What's New in TIBCO Spotfire® 7.6

Software Release 7.6
May 2016
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TIBCO Documentation and Support Services

Documentation for this and other TIBCO products is available on the TIBCO Documentation site. This site is updated more frequently than any documentation that might be included with the product. To ensure that you are accessing the latest available help topics, please visit:

https://docs.tibco.com

TIBCO Spotfire Documentation

The following documents for this product can be found on the TIBCO Documentation site:

- TIBCO Spotfire® Analyst Release Notes
- TIBCO Spotfire® Analyst User’s Guide
- TIBCO Spotfire® Administration Manager - User’s Manual
- TIBCO Spotfire® License Agreement

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  https://support.tibco.com
  Entry to this site requires a user name and password. If you do not have a user name, you can request one.

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The TIBCO Community is an online destination for TIBCO Spotfire customers, partners, and resident experts. It is a place to share and access the collective experience of the TIBCO Spotfire community. The community site offers forums, blogs, and access to a variety of resources. To register, go to the following web address.

https://community.tibco.com/products/spotfire
Introduction

TIBCO Spotfire 7.6 delivers faster, easier-to-use visual analytics for everyone.

Updates are available in many different areas of Spotfire, read about the enhancements in your specific area of interest.
Visual analytics

Spotfire 7.6 includes two new visualization types, the waterfall chart and the KPI chart, many improvements to the cross table visualization as well as a number of other improvements.

Waterfall chart visualization

One of the most requested visualizations during the last years is now available in both Spotfire Analyst and Business Author: the waterfall chart.

The waterfall chart is particularly useful to present how various categories contributed to a final result, such as how sales, cost of goods, salaries, financial incomes, amortization, tax, etcetera, make up the grand financial result for a company.

A waterfall chart can also be used to compare, for example, financial results of two years, with respect to the individual contribution of business units within the company. In such a case, the first (full) bar is typically the total result from year 1, the "floating blocks" represent the difference for each business unit between year 1 and year 2, and the last (full) bar is the total result for year 2. In the following example, we can see Sales 2014 as the full bar on the left, and Sales 2015 as the full bar on the right. In the middle, we can see how the different business units contributed to the difference.
Waterfall charts can also have subtotal bars that are shown as full bars and represent an intermediate value, such as EBITDA in financial analysis.

KPI chart visualization

Another new visualization type in Spotfire is the KPI chart. The KPI chart displays Key Performance Indicators in a new mobile and touch-friendly visualization, where the layout is responsive to the available screen estate. The KPI chart can be created using Spotfire Analyst, and it can be consumed in all Spotfire clients: installed, web, or mobile.

With the KPI chart, consumers can easily get an overview of the status of their most important KPIs, using their mobile phones. KPIs can be sorted to show, for example, the best or worst performing KPIs on top, and by clicking a KPI, they can access more detailed information in the form of more detailed KPIs or other Spotfire visualizations.
Authors can create user-friendly mobile Spotfire applications using actions, where a click on a KPI tile lets you drill down or see other information related to the clicked KPI.

The KPI chart can be used in the installed Windows client and in web clients, as well as in the Spotfire iOS app. Thus, the KPI chart can be used as master-details visualizations, etcetera, just as any other visualization in Spotfire.
A KPI chart may contain one or more KPIs, and each KPI is represented by one or more tiles. There is a Tile by axis where you choose the column on which to “split” the KPI. In Spotfire 7.6, authoring of the KPI chart can only be done in the installed client.

**Configuring a KPI chart**

Different KPI values can be added to a KPI in a KPI chart.

You create a KPI chart by clicking its icon in the toolbar. This creates a default KPI chart similar to the chart below.

The KPI chart can be further configured either from the properties icon in the visualization title, or through a right-click on the KPI itself and choosing KPI Settings. The latter is a nice shortcut, especially in case you have many KPIs in a single chart.

The next picture shows how the settings on the different axes on the Values page in the KPI Settings dialog are connected to the display in a tile. If you expand an axis selector, the Display name of a value can be changed.
The **Time** axis is optional. It is used to enable a KPI to easily represent this month, week, etcetera. If it is used, the last period’s value will be shown in the Value field of the KPI tile. If the Time axis is empty, the Value axis will be calculated on all data as default.

