



## Pentaho User Console Guide



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# Introduction

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The Pentaho BI Server is a Web-based framework that leverages elements of Pentaho Analysis and Pentaho Reporting to provide easy-to-use tools for creating and sharing reports and dashboards.

The BI Server Enterprise Edition includes two graphical user interfaces: The Pentaho User Console, which includes Interactive Reporting for quick and easy data-driven reports, Pentaho Analyzer for ROLAP-based reports and charts, and Pentaho Dashboard Designer for informative overviews of key performance indicators; and the Pentaho Enterprise Console, which gives sysadmins, IT managers, CIOs, and database administrators fine-grained control over most aspects of BI Server configuration, management, and security.

The purpose of this guide is to teach business users how to use the Pentaho User Console. The instructions below assume that the BI Server has been properly configured for users, roles, and data sources through the Pentaho Enterprise Console. If you need help configuring the BI Server, refer to the *Pentaho BI Suite Administrator's Guide*.

# First Steps

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Your system administrator, IT manager, or supervisor should have provided you with a Web address and login credentials for the Pentaho User Console. If not, now is the time to inquire about them.

## How to Log Into the Pentaho User Console

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Follow these steps to log into the Pentaho User Console:

1. Open a Web browser and type in the address of the Pentaho server.  
You'll see an introductory screen with a **Login** button in the middle.
2. Click **Login**.  
A login-related pop-up appears.
3. Type your user name and password in the appropriate fields and click **Login**.

You are now logged into the Pentaho User Console, and ready to start creating and running reports and dashboards.

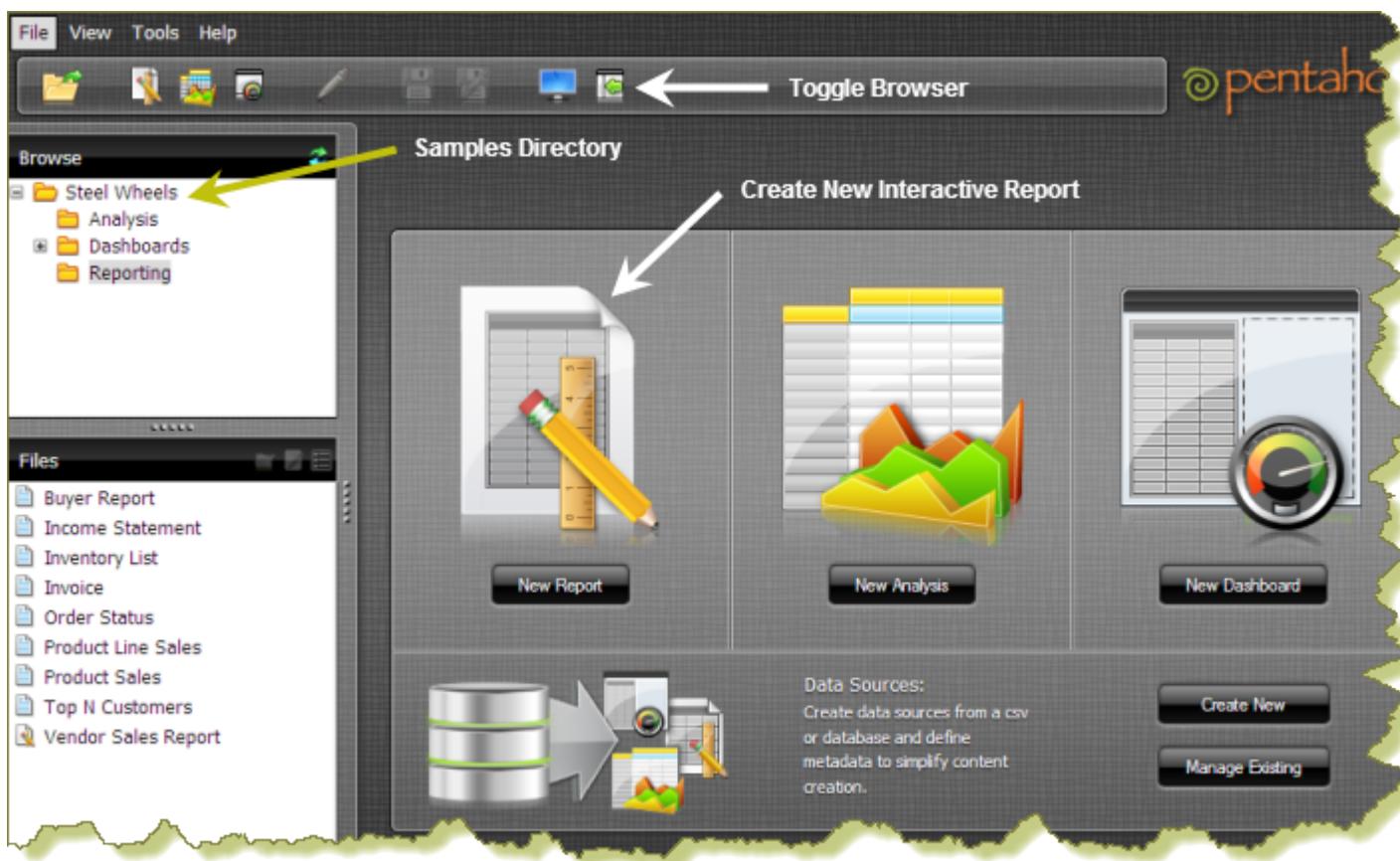


## Navigating the Pentaho User Console

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The Pentaho User Console was designed to be intuitive to users accustomed to standard file managers like Windows Explorer, and Web browsers like Firefox.

The first thing you will see when logging in is the quick launch, shown below:



 **Note:** If you do not have a Pentaho Dashboards Enterprise Edition entitlement, the **New Dashboard** button will instead be **Manage Content**, which will open a dialog box that offers quick availability to the edit, share, and schedule functions for existing content.

Click one of the three icons in the center of the screen to create a new ad hoc report, Pentaho Analyzer report, or dashboard.

The toolbar near the top of the page also contains icons for starting new Interactive Reports, Pentaho Analyzer reports, and dashboards, along with a button to print the current report or Pentaho Analyzer report, and to open a previously saved solution.

The menu above the toolbar performs these same functions, plus administrative actions if you are logged in as an administrator, and also offers access to My Workspace and external links to help and support resources.

The three buttons on the quick launch page appear when you log onto the Pentaho User Console for the first time, and when you close all tabs in the solution browser.

You can change views between My Workspace and the solution browser at any time by clicking the rightmost icons in the top toolbar, or through the **View** menu.

The navigation pane on the left allows you to browse through your existing solution folders. Solutions are content files such as dashboards and reports inside the folder. You can create and delete solution folders by right-clicking inside the navigation pane. You can also examine information associated with solution folder contents by right-clicking and selecting **Properties**.

## Creating a New Solution Folder

Follow the instructions below to create a new solution folder in which to save solution (content) files such as dashboards, ad hoc, and analyzer reports.

1. Click  (Toggle Browser) so that you can see navigation pane (Browse) on the left.
2. Scroll down to the end of the list of solution folders and right-click to display the **New Folder** dialog box.

 **Note:** If you want to create a sub-folder inside an existing solution folder, right-click on the existing folder and select **New Folder**.

3. In the **New Folder** dialog box, type a name for your folder and click **OK**.

 **Note:** The repository is refreshed. This action may take a few seconds to complete.

The new folder appears in the navigation pane.

## Deleting a Solution Folder

Follow the instructions below to delete a solution folder.

1. Click  (Toggle Browser) so that you can see navigation pane (Browse) on the left.
2. Scroll down to the solution folder you want to delete, right-click, and select **Delete**. You will be asked to confirm your delete request.
3. Click **OK**.

 **Note:** The repository is refreshed. This action may take a moment.

The folder disappears from the navigation pane.

## Using My Workspace

My Workspace is a graphical overview of the reports and Pentaho Analyzer reports you've created and scheduled. Click the triangle on the left side of each category to see the elements it contains.

Reports that you've created or have access to will have options to the right of each report listing to suspend or run them, and schedules have options to suspend, run, or delete them.

### Waiting

This category lists all private schedules that will run in the future. Clicking **Cancel** will delete the schedule. If you want to suspend a schedule, you should use the **Suspend** function of the My Schedules list instead.

### Complete

Each report that has been run via a schedule will show up in this list. Every time the schedule executes, it overwrites that report's previous entry in the Complete list.

### My Schedules

This category contains a comprehensive list of your private schedules, including those that are not currently waiting to run. This will be identical to your Waiting list unless you have suspended any of your schedules.

### All Schedules

This is a combined list of public and private schedules under your control. It is only viewable by administrator-level users.

### Public Schedules

This is a list of all public schedules set by the administrator from the Pentaho Enterprise Console. You can run a public schedule manually, but you cannot change its interval through the Pentaho User Console.

# Creating Reports

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**Restriction:** Interactive Reporting and Analyzer are exclusive to the BI Suite Enterprise Edition, and require Pentaho Reporting and Pentaho Analysis Enterprise Edition licenses, respectively.

