

*IBM SPSS Modeler 19.0 Scoring Adapter
Installation*



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Chapter 1. IBM SPSS Modeler Scoring Adapter Installation

IBM SPSS Modeler scoring adapter installation

For some databases it is possible to enable SQL pushback of the majority of the SPSS® Modeler model nuggets. In this way, model scoring can be performed within the database, avoiding the need to extract the data before scoring. This pushback can either use the native SQL within SPSS Modeler or, where available, use additional SQL scoring adapters that are tailored for different databases.

The scoring adapters support scoring of most model nuggets in a stream, with the following exceptions:

- Association Rules (with list data), TimeSeries, Sequence, PCA, STP, and TCM are not supported.
- Association models do not support transactional format.
- Text Analytics (TA) - Field mode is supported in Db2 LUW but not the other databases. When using the TA scoring adapter in field mode, the returned row length may contain many scoring output columns, which can result in some database limits being exceeded. For example, you might see the error message `T00 MANY ITEMS RETURNED IN SELECT OR INSERT LIST`. Sometimes these limits can be changed in the database but, if that is not possible, the recommended approach is to use record mode to score the model.

The use of scoring adapters that enable data to be scored by the generated models within the database to avoid data transfer. SPSS Modeler enables integration with IBM and non-IBM databases, and enable models to be deployed faster and with greater efficiency.

Where scoring adapters are installed into the relevant databases the SQL generation option generates scoring adapter SQL by default, unless you specifically choose to override this. The databases for which scoring adapters are available are:

- Netezza
- Teradata
- Db2 LUW

About scoring

In IBM® SPSS Modeler, scoring data is defined as deploying a predictive model on new data with an unknown outcome. This predictive model processes incoming data and gives a predictive score about the likelihood or probability of an event. For example, when an online payment transaction takes place, a predictive model processes the input data and provides a predictive score which gives the probability of a transaction being either genuine or a fraud.

The normal process within SPSS Modeler is that when a predictive model receives incoming data it evaluates the input using historical data from a database and creates an output of a predicted score. This score gives a probability about an event for which a predictive analysis model is built.

The predictive model process using a scoring adapter differs from this in that the scoring adapter enables the evaluation of each record and for producing a score, or prediction, in the database without the need to export the data from database, run it through the model, and import it back again thereby making the whole process quicker.

Migrating to a new version

If you're upgrading to a new version of the IBM SPSS Modeler Server Scoring Adapter, take note of the following information.

- Adapter migration is supported from the previous version only. Migration from older versions is not supported. For example, for IBM SPSS Collaboration and Deployment Services 8.1.1 with Modeler Adapter 18.1.1, migration from IBM SPSS Collaboration and Deployment Services 7 with Modeler Adapter 17.1 is supported.
- Modeler Adapter can be installed at the same time as IBM SPSS Collaboration and Deployment Services or after IBM SPSS Collaboration and Deployment Services installation.

For complete details and instructions regarding migration, see the *Migration* section of the IBM SPSS Collaboration and Deployment Services Repository Server installation and configuration guide. The migration process for Modeler Adapter is the same as the process described in the guide. The guide is available in the IBM SPSS Collaboration and Deployment Services IBM Documentation at <https://www.ibm.com/docs/SS69YH>.

Installing IBM SPSS Modeler Server Scoring Adapter for Netezza

If you have a previous version of the scoring adapter for Netezza installed, first you must uninstall it as follows:

1. Locate the executable file named `Uninstall IBM SPSS Modeler Server Scoring Adapter for Netezza` in the Netezza scoring adapter's installation directory. It's in a folder named `Uninstall IBM SPSS Modeler Server Scoring Adapter for Netezza`.
2. Run the executable file either from the console or by using the graphical user interface (GUI). Follow the instructions in the uninstaller to uninstall the scoring adapter.
3. If you receive a message that some items could not be removed, go to the root directory where the adapter had been (the `cfscoring` directory, for example) and run the command `rm -rf` on the listed directories that were not removed. This will remove them.
4. Proceed with the following steps to install the new version of the scoring adapter.

Depending on the configuration of your database you can install either from the console or by using a graphical user interface (GUI); however, the first step is the same for both methods:

- Run the `install.bin` install script. Ensure that `install.bin` can be executed by `nz user` and run it as that user.

Console Installation

1. Introduction details are displayed. Press Enter to continue.
2. Licensing information is displayed. Read the license, type Y to accept it, and press Enter to continue.
3. You are prompted to type the installation location. The default installation location is shown; however, if your installation is different, type the revised location and press Enter.

Note: The installation must be under the `/nz/export/` path.

4. You are prompted to enter the database name, database user name, and database password.

Note: The database user must have database access permissions to initialize the database and register the udf modules.