**Actions when clicking a KPI tile**

Via Actions in the KPI Settings dialog, you can configure what should happen when a user clicks/taps a KPI tile. This can be used to create dynamic applications where a user can drill down or view related information by clicking/tapping on a tile.

Using any of the predefined actions, it is really easy to create an interactive application where a user clicks a KPI tile and is navigated to another page with more information about that particular KPI. For the more advanced user, IronPython scripts can be used to achieve more advanced things. Here is a code snippet that stores the categorical value of the tile the user clicked (in this case which “State” the clicked tile represents) in a document property and then navigates the user to another page.

```python
Document.Properties["SelectedState"] = Context.HierarchyPathValues[0]
Document.ActivePageReference = TargetPage
```

**More compact and readable cross tables**

There have been several enhancements to the Spotfire cross tables both in Spotfire Analyst and Business Author. It is now possible to specify individual column width, text alignment, and orientation. These features contribute to making the cross tables more compact and more readable.
<table>
<thead>
<tr>
<th>Sector</th>
<th>Industry</th>
<th>Highest priced company</th>
<th>Price for highest valued company</th>
<th>Average price</th>
<th>Average PE</th>
<th>Average Sales Growth</th>
</tr>
</thead>
<tbody>
<tr>
<td>Commercial Services</td>
<td>Advertising/Marketing Services</td>
<td>Lamar Advertising Company Class A</td>
<td>$51.15</td>
<td>$22.01</td>
<td>49.02</td>
<td>-3.05 %</td>
</tr>
<tr>
<td></td>
<td>Commercial Printing/Forms</td>
<td>Deluxe Corporation</td>
<td>$60.40</td>
<td>$30.60</td>
<td>19.46</td>
<td>3.57 %</td>
</tr>
<tr>
<td></td>
<td>Financial Publishing/Services</td>
<td>McGraw Hill Financial, Inc.</td>
<td>$85.70</td>
<td>$55.58</td>
<td>30.53</td>
<td>8.14 %</td>
</tr>
<tr>
<td></td>
<td>Miscellaneous Commercial Services</td>
<td>Concur Technologies, Inc.</td>
<td>$129.21</td>
<td>$52.17</td>
<td>65.57</td>
<td>9.59 %</td>
</tr>
<tr>
<td></td>
<td>Personnel Services</td>
<td>Towers Watson &amp; Co. Class A</td>
<td>$107.97</td>
<td>$33.07</td>
<td>34.18</td>
<td>7.82 %</td>
</tr>
<tr>
<td>Communications</td>
<td>Major Telecommunications</td>
<td>Verizon Communications Inc.</td>
<td>$49.96</td>
<td>$29.31</td>
<td>9.52</td>
<td>-3.21 %</td>
</tr>
<tr>
<td></td>
<td>Specialty Telecommunications</td>
<td>Lumen Networks Corp.</td>
<td>$16.75</td>
<td>$11.59</td>
<td>30.52</td>
<td>-2.35 %</td>
</tr>
<tr>
<td></td>
<td>Wireless Telecommunications</td>
<td>NTELOS Holdings Corp.</td>
<td>$10.06</td>
<td>$10.06</td>
<td>18.53</td>
<td>6.36 %</td>
</tr>
<tr>
<td>Consumer Durables</td>
<td>Automotive Aftermarket</td>
<td>Standard Motor Products, Inc.</td>
<td>$39.92</td>
<td>$39.82</td>
<td>18.06</td>
<td>3.67 %</td>
</tr>
<tr>
<td></td>
<td>Electronics/Appliances</td>
<td>Helen of Troy Limited</td>
<td>$61.49</td>
<td>$61.49</td>
<td>22.44</td>
<td>2.24 %</td>
</tr>
<tr>
<td></td>
<td>Home Furnishings</td>
<td>Mohawk Industries, Inc.</td>
<td>$137.00</td>
<td>$63.08</td>
<td>18.60</td>
<td>6.66 %</td>
</tr>
<tr>
<td></td>
<td>Homebuilding</td>
<td>NVR, Inc.</td>
<td>$124.46</td>
<td>$201.87</td>
<td>14.16</td>
<td>45.82 %</td>
</tr>
<tr>
<td></td>
<td>Motor Vehicles</td>
<td>Harley-Davidson, Inc.</td>
<td>$64.45</td>
<td>$36.59</td>
<td>15.01</td>
<td>5.74 %</td>
</tr>
<tr>
<td></td>
<td>Other Consumer Specialties</td>
<td>Fossil Group, Inc.</td>
<td>$101.11</td>
<td>$67.06</td>
<td>21.88</td>
<td>6.22 %</td>
</tr>
<tr>
<td></td>
<td>Recreational Products</td>
<td>Polaris Industries Inc.</td>
<td>$140.57</td>
<td>$81.59</td>
<td>48.16</td>
<td>3.84 %</td>
</tr>
<tr>
<td></td>
<td>Tools &amp; Hardware</td>
<td>Snap-on Incorporated</td>
<td>$130.18</td>
<td>$80.53</td>
<td>22.31</td>
<td>4.12 %</td>
</tr>
</tbody>
</table>