The Pentaho User Console provides you with two reporting components: Interactive Report and Analyzer Report. Each of reporting component fulfills a specific reporting need. Read the description below to decide which reporting component is right for you:

If	Then
<p>You want to create a quick operational or financial report that answers an immediate business question such as, "Who are my top performers this week?" or "What are the current inventory levels for product X? ..."</p> <p>You want a report that looks professional and provides you with significant control over formatting elements such as fonts, font color, column widths, background colors, column sorting, and more...</p> <p>You want to create a quick prototype report that you can later customize using Pentaho Report Designer...</p>	Use <b>Interactive Report</b> .
<p>You want to analyze business data quickly in an interactive environment that focuses on the interaction, exploration, and visualization of data...</p> <p>You want to perform advanced sorting and filtering on your data; you want to drill through reports into the underlying data...</p> <p>You want to see chart visualizations that include conditional stop-lighting...</p>	Use <b>Analyzer Report</b> .



**Important:** The old ad hoc reporting tool is still available for customers who need to edit legacy reports, however, it has been deprecated and will be phased out in a future release.

## Using Pentaho Interactive Reporting

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Pentaho Interactive Reporting provides you with a Web-based, drag-and-drop interface that allows you to add elements to your report layout quickly and easily. Among other things, common formatting features such as font selection, column resizing, column sorting, column heading renaming, copy/paste formatting, and unlimited undo/redo capability are available from the Interactive Reports formatting menu and toolbar. The reports you create can be output as HTML, PDF, CSV or Excel files. Additionally, you can display your report in a dashboard.

Before you can create an Interactive Report you must have access to a data source provided by an administrator. The data source for an Interactive Report is based on a metadata model. A metadata model presents the data you use in reports in business terms; for example, users see Customers and Orders instead of CUST\_TBLE or ORDR\_TBLE. Pentaho Metadata removes the need for you to know query languages, such as SQL. Queries are generated based on the metadata selection. The metadata model allows you to create an Interactive Report without knowing the complexities of the database structure. Some examples of metadata include the names of tables and columns. Also included are the relationships between columns and tables, security, and access rules.

A metadata model is created using Pentaho Metadata Editor or generated by the Data Source Wizard (either through a manually-entered SQL query, an auto-query written against a defined set of tables and joins in a relational database, or a CSV file).

 **Note:** For information about data sources see [Adding a Data Source in the Pentaho User Console](#) on page 84.

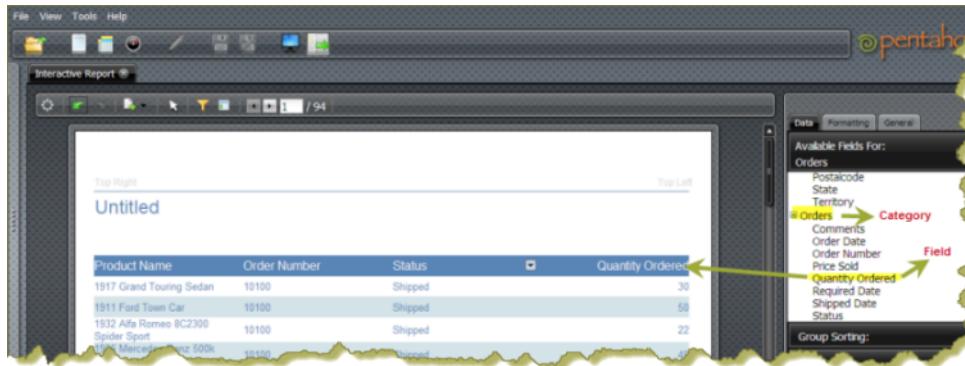
## Selecting a Data Source

The first step to creating an Interactive Report is selecting a data source. Data sources are provided to you by an administrator or authorized user. For information about creating data sources, see [Adding a Data Source in the Pentaho User Console](#) on page 84. Follow the instructions below to select a data source.

1. In the Pentaho User Console, go to **File -> New -> Interactive Report**. Alternatively, click the **New Report** icon on the Pentaho User Console Quick Launch page, or, click the **New Interactive Report** icon on the console toolbar.  
The **Select Data Source** dialog box appears.
2. Select the Data Source for your report and click **OK**.  
The Interactive Reporting interface appears.

## Creating a New Interactive Report

When you first open Interactive Report, the categories and fields associated with the data source you selected are displayed in the right pane under **Data**. You can immediately begin to build the report by clicking and dragging fields onto the report canvas. Interactive Reports provides you with live rendering of your report which means that you can see the report layout as you build it. Formatting changes can be made on the fly.



Follow the instructions below to begin creating a new report.

1. To add your first column, click and drag a field onto the report canvas.

The field becomes a column in your report. Repeat this step until you have all the columns of your report in place.

If you want to make sure subsequent columns appear in correct order, look at the vertical green line that appears to the right or left of the first column. If you drag the selected field to the left and the green line appears, the new column will appear to the left of the original column. If you drag the selected field to the right and the green line appears, the new column will appear to the right of the original column.

 **Note:** Do not worry if your column does not get placed correctly on the report canvas. To correct a placement, drag the report header to the appropriate location. Click the undo/redo buttons in your toolbar if you make a mistake.

2. If applicable, add one or more groups to your report. The grouping feature in Interactive Report allows you to group the data in your report by one or more fields. For example, you could group your data

by geographic region, by product line, or both. If the field you want to group by is already a column in your report, click the column header and drag it up above the other headers in your report. Release the mouse button when the horizontal green line appears. You can also drag a field from the right pane and place it above the report headers to create your group.

Sometimes you need to group the data in your report by more than one field to get the data in the order you want it to display. An example of adding more than one group is shown below. The report data grouped by **Territory** first and then by **Product Vendor**. To nest a group, as shown in the example, drag the field or column header beneath the original group.

Notice the small arrows next to the group name. In this example, the arrows point up indicating that both groups are sorted in **Ascending** order. To change the sort order to **Descending**, click the arrow next to the group name or make the change, under **Group Sorting** in the right pane.

Product Name	Order Number	Status	Quantity
1997 BMW R 1100 S	10399	Shipped	
The Schooner Bluenose	10360	Shipped	

You can save your report at this point or continue customizing it. See [Saving Your Interactive Report](#) on page 18 for instructions.

## Adding Filters to an Interactive Report

Filters are used to restrict or limit the data that is presented in a report. An example is a filter that limits sales figures on a report to the First Quarter of the year.

There are two filtering options in Interactive Report: **Select from a list**, which allows you select filter value from a list, or **Match a specific value**, which requires you to type a filter value in the available text box and specify a constraint. The screenshot below displays four filters. The values for the first filter, Territory, were selected from a list. The second and third filters have values, (150,000, 600,000), that were entered manually and assigned a constraint (Total Greater than or Equals, Total Less Than). Notice that fields that are filtered on can be quickly identified by the filter icon next to the field name under the Data tab. The number of filters added to the report appears next to the filter icon in the toolbar.

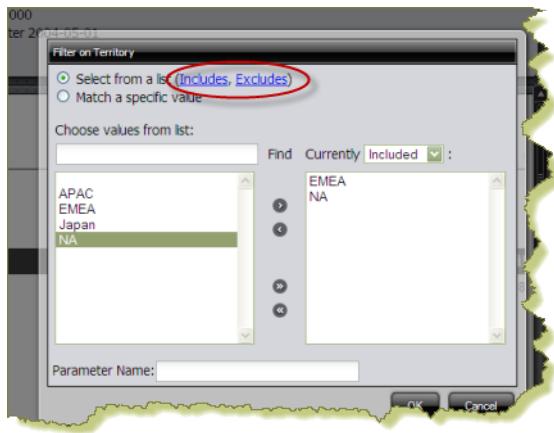
Product Line	Total
Planes	\$562,221.25
Ships	\$364,928.40
Trucks and Buses	\$524,352.35

## Adding a Filter (Select from a list)

Follow the instructions below to add a filter in which values are selected from a list:

1. In the toolbar, click  (Filters).  
A Filters box appears above the report.
2. Click and drag a field from the right pane into the **Filters** area.  
The **Filters** dialog box opens.
3. In the **Filters** dialog box, click **Select from list**.

You can immediately designate all the values in the list to be included in or excluded from the filter by clicking **Includes** or **Excludes**.



A list of values appear in the left pane of the dialog box.

4. Select one or more values from the list box on the left; click  (Add Selected) to move the value to the list box on the right.
-  **Note:** If necessary, you can designate the values in the right pane to be included or excluded by selecting Included or Excluded from the list next to **Currently**.

If the list of filter values is long, you may not see the value(s) you want include or exclude from the filter. In the **Choose value from list** text box, enter the initial letters of the value you are searching for and click **Find**. Your entries are case-sensitive.

You can remove values from the list by clicking  (Remove Selected). To add or remove all filter values click , (Add All), , (Remove all), respectively.

