
[ODBC Data Sources]
Sample DSN=Simba Athena ODBC Driver 32-bit
```

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:
<http://docs.aws.amazon.com/general/latest/gr/rande.html#athena>.

- 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 31.
 - e. Optionally, configure encryption for your query results. For more information, see [Configuring Query Result Encryption on a Non-Windows Machine](#) on page 33.
 - 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 46.
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 24.

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

```
[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:

```
[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
```

```
AwsRegion=us-east-2
S3OutputLocation=s3://simba-athena-results/
```

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 `ODBCSYSINI` environment variable specifies the location. For more information, see [Specifying the Locations of the Driver Configuration Files](#) on page 24.

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

```
[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:

```
[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 38.

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

- [Configuring Authentication on Non-Windows Machines](#) on page 31
- [Configuring Query Result Encryption on a Non-Windows Machine](#) on page 33

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 31
- [Using IAM Credentials on Non-Windows Machines](#) on page 32
- [Using an IAM Profile on Non-Windows Machines](#) on page 32
- [Using an Instance Profile on Non-Windows Machines](#) on page 33

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.

For detailed information about configuring default credentials, see "Providing AWS Credentials" in the *AWS SDK for C++ Developer Guide*: <http://docs.aws.amazon.com/sdk-for-cpp/v1/developer-guide/credentials.html>.

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.

For information about the format of a credentials file, see the "AWS Credentials File Format" section from the "Working with AWS Credentials" page in the *AWS SDK for Java Developer Guide*: <http://docs.aws.amazon.com/sdk-for-java/v1/developer-guide/credentials.html>.

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>.

Option Name	Description
NOT_SET	The driver does not encrypt the data.
SSE_S3	The driver uses server-side encryption with an Amazon S3-managed key.
SSE_KMS	The driver uses server-side encryption with an AWS KMS-managed key.
CSE_KMS	The driver uses client-side encryption with an AWS KMS-managed key.

- 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:

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

LogLevel Value	Description
0	Disables all logging.
1	Logs severe error events that lead the driver to abort.

LogLevel Value	Description
2	Logs error events that might allow the driver to continue running.
3	Logs events that might result in an error if action is not taken.
4	Logs general information that describes the progress of the driver.
5	Logs detailed information that is useful for debugging the driver.
6	Logs all driver activity.

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 56.

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 38.

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 46.

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=ABCABCABC123ABCABC4  
5;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:

```
Driver=Simba Athena ODBC Driver;AwsRegion=us-east-2;S3OutputLocation=s3://query-results-bucket/test-folder-1;AuthenticationType=IAM Profile;AWSProfile=simba;
```

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 41
- [File Formats](#) on page 41
- [Data Types](#) on page 41
- [Security and Authentication](#) on page 44

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.

Athena Type	SQL Type
ARRAY	<ul style="list-style-type: none"> • 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.
BIGINT	SQL_BIGINT
BINARY	SQL_VARBINARY
BOOLEAN	SQL_BIT
DATE <div data-bbox="228 898 737 1016" style="border: 1px solid gray; padding: 5px; margin-top: 10px;">  Note: Not supported for Parquet files. </div>	<ul style="list-style-type: none"> • 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 <div data-bbox="228 1276 737 1625" style="border: 1px solid gray; padding: 5px; margin-top: 10px;">  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 44. </div>	SQL_INTEGER

Athena Type	SQL Type
MAP	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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

Athena Type	SQL Type
VARCHAR	<ul style="list-style-type: none"> • SQL_VARCHAR if the Use SQL Unicode Types option (the <code>UseUnicodeSqlCharacterTypes</code> property) is disabled. • SQL_WVARCHAR if the Use SQL Unicode Types option (the <code>UseUnicodeSqlCharacterTypes</code> 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>.

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 31.

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 33.

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 47
- [AWS Profile](#) on page 47
- [AWS Region](#) on page 48
- [Binary Column Length](#) on page 48
- [Encryption Options](#) on page 48
- [KMS Key](#) on page 49
- [Log Level](#) on page 49
- [Log Path](#) on page 50
- [Max Catalog Name Length](#) on page 50
- [Max Column Name Length](#) on page 51
- [Max File Size](#) on page 51
- [Max Number Files](#) on page 52
- [Max Schema Name Length](#) on page 52
- [Max Table Name Length](#) on page 52
- [Password](#) on page 53
- [S3 Output Location](#) on page 53
- [Schema](#) on page 53
- [Session Token](#) on page 54
- [String Column Length](#) on page 54
- [Use SQL Unicode Types](#) on page 54
- [User](#) on page 55

Authentication Type

Key Name	Default Value	Required
AuthenticationType	IAM Credentials (IAM Credentials)	Yes

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

Key Name	Default Value	Required
AwsProfile	default	No

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

Key Name	Default Value	Required
AwsRegion	None	Yes

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

Key Name	Default Value	Required
BinaryColumnLength	32767	No

Description

The maximum data length for BINARY columns.

Encryption Options

Key Name	Default Value	Required
S3OutputEncOption	NOT_SET (NOT_SET)	Yes

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*:

<http://docs.aws.amazon.com/athena/latest/ug/encryption.html>.

KMS Key

Key Name	Default Value	Required
S3OutputEncKMSKey	None	Yes, if using SSE_KMS or CSE_KMS encryption.

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

Key Name	Default Value	Required
LogLevel	OFF (0)	No

Description

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

! Important:

- Only enable logging long enough to capture an issue. Logging decreases performance and can consume a large quantity of disk space.
- 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 56.

Log Path

Key Name	Default Value	Required
<code>LogPath</code>	None	Yes, if logging is enabled.

Description

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

! Important:

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

Max Catalog Name Length

Key Name	Default Value	Required
<code>MaxCatalogNameLength</code>	0	No

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

Key Name	Default Value	Required
MaxColumnNameLength	0	No

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

Key Name	Default Value	Required
LogFileSize	20	No

Description

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

! Important:

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

Max Number Files

Key Name	Default Value	Required
LogFileCount	50	No

Description

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

! Important:

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

Max Schema Name Length

Key Name	Default Value	Required
MaxSchemaNameLength	256	No

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

Key Name	Default Value	Required
MaxTableNameLength	0	No

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

Key Name	Default Value	Required
PWD	None	Yes, if Authentication Type is set to IAM Credentials.

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

Key Name	Default Value	Required
S3OutputLocation	None	Yes

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

Key Name	Default Value	Required
Schema	default	No

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

Key Name	Default Value	Required
SessionToken	None	Yes, if you are using temporary security credentials.

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

Key Name	Default Value	Required
StringColumnLength	255	No

Description

The maximum data length for STRING columns.

Use SQL Unicode Types

Key Name	Default Value	Required
UseSQLUnicodeTypes	Clear (0)	No

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

Key Name	Default Value	Required
UID	None	Yes, if Authentication Type is set to IAM Credentials.

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 56

Driver

Key Name	Default Value	Required
Driver	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.	Yes

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

Key Name	Default Value	Required
<code>UseLogPrefix</code>	0	No

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\SOFTWAREWow6432Node\Simba\Simba Athena ODBC Driver\Driver`
- Otherwise: `HKEY_LOCAL_MACHINE\SOFTWARE\Simba\Simba Athena ODBC Driver\Driver`

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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