The appearance of the cross table can now be configured in context with a simple click.
Header cells may be configured all at once or individually. If you wish the setting to affect only what you have clicked, you need to use the check boxes Style this individually and Align this column individually.

Support for multiple screens in the installed client

Just as in the web client, the installed Spotfire client now lets you analyze data using multiple displays. Just right-click a page tab and choose Open in new window. Example use cases:

- Create a details visualization and put it on a separate screen.
- Brush over several screens to see how marked items in one visualization affect the other visualizations, even on other screens. This is just as before in Spotfire, but now with the possibility to use more than one screen.
- Make several pages of a dashboard visible at the same time for consumers.

The following screenshot shows how marking companies on the left screen lets you see aggregated measures to the right on the same screen, as well as see how each of the marked companies compares in terms of detailed metrics in the four scatter plots on the right screen.
Check box mode in list box filter

For columns with a large number of categorical values, a list box filter is generally the best solution. However, in some cases it is desirable to be able to easily deselect only a few of the categorical values. In such a case, a check box filter is more suitable because it is easy to deselect individual values. However, a check box filter does not handle large numbers of categorical values well. Now, it is possible to combine the advantages of the check box filter with the list box filter by putting the list box filter into check box mode.

In the picture, the list box filter has 737 unique values and is scrollable. It is also easy to clear check boxes for individual values.

To use the check box mode, right-click the filter, and select Show Check Boxes, alternatively select Filtering Scheme Properties, and then select Show check boxes.

This setting is made in Spotfire Analyst, but list box filters with check boxes can be used in all Spotfire clients.

More flexible appearance for box plots

The appearance of the box plot has become more flexible. You can now configure it in more detail, for example, by adding horizontal lines to the whiskers and indicating the median value as a diamond while the average is a dotted line. This enables you to configure the look and feel of your box plot in more detail.
Support for TMS layer in map charts

By supporting Tile Map Services (TMS), Spotfire now enables users to use the basemap background of their choice in Spotfire Analyst.

TMS is a standard used to display map background. Most of the main map providers support TMS.
In addition to Rectangle and Lasso selection, users can now mark data around a location on the map using the new Radius selection in both Spotfire Analyst and Spotfire Business Author.
The Radius Selection distance is displayed within the circle. However, it is only visible when using the default map projection (EPSG:3587 - WGS 84 / Pseudo-Mercator).

**Auto-zoom of map charts in Business Author**

Auto-zoom capability is now available in Business Author. You can configure a map chart to automatically zoom-in to the filtered data.
Data management

There have been several important improvements to the way you can manage your data within Spotfire.

The expanded data panel has been enhanced with the ability to show a visual overview of the data table structure; the Source view. Also, there have been massive improvements to the handling of linked or embedded data in an analysis; you can now combine both linked and stored data in one data table.

Visual overview of data table structures

It is sometimes challenging to understand which data sources and what methods have been used to create combined data tables. To solve this problem, data table data sources and operations can now easily be viewed in the Source view of the expanded data panel. It is possible to see detailed information about operations and preview intermediate resulting data tables after individual steps.