5. Click **OK** to save your filter.

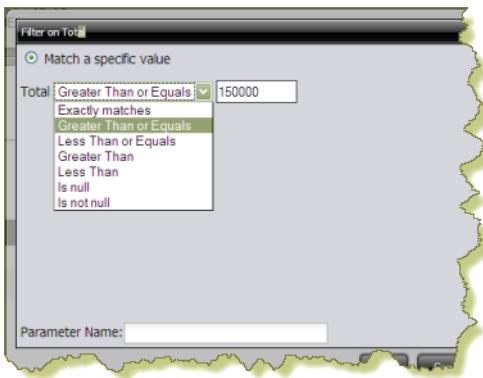
The report display updates as soon as the filter is added. The filter appears in the Filter box and an icon displays next to the field name under the **Data** tab. Also, the number of filters added to the report appears next to the filter icon in the toolbar.

You can edit the filter by clicking  (Edit). You can delete the filter by clicking .

## Adding a Filter (Match a specific value)

Follow the instructions below to add a filter that contains Numeric type values:

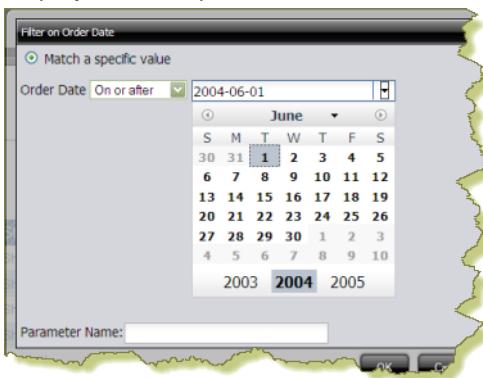
1. In the toolbar, click  (Filters).  
A Filters box appears above the report.
2. Click and drag a field from the right pane into the **Filters** area.  
The **Filters** dialog box opens.
3. Click **Match a specific value**.
4. Next to the field name, select a constraint from the list, then enter the value in the available text box.



## Adding a Filter on Date Fields

Follow the instructions below to add a filter that matches a specific value:

1. In the toolbar, click (Filters).  
A Filters box appears above the report.
2. Click and drag a **date field** from the right pane into the **Filters** area.  
The **Filters** dialog box opens.
3. Next to the field name, select a date constraint from the list, then click the small arrow on the right to display the date picker.



**Note:** To create a "date range" you must add two filters: one for the start date, and one for the end date.

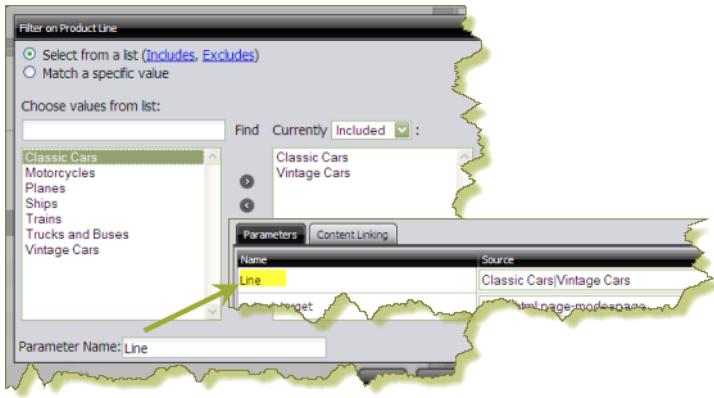
4. In the date picker select your date.
5. Click **OK** to save your filter.

The report display updates as soon as the filter is added. The filter appears in the Filter box and an icon displays next to the field name under the **Data** tab. Also, the number of filters added to the report appears next to the filter icon in the toolbar.

You can edit the filter by clicking (Edit). You can delete the filter by clicking .

## Flagging a Filter Constraint for Use as a Dashboard Parameter

You can flag a filter constraint for use as a parameter. The parameter name will appear under the Parameters tab in Dashboard Designer when you place the report into a dashboard panel. The parameter(s) also appear and can be edited when working in Report Designer



1. After you create your filter, type the parameter name in the **Parameter Name** text box.
2. Click **OK**.
3. Save your report.

The parameter is ready to be used in Dashboard Designer. To see if the parameter appears in Dashboard Designer, insert your report into a dashboard panel. The parameter name will appear under the **Parameters** tab.

## Applying an Aggregate Function

You can assign an aggregate function to columns that contain numeric and non-numeric values in your report. Aggregate functions return a single value, (for example, Average, Maximum, Minimum) calculated from the values in a column. For example, the sum of a column results from adding all the values in the column.

1. Click the down arrow next to a report column that contains numeric values.
2. Select **Aggregation** from the menu, then select your aggregation type.

Function Name	Description
<b>None</b>	No aggregate function assigned
<b>Average</b>	Calculates the average value in a given column
<b>Count</b>	Counts the items in a column
	 <b>Note:</b> Count does not require a numeric value
<b>Count Distinct</b>	Counts the distinct occurrences of a certain value in a column
	 <b>Note:</b> Count Distinct does not require a numeric value
<b>Max</b>	Identifies the highest or largest value in a column
<b>Min</b>	Identifies the lowest or smallest value in a column
<b>Sum</b>	Calculates a running total sum of the specified column

The values in the column update.

3. Save the report.

## Applying a Summary Function

You can assign a summary function to columns that contain numeric values in your report. A summary function is a summarization technique that performs calculations on values in columns, groups, or in the entire report.

1. Click the down arrow next to a report column that contains numeric values.
2. Select **Summary** from the menu, then select your summary type.

Function Name	Description
<b>None</b>	No summary function assigned
<b>Average</b>	Calculates the average value in a given column
<b>Count</b>	Counts the items in a group or report
	 <b>Note:</b> Count does not require a numeric value
<b>Count Distinct</b>	Counts the distinct occurrences of a certain value in a group or report
	 <b>Note:</b> Count Distinct does not require a numeric value
<b>Max</b>	Identifies the highest or largest value in a column
<b>Min</b>	Identifies the lowest or smallest value in a column
<b>Sum</b>	Calculates a total sum of the group or report (group level, and running total in the report footer)

The numeric values in the column update.

3. Save the report.

## Disabling Auto Refresh Mode in Interactive Reports

When you disable the **Auto Refresh** mode in Interactive Report you can design your report layout first, including calculations and filtering, without querying the database until you are done. Once the report layout is complete, you can re-enable Auto Refresh mode. Data retrieval will occur once and your report will display the requested data. Disable auto refresh if you want to reduce the number of queries executed against the data source or if you know that the data source returns data slowly.

To disable Auto Refresh, click the small icon in the upper right corner of the **Data** tab to open the Query Setup dialog box, then disable the **Auto Refresh** option.

## Enabling Row Limit and Query Timeout

You can limit the number of rows that are displayed in your report. You can also limit the number of seconds a query runs before a timeout occurs. Imposing row limits and timeouts on queries is important to avoid out of memory errors or processes that consume too many resources on the database server.

Both options are available in the **Query Setup** dialog box. In the **Data** tab, click the small icon on the upper right corner to open the Query Setup dialog box. Make your changes as needed and close the dialog box when you are done.

## Refining Your Report

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Now that you have defined the data for your report, you are ready to begin refining some of the formatting elements in your report.



**Note:** See the *Interactive Reporting Quick Reference* on page 20 section for an overview of formatting actions.

### Editing Report Headers and Footers

To create the page headers, double click on the words, **Top Left**, (or **Top Right**), in the upper left or right corner of the report.

A pop-up dialog box appears. You can:

- Delete the default wording, (Top Left/Right), in the text box and type a new header and press <ENTER>.
- Click **Date** and press <ENTER> to insert a date and time stamp in the page header. You can customize the date and page count displays by adding your own text, such as, **Today: \${report.date}** instead of using the default, **\$(report.date)**.
- Click **#/Pages** and press <ENTER> to insert the number of pages in the report as in 1/1 (page one of one).

Repeat this process for the **Bottom Right** and **Bottom Left** page footers.

### Editing the Report Title

To edit the report title, double-click **Untitled** and type a title for your report in the available text box; press <ENTER>.

### Reordering and Adjusting Columns

To reorder your column, select the column you want to move and drag it to your desired location. Alternatively, select the column you want to move, click the down-arrow and select **Move** (Right or Left) from the menu.

To adjust your column width, select the column, then click on the vertical line that divides your column headers. A small arrow appears. Move the arrow left or right to adjust your column width.

## Formatting Your Report

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Formatting options such as font color, size, and type, page justification, background color options, text alignment and more, are available under the **Formatting** tab in the right pane. These options are standard and self-explanatory. The sections that follow provide information about a subset of formatting options.

### Changing the Report Template

To change a report template, click the **General** tab then use the right and left arrows to page through the available templates. Click **Select** to see all templates. Answer **Yes** or **No** when you are asked if you want to keep any custom formatting you have applied to the report. The report display updates with the new template.

### Changing Page Format and Orientation

By default Interactive Report presents you with a page in Letter format (8.5" x 11"), a format used in the United States. In addition, the report page displays in portrait mode. You may need to change both the format and the page orientation.