5. A pre-installation summary is displayed to confirm your entries so far. Press Enter to continue.
6. A message is displayed to say the installation routine is ready to run. Press Enter to continue.
7. A progress bar is displayed whilst the installation routine runs. When the installation is complete, press Enter to exit from the installer.

GUI Installation

1. Introduction details are displayed. Click **Next** to continue.
2. Licensing information is displayed. Read the license, select the option to accept it, and click **Next** to continue.

3. You are prompted to select the installation location. The default installation location is shown; however, if your installation of is different, click **Choose** to browse for the revised location. When the correct location is shown, click **Next**.
4. You are prompted to enter the database name, database user name, and database password.
Note: The database user must have database access permissions to initialize the database and register the UDF modules.
5. A pre-installation summary is displayed to confirm your entries so far. Click **Install** to continue.
6. A progress bar is displayed whilst the installation routine runs. When the installation is complete, click **Done** to exit from the installer.

When you have completed these steps the scoring adapter is ready to receive work.

Note: The Netezza UDF has a 64 field limit that can be processed by the scoring adapter. If that field limit is exceeded, the validation error message: SQL Validation Error: HY000[46] ERROR: Cannot pass more than 64 arguments to a function is displayed and model scoring continues without using the scoring adapter.

Installing IBM SPSS Modeler Server Scoring Adapter for Teradata

If you have a previous version of the scoring adapter for Teradata installed, first you must uninstall it as follows:

1. Locate the executable file named `Uninstall IBM SPSS Modeler Server Scoring Adapter for Teradata` in the Teradata scoring adapter's installation directory. It's in a folder named `Uninstall IBM SPSS Modeler Server Scoring Adapter for Teradata`.
2. Run the executable file either from the console or by using the graphical user interface (GUI). Follow the instructions in the uninstaller to uninstall the scoring adapter.
3. If you receive a message that some items could not be removed, go to the root directory where the adapter had been (the `cfscoring` directory, for example) and run the command `rm -rf` on the listed directories that were not removed. This will remove them.
4. Proceed with the following steps to install the new version of the scoring adapter.

Depending on the configuration of your database you can install either from the console or by using a graphical user interface (GUI); however, the first step is the same for both methods:

- Log in as either *root* or *DBA user* and run the `install.bin` install script. You must have access permissions for the installation folder to do this. The installing user must also have `CREATE FUNCTION` permissions.

Console Installation

1. Introduction details are displayed. Press Enter to continue.
2. Licensing information is displayed. Read the license, type Y to accept it, and press Enter to continue.
3. You are prompted to type the installation location. The default installation location is shown; however, if your installation is different, type the revised location and press Enter.
4. Enter the database TDPID. Press Enter to continue.
5. Enter the user name. Press Enter to continue.
6. Enter the password. Press Enter to continue.
7. A pre-installation summary is displayed to confirm your entries so far. Press Enter to continue.
8. A message is displayed to say the installation routine is ready to run. Press Enter to continue.
9. A progress bar is displayed whilst the installation routine runs. When the installation is complete, press Enter to exit from the installer.
10. If the *Components* table exists in your database a confirmation message is displayed. Either enter Y to continue creating tables and functions in your database, or enter N to skip this step. *Note:* If you skip this step you must manually create tables and functions later using `initdb.sh`, which is stored in the `<installation path>\setup` folder.

GUI Installation

1. Introduction details are displayed. Click **Next** to continue.
2. Licensing information is displayed. Read the license, select the option to accept it, and click **Next** to continue.
3. You are prompted to select the installation location. The default installation location is shown; however, if your installation of is different, click **Choose** to browse for the revised location. When the correct location is shown, click **Next**.
4. Enter the database TDPID, name, and password and click **Next** to continue.
5. A pre-installation summary is displayed to confirm your entries so far. Click **Install** to continue.
6. A progress bar is displayed whilst the installation routine runs. When the installation is complete, click **Done** to exit from the installer.
7. If the *Components* table exists in your database a confirmation message is displayed. Either click **Yes** to continue creating tables and functions in your database, or click **No** to skip this step. *Note:* If you skip this step you must manually create tables and functions later using `initdb.sh`, which is stored in the `<installation path>\setup` folder.

When you have completed these steps the scoring adapter is ready to receive work.

Note: The UDFs and COMPONENTS table are installed into the default database of the user who installs the scoring adapter.

Sharing the scoring adapter

To share the scoring adapter for use by other Teradata users:

1. Grant the following privileges to the user:
 - SELECT and EXECUTE FUNCTION on the database where the scoring adapter is installed.
 - INSERT on the COMPONENTS table on the database where the scoring adapter is installed.
2. When a database connection is made to Teradata with the scoring adapter installed, open the Database Preset dialog box, enable **Use Server Scoring Adapter Schema** and select the schema from the **Server Scoring Adapter Schema** drop down list.