Features

- Both Spotfire Analyst and Spotfire Business Author now offer a source view showing an overview of how an individual data table is defined. For example, the source view shows detailed information about data sources (both in-memory and in-database), add rows operations, add columns operations, and add transformation operations.

- Both clients also allow you to preview the intermediate resulting data table after each individual operation (step) in the tree. This is valuable during development of an analysis, as well as when testing and troubleshooting.

Result table from a data function with added rows
In this example, a data table has been built from a data function result table, and rows have been added from a Microsoft SQL Server Analysis Services connection. The added source data as well as the add rows operation are shown as separate nodes.

**Data table with added rows from multiple sources**

![Diagram showing data table with added rows](image)

Here, rows have been added from two different data sources; one is a Microsoft SQL Server data connection and the other is a local SBDF file.

**Data table with added columns**

![Diagram showing data table with added columns](image)

In this example, columns have been added from a local SBDF file to the Spotfire data table.

**Clipboard data**

![Diagram showing clipboard data](image)

Here is an example where the Spotfire data table originates from the clipboard.
**Data table with added, transformed, data**

In this picture, rows from a data function and an information link have been added to a Spotfire data table, and both of the added sources have been added using some kind of transformation step.

**Combine linked and stored data in the same data table**

Data from different sources are often combined into a single data table in Spotfire. The problem until now has been that if data from one source was embedded, the combined data table also became embedded, and it was no longer possible to refresh data from any source. Now, data from individual data sources can keep their linked settings, even if they are combined with stored (embedded) data.

Spotfire can be configured to use different data loading settings for different data source types and apply proper default settings. An example is Salesforce.com data that is available online and, thus, will always be linked by default. A Microsoft Excel or DXP file uploaded to Spotfire Business Author will not be available after the initial upload and will therefore be stored in the analysis. SBDF files in the library are by default linked, because they are available for data reload. As an end user you simply don’t need to worry about whether data should be embedded or not anymore.

**Data tables can now be part linked, part stored**

Previously, data tables had to use one data loading type, but now parts of the data table can be linked and other parts can be stored in the analysis.

**View data loading settings for a source, both in Spotfire Analyst and in Spotfire Business Author**

From the source view it’s easy to see whether the source data will be reloaded when opening the analysis or whether data has been configured to be stored in the analysis. You can view the Last reload date for a source to find out how old your current data is.
Data loading settings in the Source view

In this image, the Source view is shown in the expanded data panel, and the data loading settings for a Google Analytics source is reviewed.

Configure data loading settings for each source, both in Spotfire Analyst and in Spotfire Business Author

From the source view it is also easy to switch between three different data loading settings:

- **Always new data** – This option is similar to the old version of linked data; nothing from this source is stored in the analysis.

- **Stored data** – This can be useful to avoid having to load row level data from relatively slow and/or large data sources every time an analysis is opened. Even if data is stored in the analysis, it is possible to manually reload the data from the source view.
The new New data when possible option for linked data makes it possible to automatically reload data tables and parts of data tables whenever it is possible, but to use stored data when the source is unavailable.

Easy refresh of individual data sources
Individual data sources can now be refreshed, as long as the source is available. Previously, refresh was made on the entire, final data table, but now you can select to only refresh the necessary parts.

Password protected analysis files are by default not storing any data in Spotfire Analyst
This default behavior can be overridden by users.

New data loading settings dialog when saving analysis files to the Spotfire library
When using Spotfire Analyst to save files to the library, settings for how data is loaded can easily be reviewed. This is useful, for example, when analysis files are to be shared with other users who do not have access to a data source.

Save as Library Item dialog

In this image, the new Review or edit settings option in the Save as Library Item dialog is visible.
Here, a Spotfire Analyst user has clicked the Review or edit settings link and is reviewing data loading settings for the analysis. Two data sources in this analysis are linked (Always new data), one is stored in the analysis (clipboard data) and one is external (in-database data). Note the option to change all data sources to the same loading method. This option is available for all data sources that can be changed to a different alternative. In this case, the external data always fetches new data and the clipboard data is always stored (it has no available source), hence, these two settings cannot be changed.

Split columns into new columns based on column values

Sometimes, column values contain multiple pieces of information. Examples are first and last name, or city and zip code. It's now easy to split columns of this type into separate columns containing the individual values from the original column. The original column can then be hidden from the analysis, not to distract and take up valuable space (in, for example, the Data panel).