To change page format, click the **General** tab, then click **Page Setup**. In the Page Setup dialog box, choose the correct page format for your report from the list. Page margin measurements are shown in the lower portion of the dialog box. You can adjust the measurements as needed. Click **OK** to save your changes.

To change page orientation, click the **General** tab, then click **Page Setup**. In the Page Setup dialog box, click on the appropriate icon. Click **OK** to save your changes.

## Changing a Column Header Name

To change a column header name, double click on the column header to display the input text box. Type the new header name into the text box and press <Enter>.

## Applying Copy/Paste Formatting

Use the **copy/paste** options in the under the **Formatting** tab to copy the formatting of one column to one or more columns in your report. Select the column that contains the formatting you want to copy then click (Copy Formatting). Select the column you want to apply formatting to and click (Paste Formatting).

## Changing the Format of Numeric Values

If your column contains numeric values, you may need to change the formatting associated with those values. Select the column that contains the numeric values that require a formatting change. Click the **Formatting** tab in the right pane. Under **Numeric Format**, select the correct numeric format for the values in your column.

 **Note:** In some instances, you will notice that formatting has already been applied to your numeric values. For example, monetary symbols are already included in sales figures. This formatting is inherited from the metadata associated with the data source and can be overridden, if necessary.

## Saving Your Interactive Report

---

Follow the instructions below to save your interactive report:

1.



Click  (Save) in the Pentaho User Console toolbar.

The **Save** dialog box appears.

2. In the **File Name** text box, type a file name for your report.

3. Browse to locate the folder in which to save your report.

The path to the folder which will contain your report appears in the **Location** text box.

4. Click **Save**.

 **Note:** An error message appears if you try to save your report in a folder to which you do not have save permission.

5. If you are done making changes, close the report.

## Editing Your Interactive Report

---

Follow the instructions below to edit your interactive report:

1. Browse the solution repository to locate your report.

2. Right-click the report name and select **Edit**. Alternatively, double-click the report name to open it, then

click  (Edit) in the Pentaho User Console toolbar.

3. Edit your report as needed.

4. Save your report.

## Interactive Reports and Report Designer

---

Reports you create using Interactive Report can be opened in Report Designer for further customization. Pentaho Report Designer is the most comprehensive report design tool in the Pentaho BI Suite Enterprise Edition and provides you with advanced formatting capabilities and the ability to connect to disparate data sources. Charts and other report elements, including sub-reports can be added to a basic report. Below is a subset of Report Designer capabilities:

- Connect to diverse data sources including relational data, Pentaho Analysis, Pentaho Metadata, flat files, java objects, or stream data directly from Pentaho Data Integration transformations to design reports
- Create and view user prompts, including dynamic cascading prompts
- Add data visualizations such as charts, barcodes, sparklines, survey scales, and more
- Localize reports easily to support multi-lingual deployment with a single report file
- Embed HTML and JavaScript controls for dynamic and interactive online reports
- Fine-tune reports using the built-in interactive preview mode

 **Important:** Once you customize an Interactive Report using Report Designer, you can no longer edit the report using the Interactive Report module in the Pentaho User Console.

Interactive Reports are saved as **.prpti** files. Report Designer report files have a **.prpt** extension. In the Pentaho User Console, Interactive Reports are displayed with a special icon that differentiates them from reports that are created in Report Designer.

If you want to create a new Interactive Report template, you must create it in Report Designer and place the template in the Interactive Reports Templates directory.

For more information about enhancing Interactive Reports and building Interactive Report templates in Report Designer, refer to the *Report Designer User Guide* available from the [Pentaho Knowledge Base](#).

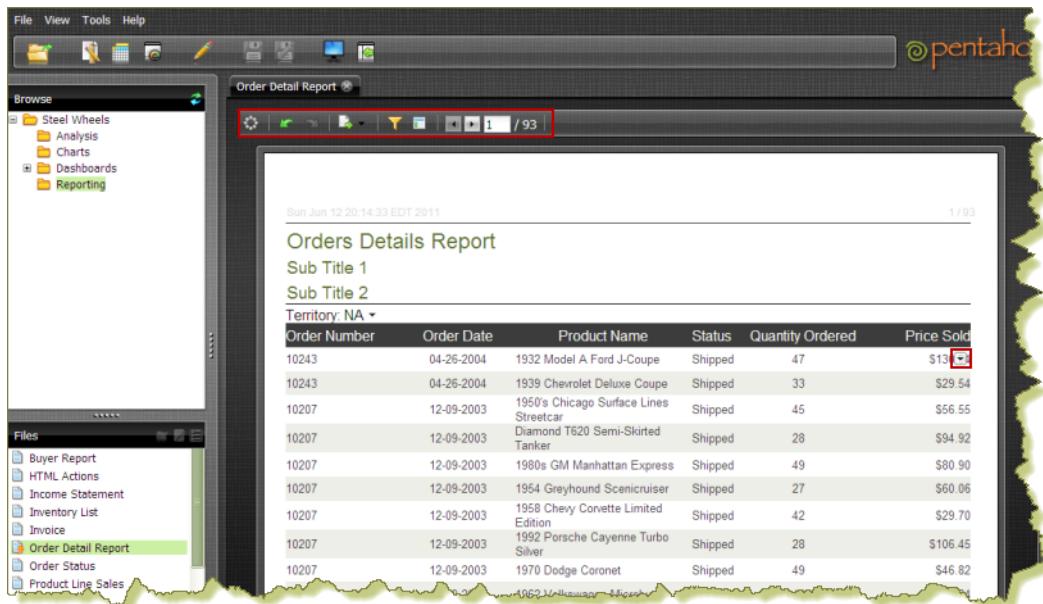
## Examining an Interactive Report in View-Only Mode

---

After you save your interactive report, browse for it in your solution repository. An Interactive Report is quickly identified because its associated icon is unlike the icons of other repository content. Once the report appears, notice that there is a toolbar that allows you or a report consumer to perform certain limited actions on the report. Hover over the icons in the toolbar to see what actions you can take. These include, but are not limited to...

- Exporting a report as a PDF, HTML, Excel, or CSV file to be saved locally
- Adding filters for viewing report data
- Rearranging the report layout, such as moving, sorting, and removing columns from the report
- Editing page headers and footers
- Editing the report title

You cannot save the changes you have made to a report when you are in View-only model; however, you can click  (Edit) in the Pentaho User Console toolbar to return to edit mode and save the changes you made.



## Interactive Reporting Quick Reference

This Quick Reference section provides you with an at-a-glance overview of common Interactive Reporting actions.

### General

Action	Description
To hide tips on startup...	Disable <b>Show tips on startup</b> in the lower right corner of the report canvas.. Alternatively, disable <b>Show tips on startup</b> in <b>Preferences</b> under the <b>General</b> tab.
To show tips on startup...	Enable <b>Show tips on startup</b> in the lower right corner of the report canvas.. Alternatively, enable <b>Show tips on startup</b> in <b>Preferences</b> under the <b>General</b> tab.
To hide tips altogether...	Click <b>Hide Tips</b> in the lower right corner of the report canvas.
To disable menu buttons ...	Disable <b>Enable menu buttons</b> in <b>Preferences</b> under the <b>General</b> tab.
To enable menu buttons (down arrow next to a report column)...	Click <b>Enable menu buttons</b> in <b>Preferences</b> under the <b>General</b> tab.
To enable <b>Select Distinct</b> ...	Click the <b>Query Setup</b> icon in the <b>Data</b> tab to prevent the report from displaying duplicate values in columns. Enabling this option will list the different (distinct) values in a table, exclusively.

Action	Description
To export a report...	Click  (Export) and select your export file type: PDF, Excel, CSV or HTML; exported files can be saved locally on your computer.

## Fields and Columns

Action	Description
To place a field on the report canvas...	Click and drag a field from the right pane to the report canvas. Alternatively, double-click a field name to place it onto the report canvas.   <b>Note:</b> For quick placement, click  (Layout) in the toolbar and drag the fields into the <b>Columns</b> area. Alternatively, right-click a field name and select, <b>Column</b> .
To place multiple fields on the report canvas...	Press the < <b>CTRL</b> > key and select multiple fields in the right pane, then drag the fields onto the report canvas. The fields will become columns in the report in the order in which they were selected.
To move columns left or right...	Click the report header and move the column to the desired location. Alternatively, right-click on the column header and select <b>Move -&gt; Right</b> (or Left). Columns can also be moved as needed by clicking  (Layout) in the toolbar and dragging the columns to the desired position.
To adjust column width...	Click the column header to select it. Move your cursor to the right or left until a small horizontal line appears. Drag the line to the desired width.
To assign column width (percentage)	Enter a value in the <b>Column Width</b> text box under the <b>Formatting</b> tab.
To change the column name...	Double-click the column name and type the new name in the available text box.
To remove a column...	Click and drag the column header to the right and place the column into the trash can.

## Grouping

Action	Description
To add a group to a report...	Click and drag a group field from the right pane up above the column headers in the report. Release the mouse button when the green horizontal line appears.