Note: The Database Preset dialog box varies for different databases and is not supported by scripting; therefore, this step can only be done in SPSS Modeler Client.

Preventing SQL errors for date or time entries

If the ODBC driver for the Date or Time format is set to Integer, and your input table contains fields that are coded as Date, Time, or Timestamp; Teradata displays a SQL error message and is unable to process those fields.

To prevent this error from happening follow these steps:

1. Open the ODBC Data Source Administrator.
2. Open the DSN that uses the Teradata driver.
3. Click on **Options >>** to open the **Teradata ODBC Driver Options** dialog box.
4. On the top right side of the dialog box, set the **Date Time Format** to AAA.
5. Save your changes.
6. In IBM SPSS Modeler Server, remove the connection and then reconnect to the DSN that uses the Teradata driver.

Note: On Unix/Linux, the option is called: **DateTimeFormat**.

Teradata drivers and null datetime_now values

When using the DataDirect Teradata driver, the SQL_COLUMN_TYPE may return a null value. The alternative is to use the native Teradata driver.

Installing IBM SPSS Modeler Server scoring adapter for Db2 LUW

Note: The Db2 LUW scoring adapter is only available on Db2 running on LINUX or AIX.

Note: The IBM SPSS Modeler Server Scoring Adapter may conflict with the Db2 LUW ANALYZE_TABLE embedded process for SAS because they share the same Db2 built in support.

If you have a previous version of the scoring adapter for Db2 LUW installed, first you must uninstall it as follows:

1. Locate the executable file named `Uninstall IBM SPSS Modeler Server Scoring Adapter for DB2` in the Db2 scoring adapter's installation directory. It's in a folder named `Uninstall IBM SPSS Modeler Server Scoring Adapter for DB2`.
2. Run the executable file either from the console or by using the graphical user interface (GUI). Follow the instructions in the uninstaller to uninstall the scoring adapter.
3. If you receive a message that some items could not be removed, go to the root directory where the adapter had been (the `cfscoring` directory, for example) and run the command `rm -rf` on the listed directories that were not removed. This will remove them.
4. Proceed with the following steps to install the new version of the scoring adapter.

Before installation, you need to shut down the Db2 LUW ANALYZE_TABLE embedded process using the `db2ida_epspss.sh` script provided in the IBM SPSS Modeler Server scoring adapter installation folder. To do this, use the Db2 command: `db2ida_epspss.sh stop`.

After installation, the Db2 LUW ANALYZE_TABLE embedded process should start automatically using `db2start`. However, if you install the adapter while a Db2 instance is active, you can start the Db2 LUW ANALYZE_TABLE embedded process manually by using the command: `db2ida_epspss.sh start`.

Note: The Db2 LUW ANALYZE_TABLE doesn't support the WITH table-expression clause if it contains UNION ALL. This may cause an error if you attempt to use this expression in a IBM SPSS Modeler node which generates UNION or UNION ALL SQL, such as the Append node.

Depending on the configuration of your database you can install either from the console or by using a graphical user interface (GUI); however, the first step is the same for both methods:

- Run the `install.bin` install script. Ensure that `install.bin` can be executed by **db2 user** and run it as that user.

Console Installation

1. Introduction details are displayed. Press Enter to continue.
2. Licensing information is displayed. Read the license, type 1 to accept it and press Enter.
3. You are prompted to type the installation location. The default installation location is shown; however, if your installation is different, type the revised location and press Enter.
4. You are prompted to enter the database name, database user name, and database password.
5. A pre-installation summary is displayed to confirm your entries so far. Press Enter to continue.
6. A message is displayed to say the installation routine is ready to run. Press Enter to continue.
7. A progress bar is displayed whilst the installation routine runs. When the installation is complete, press Enter to exit from the installer.

GUI Installation

1. Introduction details are displayed. Click **Next** to continue.

2. Licensing information is displayed. Read the license, select the option to accept it, and click **Next** to continue.
3. You are prompted to select the installation location. The default installation location is shown; however, if your installation of is different, click **Choose** to browse for the revised location. When the correct location is shown, click **Next**.
4. You are prompted to enter the database name, database user name, and database password.
5. A pre-installation summary is displayed to confirm your entries so far. Click **Install** to continue.
6. A progress bar is displayed whilst the installation routine runs. When the installation is complete, click **Done** to exit from the installer.

When you have completed these steps the scoring adapter is ready to receive work.

Note: If you have problems scoring large Text Mining models via the Database Scoring Adapters for Db2 LUW, you may need to modify the database table column size parameter. If you encounter errors related to failing to insert the model into the components table, use a Db2 command such as the following to increase the column size parameter as appropriate:

```
ALTER TABLE COMPONENTS ALTER COLUMN MODELDS2 SET DATA TYPE BLOB(48M);
```