Split is also available as a new function in custom expressions and calculated columns, as an alias to the Substring function. For example, the expression "Split([List of names], ",", 4)" splits the column "List of names" into four columns, using comma as the delimiter, and it places the fourth value in a new column.

Features

- You can automatically, without manual configuration of the split, split columns using commonly used separators.
- A split operation automatically adds new columns to an appropriate category (using the heuristics of the add columns function).
- You can manually configure the splitting of a column by modifying:
  - The number of columns that should be created.
  - The separator character.
- The number of characters to ignore in the beginning or end of the original string value.
- Whether to split from the beginning or the end of the original string.
- You can determine whether the source column should be hidden or not (the option to hide the source column is offered if you try to delete the original column).
- You can split all in-memory columns.
- You can split in-database columns added using the Microsoft SQL Server connector.

In the picture below, a column with names, separated by comma, has automatically been suggested to be split into four new columns.

Here, a column with longitudes and latitudes, separated by comma, is automatically suggested to be split into two new columns.
In the picture below, a column with first name and last name, separated by space, is automatically suggested for a split into two new columns.
Columns containing months or days of the week are now categorized as Time

The automatic categorization of columns containing months or days of the week has been improved. Integer columns called Month or ending with the word "month" and have data containing the values 1-12 are automatically categorized as Time.

String columns containing names of months are automatically categorized as Time.

Integer columns named Day or ending with the word "day" and have data containing the values 1-31 are automatically categorized as Time.

String columns containing names of days are automatically categorized as Time.

These improvements cause months and days in these types of columns to be automatically sorted correctly (not alphabetically) and they make the columns easier to find in the Data panel. The categorization is also used to give better recommendations for new visualizations.

String columns support local culture settings.

Unpivot from the data panel

Data can be organized in different ways, for example, in a short/wide or tall/skinny format, but still contain the same information. Often, it is easier to visualize data organized in a tall/skinny format, that is, when the values are collected in just a few value columns. Unpivoting is one way to transform data from a short/wide to a tall/skinny format, so the data can be presented the way you want it in the visualizations. The Data panel (both in Spotfire Analyst and Spotfire Business Author) now has a built-in unpivot tool on the right-click menu.

In the picture below, we see a data table with sales figures per product, year and sales representative:
The Unpivot function is used by clicking on the columns to unpivot (the value columns) in the Data panel, and then right-clicking and selecting **Unpivot** from the pop-up menu:
The result, the unpivoted data table, can then directly be reviewed in the expanded data panel:

In the picture below, the Unpivot operation is reviewed in the Source view of the expanded data panel. Note that the unpivot operation is not performed on the final data table (the node to the far right), but on the source data itself. The Unpivot operation on the data source is indicated by the blue circle on the data source node, and details about the operation are shown in the Information field, when the Unpivot step is selected.
Sales summary per year and sales rep

MOCK_DATA (1).csv

Added transformations:
- Transformation name: Unpivot
- Columns to pass through: Product, Sales rep
- Category column data type: String
- Value column data type: Currency
- Empty values included: Yes
Data connectors

There are several updates to the Spotfire data connectors. Some highlights in 7.6 are access to data from Salesforce.com and Google Analytics directly from Spotfire Business Author (as well as from Spotfire Analyst), support for advanced connection parameters and stored procedures in many connectors, as well as support for SAP BW 7.4.

New Salesforce.com connector in Spotfire Business Author

TIBCO Spotfire Business Author now supports direct access to, and analysis of, Salesforce.com data, without using the installed Spotfire Analyst client.

The support includes creation of new Salesforce.com connections; selection of tables, reports and columns, as well as the loading of data into Spotfire. Sandbox URLs are supported, making it possible to work with data from alternative Salesforce.com databases. Data limitation is possible by creating prompts for the end users.