Action	Description
	<p>If the group field you want is a column in the report, drag the column name up above the column headers in the report. Release the mouse button when the green horizontal line appears.</p> <p> <b>Note:</b> For quick placement, click  (Layout) and drag the fields into the <b>Groups</b> area. Alternatively, right click on the field name you want as your group and select, <b>Group</b>.</p>
To add more than one group to a report...	Click another group field from the right pane and drag it above or below the previously placed group.
To change the sort order of a group...	<p>Click the small arrow to the right of the group name to change the sort order.</p> <p>Alternatively, assign the sort order under <b>Group Sorting</b> in the right pane.</p>

## Filtering

Action	Description
To add a filter...	<p>Click  (Filters) in the toolbar, then drag a field into the Filter area.</p> <p>Alternatively, right click on the field name you want to filter on, (under the <b>Data</b> tab), and select, <b>Filter</b>.</p> <p>Alternatively, select a column name, click to open the context menu and select, <b>Filter</b>.</p>
To edit a filter...	<p>Click  next to the filter name to open the Filter dialog box. Make your changes and click <b>OK</b>.</p> <p>Alternatively, select a column name, click to open the context menu and select, <b>Filter</b>.</p>
To delete a filter...	Click <b>Filters</b> in the toolbar, then click  (Delete) next to the filter name.
To select a filter value from a list...	Click <b>Select from list</b> in the <b>Filter</b> dialog box.
To find a filter value in a list...	Type the first few characters of the value and click <b>Find</b> . Entries are case-sensitive.
To include or exclude a filter value from a list...	<p>Click <b>Includes</b> or <b>Excludes</b> link next to <b>Select from list</b>.</p> <p>Alternatively, make a selection next to <b>Currently</b> on the Filter dialog box.</p>
To specify a specific filter value...	Click <b>Match a specific value</b> then select a constraint from the list.

## Formatting

Action	Description
To undo or redo previous actions...	Click  (Undo) or  (Redo) in the toolbar.
To change the font type in a column header...	Select the column header. Under the <b>Formatting</b> tab, select font type from the available list.
To change font type in the column details...	Select the column details. Under the <b>Formatting</b> tab, select font type from the available list.
To change font color in a column header...	Select column header. Under the <b>Formatting</b> tab, click (icon here) to select font color from the available list.
To change the font color in column details	Select column details. Under the <b>Formatting</b> tab, click (icon here) to select font color from the available list.
To change the column header background color...	Select the column header. Under the <b>Formatting</b> tab, click (Background Color). Select a color from the color picker or create your own custom color.
To change the column details background color...	Select column details. Under the <b>Formatting</b> tab, click (Background Color). Select a color from the color picker or create your own custom color.
To apply text justification...	Select the report element column header or column details. Under the <b>Formatting</b> tab, click the appropriate text alignment option. Column headers can be formatted separately from column details.

## Using Pentaho Analyzer

Pentaho Analyzer is an interactive analysis tool that provides you with a rich Web-based, drag-and-drop user interface, which makes it easy for you to create reports based on your exploration of your data. You can also display Pentaho Analyzer reports in a dashboard. Unlike standard reports which tend to be static or minimally interactive after they are created, Pentaho Analyzer reports allow you to explore your data dynamically and to drill down into the data to discover previously hidden details. Pentaho Analyzer presents data multi-dimensionally and lets you select what dimensions and measures you want to explore. Use the Analyzer to drill, slice, dice, pivot, filter, chart data and to create calculated fields. Users of Analyzer reports can query the data in a database without having to understand how the database is structured.

Before you can create an Analyzer Report you must have access to a data source, (relational database table(s) or a CSV file) provided by an administrator or a user with create data source permission. The data source used for an Analyzer Report is based on a Mondrian schema (also referred to as an Analysis Model). Mondrian schemas are XML models that have cube-like structures which use fact and dimension tables found in a relational database.

A Mondrian schema is created using Schema Workbench or generated by the Data Source Wizard, (either through a manually-entered SQL query, an auto-query written against one fact table, multiple database tables joined to a fact table, or a CSV file).



**Note:** For information about data sources see [Adding a Data Source in the Pentaho User Console](#) on page 84.

## Creating a New Analyzer Report

Pentaho Analyzer is an interactive analysis tool that provides you with a rich drag-and-drop user interface, which makes it easy for you to create reports based on your exploration of your data. You can also display Pentaho Analyzer reports in a dashboard. Unlike standard reports which tend to be static or minimally interactive after they are created, Pentaho Analyzer reports allow you to explore your data dynamically and to drill down into the data to discover previously hidden details. Pentaho Analyzer presents data multi-dimensionally and lets you select what dimensions and measures you want to explore. Use the Analyzer to drill, slice, dice, pivot, filter, chart data and to create calculated fields. Users of Analyzer reports can query the data in a database without having to understand how the database is structured.



**Note:** The field view in the sample report below is organized by **Category** (hierarchies and levels within a dimension). You can organize the field view in your Analyzer report alphabetically (**A-Z**), by **Number** (measures) - **Text** (names, categories, etc.) - **Time** (months, quarters, and years), and by **Schema**, which displays the dimensions as defined in the Mondrian schema.

The screenshot shows the Pentaho Analyzer interface. The main window displays a report titled "Top 5 Product Lines by Territory". The report is a pivot table with "Territory" and "Line" as dimensions and "Years" as a measure. The data is grouped by APAC, EMEA, and Japan, with sub-groups for Classic Cars, Vintage Cars, Motorcycles, Trucks and Buses, and Planes. The table includes columns for Sales, Quantity, and Unit Sales for the years 2003 and 2004. The right side of the interface features a sidebar titled "Available fields (14) for: SteelWheelsSales". This sidebar lists dimensions under "Customer", "Markets", and "Time", and measures under "Numbers", "Order Status", "Product", and "Time". The "Customer" section includes Territory, Country, State Province, and City. The "Numbers" section includes Sales and Type. The "Product" section includes Line, Vendor, and Product (3). The "Time" section includes Years, Quarters, and Months. A "Find:" search bar and a "by Category" checkbox are also present in the sidebar.

		Years		
		2003		2004
Territory	Line	Sales	Quantity	Unit Sales
APAC	Classic Cars	\$115,011	1,052	\$109
	Vintage Cars	\$111,639	1,243	\$90
	Motorcycles	\$60,789	654	\$93
	Trucks and Buses	\$11,298	91	\$124
	Planes	\$42,663	456	\$94
APAC Total		\$341,400	3,496	\$98
APAC Sum		\$341,400	3,496	\$98
EMEA	Classic Cars	\$691,273	5,853	\$118
	Vintage Cars	\$263,695	3,094	\$85
	Motorcycles	\$141,836	1,428	\$99
	Trucks and Buses	\$228,699	2,261	\$101
	Planes	\$154,519	1,723	\$90
EMEA Total		\$1,480,021	14,359	\$103
EMEA Sum		\$1,480,021	14,359	\$103
Japan	Classic Cars	\$120,696	898	\$134
	Planes	\$60,556	677	\$89
	Trucks and Buses	\$44,498	415	\$107
	Motorcycles	\$16,485	205	\$80
	Vintage Cars	\$22,988	308	\$74

In this exercise, you will be creating a report that displays the actual versus budgeted expenses by region for each department in the fictitious Steel Wheels company (SampleData).

Follow the instructions below to start creating the Analyzer report.



**Note:** If you do not have access to Sample Data, adapt the instructions to your own data source.

1. In the Pentaho User Console menubar, go to **File -> New** and select **Analyzer Report**.  
Pentaho Analyzer opens.

- Select your **Schema** and **Cube** from the list. For the purposes of this exercise, select **SampleData:Quadrant Analysis**.

 **Note:** The list of available schemas and cubes are provided by your administrator. A **schema** is the structure of the relational database and includes tables, fields, views, and more. A **cube** is a data structure that allows information in a database to be analyzed quickly and from multiple perspectives.

- In the list of fields (on the right), click and drag **Department** to the **Analyzer** workspace in the left pane. The **Department** column appears in the workspace.
- In the list of fields, click and drag **Budget** to the **Analyzer** workspace in the left pane. The **Budget** column appears in the workspace.
- Right-click the **Budget** column to display the **Edit Column** dialog box. Select **Column Name and Format -> Currency (\$)** from the **Format** list so that your values display as dollar amounts. Click **OK**.
- In the list of fields, click and drag **Actual** to the **Analyzer** workspace in the left pane. The **Actual** column appears in the workspace.
- Right-click the **Actual** column to display the **Edit Column** dialog box. Select **Column Name and Format -> Currency (\$)** from the **Format** list so that your values display as dollar amounts. Click **OK**.
- Click and drag the **Region** column to the report. (Read the note below.)

 **Note:** Notice that the **Region** column appears in the workspace; however, you want this column to be the first column in the report.

- In the workspace, click and drag the **Region** column to the left of the **Department** column.

Pentaho Analyzer is designed to provide you with great flexibility when designing the visual structure of your report.



10.

At this point you have a functioning report and you can view your data in chart form. Click  (Switch to Chart Format) to examine your report data in a chart format. The default display is a bar chart but if you click  (Choose Chart Type) you can select a different chart type to display your data.

- Save your report before continuing the exercise. In the Pentaho User Console, click  (Save As). When the **Save As** dialog box appears, save your report as **Regional Expense Report** under /Steel Wheels/Analysis and click **OK**.

### Simple Conditional Formatting of Measures

Conditional formatting in the Analyzer data grid means that cells will be physically affected by the data they contain. The most common form of conditional formatting is stoplight reporting, where cell backgrounds are colored red, green, or yellow depending on user-defined thresholds. Analyzer offers some simple pre-defined methods of conditionally formatting numeric data. Follow the directions below to implement conditional cell formatting.

- Right-click a measure in the grid, then select **Conditional Formatting** from the context menu. A sub-menu with conditional formatting types will appear.
- Select your preferred number format from the list.

Consult [Conditional Formatting Types](#) on page 26 for more information on simple conditional formatting types.

The analyzer report will refresh and apply the formatting choice you specified.

### Conditional Formatting Types

Indicator Type	Description
Color scale	The background cell color will be shaded according to the value of the cell relative to the highest and lowest recorded values in that measure. There are several color progressions to choose from.
Data bar	The cell background is partially filled with a solid color proportional to the scale of the cell's value relative to the highest and lowest recorded values in that measure.
Trend arrow	An upward or downward arrow is displayed to the right of the cell value depending on whether it is above or below the median value of the selected measure.

### Enhancing the Pentaho Analyzer Report

You have created a working Analyzer report; however you can make the data in the report more useful if you can show the difference, in dollar amounts, between the actual and budgeted expenses.

Follow the instructions below to enhance your report.

1. In the Pentaho User Console menubar, go to **File -> Open**.
2. Browse to **/Steel Wheels/Analysis** and select **Regional Expense Report**.
3.  Click  (Switch to Table Format) if you are in chart mode when the report appears.
4. Right-click the **Actual** column and select **User Defined Number -> Calculated Number**. The **New Calculated Number** dialog box appears.
5. In the **Name** field, type **Difference**.
6. Select **Currency (\$)** from the **Format** list so that the data in your report displays as dollar amounts.
7. In the right pane of the dialog box, click  so that a minus sign appears next to **[Actual]-**.
8. Click **Budget** in the left pane and click  to move it to the right pane so that you create a formula that subtracts the budgeted expenses from the actual expenses, **[Actual]-[Budget]**. Click **OK**. A **Difference** column appears in the report.

Budget	Actual	Difference
\$2,043,642	\$1,776,282	-\$267,360.00
\$3,067,361	\$3,106,680	\$39,319.00
\$3,414,295	\$3,438,863	\$24,568.00
\$3,582,552	\$3,590,423	\$7,871.00
\$3,159,180	\$2,997,702	-\$161,478.00
\$20,400,000	\$20,068,039	-\$331,961.00
\$2,730,570	\$2,915,173	\$184,603.00
\$1,483,508	\$1,507,580	\$24,072.00
\$3,010,015	\$3,039,180	\$29,165.00
\$3,195,682	\$3,212,200	\$16,518.00
\$3,383,905	\$3,440,110	\$56,205.00

9. Right-click the **Region** column and select **Show Subtotals**.

The subtotals for each region is displayed in the report.

10. Save the report.

 **Note:** To learn more about Analyzer Reporting features, see the *Pentaho User Console Guide*.  
Click **Help -> Documentation** in the Pentaho User Console.

## Adding Filters to an Analyzer Report

Filters are used to restrict or limit the data that is presented in a report. For example, a report shows sales by product line. A filter on **Quarter** restricts the data so that sales for the fourth quarter in 2010 only are shown. If you were to add a regional filter of Europe, the report displays data pertaining to European sales in the fourth quarter of 2010, exclusively. If you were to add a filter on the **Product Line** field to exclude **Surfing**, the report displays data pertaining to European sales in the fourth quarter of 2010 that are not in the surfing product line, exclusively.

Follow the steps below to add a filter to your sample report:

1. Open the **Regional Expense Report**.
2. Under the report name click **Show/Hide Filters** next to **No Filter in Use**.  
A workspace for filters appears at the top of the report.
3. Click and drag the **Region** field/column into the filter workspace.  
The **Filter on Region** dialog box appears. Notice that the values, (Central, Eastern, Southern, and Western), associated with the **Region** field are listed in the dialog box. You can choose one of these values or you can enable **Match a specific string** to filter the report on a specific string of data.
4. Select **Eastern** from the list of values and click  (Add Selected) to move it into the right pane.  
**Eastern** appears with a green checkmark next to it in the right pane.
5. Select **Western** from the list of values and click  (Add Selected) to move it into the right pane.  
**Western** appears with a green checkmark next to it in the right pane.
6. Click **OK** to exit the dialog box.  
Your sample report displays data for the **Eastern** and **Western** regions only.

 **Note:** You can click **Undo** or **Reset** to return to the previous version of the report.

7. Click **OK** and save your report.

## Adding Query Parameters to Analyzer Reports

You must be logged into the Pentaho User Console, and have an Analyzer report open for editing in order to continue.

Follow the below procedure to parameterize your MDX query in Analyzer.

1. Right-click on the dimension member you want to create a parameter for, and select **Filter** from the context menu.

2. Select the level you want to set as the default parameter value, then click the right arrow to move it to the list on the right.
3. Click the checkbox at the bottom of the window, then type in a name for the parameter in the **Parameter Name** field.
4. Click **OK**.

Your parameter is now created as a filter in Pentaho Analyzer. Whenever this Analyzer report is run, users will have a selection of columns to filter by.

 **Note:** If you create a dashboard with this Analyzer report, then this filter can be used by Dashboard Designer as a parameter as well.

### Exporting the Analyzer Report

Pentaho Analyzer allows you to export your report as a PDF, a Microsoft Excel spreadsheet, or a CSV file.

Follow the instructions below to export your report:

1. In the Pentaho Analyzer toolbar, click **More** and select **Export Report**.  
The export options list appears.
2. Select **Export to PDF**.  
A PDF of the report appears.
3. Examine your report.

Notice that Pentaho Analyzer appends metadata about the report itself in the PDF. Information about the report author, the location of the source file, fields used, filter summary, are included.

### Filtering by Member Properties

If a dimension has a number in parenthesis next to it in the field list, that means that it has **member properties** associated with it. To constrain a dimension by controlling its member properties, follow the instructions below.

1. Open the field layout by clicking **Show Field Layout** button above the grid.  
Depending on how you have them oriented, you will see your selected dimensions in either the **Row Labels** or **Col Headers** fields.
2. Right-click on a dimension in the row label or column header fields, then select **Show Properties** from the context menu.  
A sub-menu with all available member properties will appear.
3. Check or un-check the member property boxes to add or remove them from the report, then click **OK**.

The analyzer report will refresh and show the filter choices you've selected.

### Configuring Drill-Down Links

To create reports based on specific number value data, you can implement drill-down links in Pentaho Analyzer. This will turn all non-calculated number fields into links which, when clicked, bring up a configurable data grid that enables you to quickly view more details for that data point without having to reconfigure your report. Follow the directions below to turn on drill-linking.

 **Note:** Calculated members are unavailable for drill-down at this time.

 **Note:** Drill-down links will not work in reports that have filters that are not being used. If you have any filters in an Analyzer report, they must be used in the report in order to view drill-down links.

1. Open the Analyzer report that you want to add drill links to.
2. Go to the **More** menu in the upper right corner of the report, and select **Set Report Options** from it.
3. Select the **Show drillthrough links on Number cells** checkbox, then click **OK**.

The number fields in your report will turn into links.

4. Click on a drill-down link to see a data grid that shows all of the available details for that value.
5. To add or remove columns from the grid, click on the down arrow on the right side of any column and select the **Columns** sub-menu. From there you can select which columns you want to appear. You can also sort by ascending or descending values for any column through this menu.

You now have drill-down links for numeric, non-calculated members.

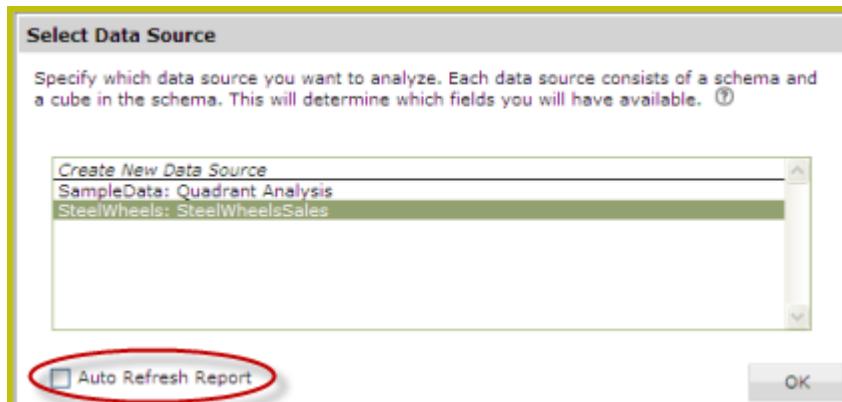
### Disabling Auto Refresh Mode

When you disable the **Auto Refresh Report** feature in Analyzer you can design your report layout first, including calculations and filtering, without querying the database until you are done. Once the report layout is complete, you can re-enable Auto Refresh Report. Data retrieval will occur once and your report will display the requested data.