*The Salesforce.com access point*
The Load data from Salesforce.com dialog with a report added

In this example, a Spotfire Business Author user has selected to add data from Salesforce.com to an analysis, then searched for a report, and added it to the Spotfire view. A progress indicator is displayed as column metadata is loaded.
The Load data from Salesforce.com dialog showing the columns in the selected view

The added report has also been selected in the middle part of the dialog. The columns in the selected report are shown to the right.
The option **Let end users select values** has been selected on the column named ‘BillingCountry’. This means that a prompt will be shown each time the analysis is opened, and the user can then select the countries of interest, instead of loading data for all the available countries. In this case a multiple selection prompt has been chosen, and no max value has been defined, which means that the user can select as many countries as desired.
The prompt dialog shown when the analysis is opened

This image shows the prompt that is displayed when the end user opens the analysis. The end user can select one or more 'BillingCountry' unique values.
New Google Analytics connector in Spotfire Business Author and Spotfire Analyst

TIBCO Spotfire Business Author and TIBCO Spotfire Analyst now support direct access to, and analysis of, data from Google Analytics.

The Google login dialog

A Spotfire user has selected to add data from Google Analytics, and the login dialog is displayed. The user will also need to allow Spotfire offline access to data.
A Spotfire user has selected a Google Analytics view named 'My Google Analytics View'. Note that the Date dimension is automatically added, but can be removed if saving a dimension is unnecessary.
The Load data from Google Analytics dialog, showing search results

In this image, the user has entered a search string, and the metrics and dimensions containing the letters “sess” are shown.
The Load data from Google Analytics dialog, showing the prompt popover

In this image, the Date range pop-over is open, and the option Let end user specify range has been selected. This means that a prompt will be shown when the analysis is opened, and the end user can then select which date range to load data from. This is a way of limiting data in size and relevance.

**Improved Microsoft SQL Server Analysis Services connector**

Localized data can now be analyzed by choosing a preferred language when connecting to the data source.
**Improved SAP BW connector**

The SAP BW connector now supports NTLM, as well as version 7.4 of SAP BW.

**Other improvements in TIBCO Spotfire connectors**

The table below summarizes the updates made to the connectors in Spotfire 7.6.

<table>
<thead>
<tr>
<th>TIBCO Spotfire Connector</th>
<th>Support for stored procedures</th>
<th>Support for fast metadata load</th>
<th>Advanced parameters</th>
<th>Split columns in-db</th>
</tr>
</thead>
<tbody>
<tr>
<td>Amazon Redshift</td>
<td>Not supported by the database</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Hortonworks</td>
<td>Not supported by the database</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Microsoft SQL Server</td>
<td>Yes (Supported from version 7.0.)</td>
<td>Yes (Supported from version 7.0.)</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Oracle</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Oracle MySQL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Pivotal Greenplum</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Pivotal HAWQ</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>PostgreSQL</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
<td></td>
</tr>
<tr>
<td>Teradata</td>
<td>Yes (Internal)</td>
<td>Yes</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Amazon Redshift

The Amazon Redshift connector now supports faster loading of metadata. An Advanced tab has also been added to the login dialog, making more connection parameters available.
**Hortonworks**

The Hortonworks connector now supports faster loading of metadata. An *Advanced* tab has also been added to the login dialog, making more connection parameters available.

![Hortonworks Connection](image)

**Microsoft SQL Server**

It is now possible to split in-database columns added using the Microsoft SQL Server connector. See [Split columns into new columns based on column values](#) for more information.
Oracle

The Oracle connector now supports stored procedures and faster loading of metadata. An Advanced tab has also been added to the login dialog, making more connection parameters available.

Oracle MySQL

The Oracle MySQL connector now supports stored procedures and faster loading of metadata. An Advanced tab has also been added to the login dialog, making more connection parameters available.
Pivotal Greenplum

The Pivotal Greenplum connector now supports stored procedures and faster loading of metadata. An Advanced tab has also been added to the login dialog, making more connection parameters available.
**Pivotal HAWQ**

The Pivotal HAWQ connector now has support for stored procedures and faster loading of metadata. An **Advanced** tab has been added to the login dialog, making more connection parameters available.

![Pivotal HAWQ Connection](image)

**PostgreSQL**

The PostgreSQL connector now has support for stored procedures and faster loading of metadata. An **Advanced** tab has been added to the login dialog, making more connection parameters available.

![PostgreSQL Connection](image)
Teradata

The Teradata connector now supports internal stored procedures and faster loading of metadata.