Follow the instructions below to disable auto refresh and build a report.

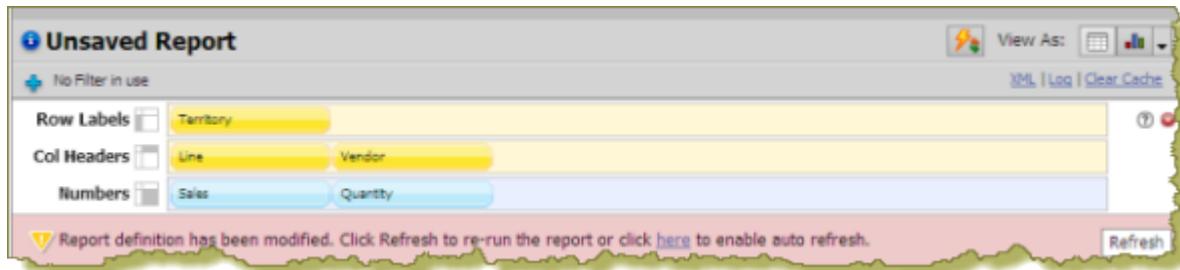
1. In the Pentaho User Console menubar, go to **File -> New** and select **Analyzer Report**.  
Pentaho Analyzer opens.
2. Select your Data Source, (schema and cube), from the list.
3. Disable **Auto Refresh Report**.

 **Note:** Auto Refresh Report is enabled by default.



4. Click **OK**.
- The Analyzer workspace appears.
5. To begin creating your report layout, select a field and drag it to the **Field Layout** area at the top of the workspace.

 **Note:** If you are not seeing the Field Layout area, click the **Show Field Layout** button.



A message appears when you place the first field allowing you to refresh the report or to re-enable Auto Refresh. Right-click menus are available for each of the fields you have dragged to the field layout area. You can continue to build your report and only query the database when the layout is complete. You will build your report in the field layout area exclusively while Auto Refresh is disabled. The icons next

**to Row Labels, Col (Column) Headers, and Numbers** indicate the position of the fields once they are placed in the report. Also, a color indicator (yellow or blue) allows you to differentiate between the field types. Notice that the Analyzer workspace is disabled (greyed out) if you are not in live query mode.

**Note:** Click the enable/disable **Auto Refresh** button () in the toolbar to toggle between the two modes.

- When your report is complete, click **Refresh** in the pink band of the field layout area. Alternatively, use the toggle button.

The Analyzer report updates based on the report definition and displays the results. You can continue to edit the report as needed and click **Refresh** to run the query again.

Territory	Sales	Quantity	Unit Sales	Line	Vendor
EMEA	356,050	2,855	125	Classic Metal Creations	Classic Cars
NA	261,427	2,039	128	Gearbox Collectibles	Gearbox Collectibles
APAC	87,288	694	126	Toy Chest	Toy Chest
Japan	37,919	242	157		

### Creating Hyperlinks to Pentaho Solution Repository Content

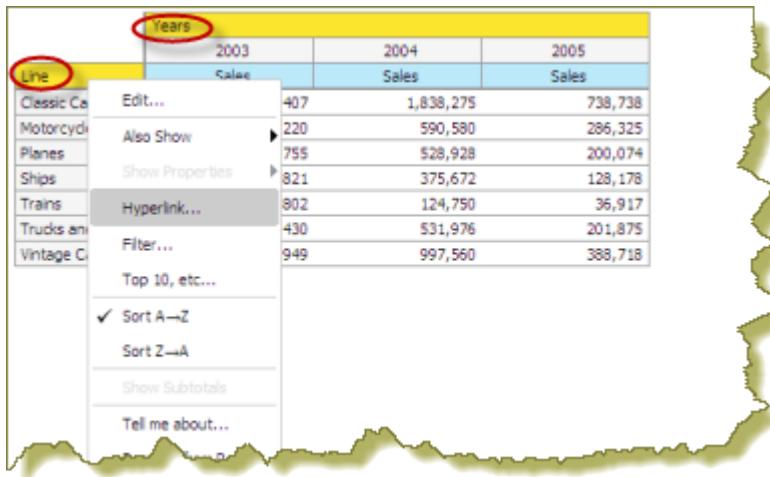
This feature allows you to create hyperlinks in an Analyzer report that will link to content in the Pentaho Solution Repository.

The instructions below show you how to create hyperlinks to content inside your Pentaho Solution Repository (reports, action sequences, etc.). You must adjust the instructions to work with your own data.

**Important:** Hyperlinks take precedence over the drill down feature in charts. That means that if a hyperlink has been defined and you click on a bar in a bar chart, for example, the data associated

with the hyperlink, (not the drill down chart), displays. See [Drilling in Charts](#) for details about drill down feature in charts.

1. Create a simple Analyzer report.
2. Select a row label or column header, right-click, and choose **Hyperlink**.



 **Note:** In the example above, **Line** is a row label and **Years** is a column header. Under these, are the individual members that belong to that field/level (for example, Classic Cars, Motorcycles, and so on are members of **Line**).

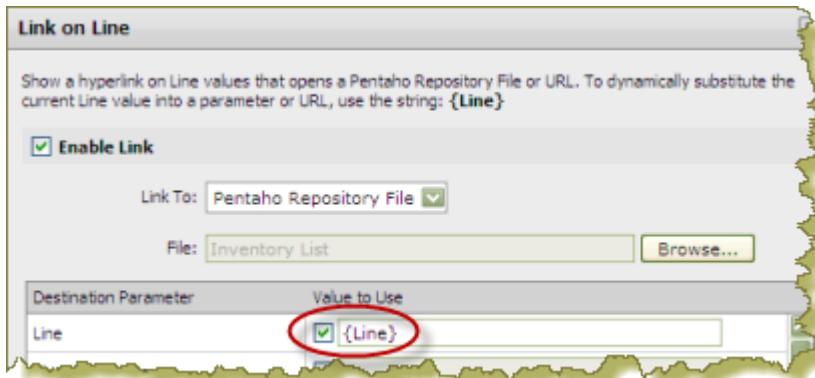
The **Link on (Name of Field Level)** appears.

3. Click **Enable Link** to activate the hyperlink feature.

You are not creating a hyperlink to the field header itself but rather to the members under the field level. You can disable linking at any time by clearing the Enable Link checkbox.

4. Click the down arrow next to **Link to** and choose **Pentaho Repository File**.
5. If you choose Pentaho Repository File, you can link to a report (.prpt), an action sequence, or any other file inside the Pentaho Solution Repository which contains a parameter that can be associated with the content in your Analyzer report. Click **Browse** to locate your file in the Pentaho Repository. When you have found the file click **Open**.

The **Link on Field Name** dialog box appears. If a destination parameter that matches the field name in your Analyzer Report is found, field name is associated to that parameter. Click the checkbox next to the destination parameter name to enable it.



If there are more parameters available for linking in the report or other content, they are also listed. You can override the values to the available parameters or leave them as is. You can also define how hyperlink content will display (Open in **New Tab**, **Window**, **Current Window**). Finally, you can enter a **Tool Tip** that displays when users hover over the hyperlinks.

6. Click **OK**.

Hyperlinks appear in your Analyzer report. Click on the links to make sure the content associated with them appears correctly.

Line	Years		
	2003	2004	2005
Sales	Sales	Sales	
Classic Cars	1,514,407	1,838,275	738,738
Motorcycles	397,220	590,580	286,325
Planes	347,755	528,928	200,074
Ships	244,821	375,672	128,178
Trains	72,802	124,750	36,917
Trucks and Buses	420,430	531,976	201,875
Vintage Cars	679,949	997,560	388,718

## 7. Save your Analyzer Report.

### Creating Hyperlinks to a URL

This feature allows you to create hyperlinks in an Analyzer report that will link to a URL for system to system linking, for example.

The instructions below show you how to create hyperlinks to a URL. You must adjust the instructions to work with your own data.

 **Important:** Hyperlinks take precedence over the drill down feature in charts. That means that if a hyperlink has been defined and you click on a bar in a bar chart, for example, the data associated with the hyperlink, (not the drill down chart), displays. See [Drilling in Charts](#) for details about drill down feature in charts.

1. Create a simple Analyzer report.
2. Select a row label (or column), right-click, and choose **Hyperlink**. In the example below, **Line** is row label and **Years** is a column header. Under these, are the individual members that belong to that field/level; for example, Classic Cars, Motorcycles, and so on are members of **Line**.

Line	Years		
	2003	2004	2005
Sales	Sales	Sales	
Classic Cars	1,514,407	1,838,275	738,738
Motorcycles	397,220	590,580	286,325
Planes	347,755	528,928	200,074
Ships	244,821	375,672	128,178
Trains	72,802	124,750	36,917
Trucks and Buses	420,430	531,976	201,875
Vintage Cars	679,949	997,560	388,718

The **Link on (Name of Field)** appears.

3. Click **Enable Link** to activate the hyperlink feature.

You are not creating a hyperlink to the field header itself but rather to the members under the field. You can disable linking at any time by clearing the **Enable Link** checkbox.

4. Click the down arrow next to **Link to** and choose **URL**.

The Link on **Field Name** appears.

- Enter the URL path. You must use the {*FieldNameInsideCurlyBraces*} format to pass a parameter in your URL as shown in the example below where {Years} is the parameter:

`http://www.google.com/search?query={Years}`

You can also define how hyperlink content will display (Open in **New Tab**, **Window**, **Current Window**). Finally, you can enter a tool tip that displays when users hover over the hyperlinks.

- Click **OK** to return to your report.

Hyperlinks appear in your Analyzer report. Click on the links to make sure the content associated with them appears correctly.

Line	Years		
	2003	2004	2005
Sales	Sales	Sales	Sales
Classic Cars	1,514,407	1,838,275	738,738
Motorcycles	397,220	590,580	286,325
Planes	347,755	528,928	200,074
Ships	244,821	375,672	128,178
Trains	72,802	124,750	36,917
Trucks and Buses	420,430	531,976	201,875
Vintage Cars	679,949	997,560	388,718

## Managing Charts in Pentaho Analyzer

The charting features in Pentaho Analyzer give you the flexibility to control the look and feel of the charts in your Analyzer reports.

### Setting Chart Options

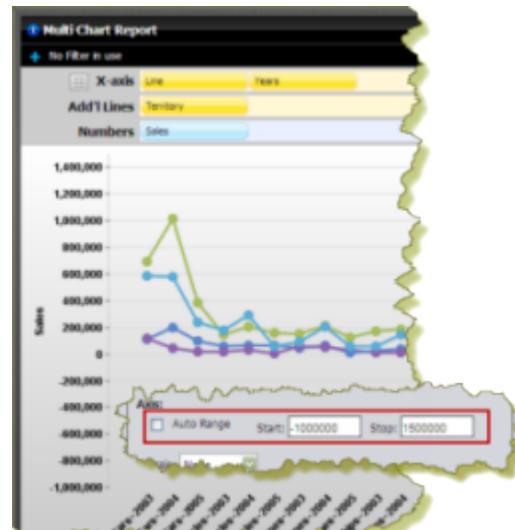
The **Set Chart Options** allow you to define the chart display (colors, legend, number of charts per row, bullet styles, and more). To access the Chart Options dialog box, click **More** in the upper right corner of the Pentaho Analyzer toolbar and choose, **Set Chart Options**.



Chart options are defined below:

### General

Option	Description
Background	<b>Fill type</b> defines the background color of the chart and the specific fill colors used. A <b>Gradient</b> will result in a gradual color transition in the fill color. Choose the color you want from the available color pickers ( <b>Fill Color, End Color</b> ) You can select not to have a fill color ( <b>None</b> ), or select a single background color ( <b>Solid</b> ).
Labels	Allows you to select a <b>font type, size, formatting</b> , and <b>color</b> of the labels in your chart.
Axis	Allows you to adjust the axis range. When set to <b>Auto Range</b> , the chart will scale based on the data. If you have a time series chart, you may want to set the range manually so that figures, (not close to the 0 axis), display correctly; (see image below). Select a <b>Scale</b> option to manage instances where numeric values in a chart are so long that they affect the display.



### Legend

Option	Description
Show Legend	Allows you to enable to disable the legend display
Position	Allows you to select the placement (Top, Right, Bottom, Left) of the legend on the chart
Background Color	Allows you to select a background color for the legend

Option	Description
Font	Allows you to set the font type, size, format, and color associated with your legend

## Other

Option	Description
Line Charts	Allows you to set the <b>Bullet Style</b> for points on a line chart and assign <b>Line Width</b>
Multi-Charts	Allows you to define the number of charts that display when using the <b>Multi-Charts</b> feature
Domain Limit	Allows you to limit the number of plot values that display in a chart.

## Displaying Multi-Charts in Analyzer

The Analyzer multi-chart feature allows you to display multiple charts in a single Analyzer report. For example, you can use this feature when you want to display the same data over different years. The multi-chart feature prevents you from having to create separate filters and reports.



1. Create a New Analyzer report.

**Important:** You must have Auto-Refresh Mode disabled (see [Disabling Auto Refresh Mode](#) on page 29) to use the Multi-Chart feature.

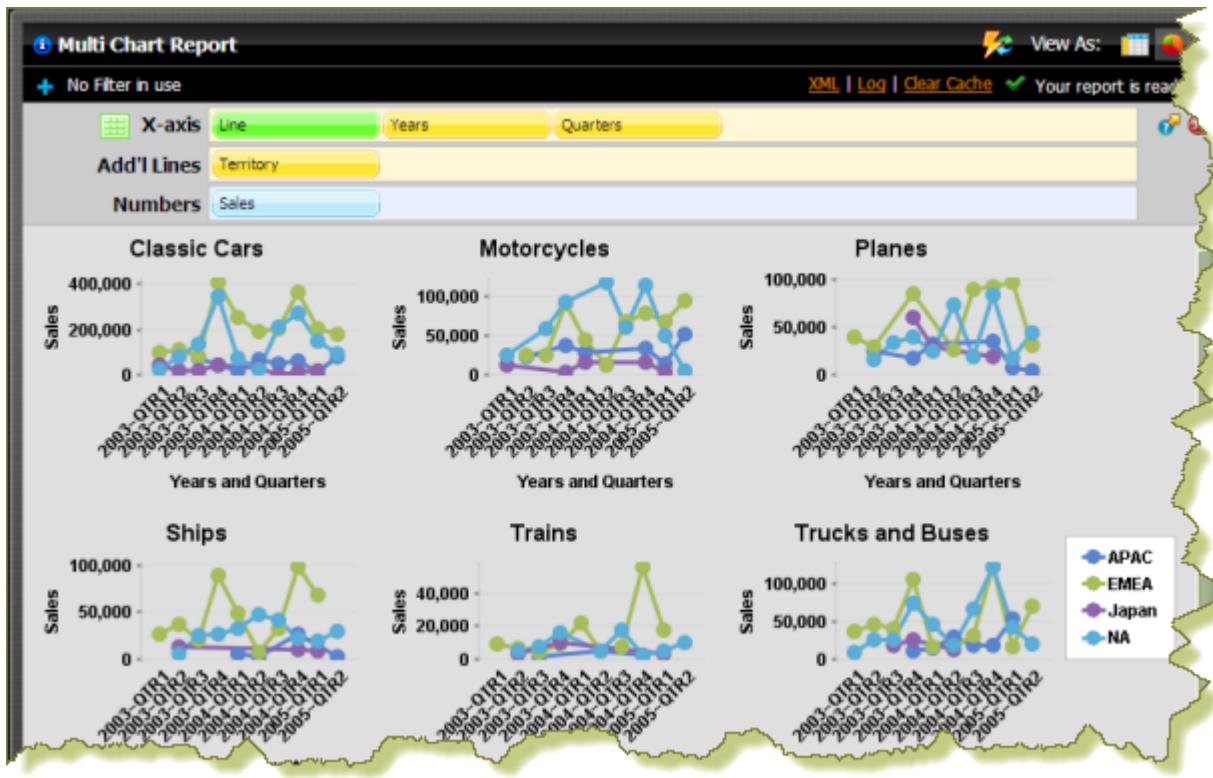
2. Click to change to chart format mode.
3. Move the appropriate fields into the field layout section.
4. Click **Enable Multi-Charts** in the upper left corner of the field layout section.



The field that you defined as the **X-axis** will become the data to be sliced into multiple charts. In the first example, **Territory** is defined as the X-axis and the report displays data by Territory. In the second example, the **Years** is defined as the X-axis and the report displays data by Years.



You can change the chart type, rearrange the fields, or add new fields as needed.



## 5. Save your report.

### Drilling in Charts

The Pentaho Analyzer drill down feature in charts, allows you to click on a single bar in a bar chart, a wedge in a pie chart, or a line in a line chart to drill down for more details. Drill downs display in a separate chart.

Consider the example below. When hovering over a bar in the chart, a tooltip describes the data associated with that particular bar; in this example, **Vintage Car Sales and EMEA; click to show Vendor**. Once you click the bar, a new chart appears that displays the vendors associated with the product line (Classic Cars, Motorcycles, Planes, and so on) for the territory, EMEA. The drill down path follows the levels in the hierarchy. You can continue drilling down until there are no more levels of data to display. Drill down also works with multi-charts.



## Working With Ad Hoc Reports

The procedures below explain what you need to know about working with ad hoc reports in the Pentaho User Console.

**Note:** The ordering of all of the list elements in the ad hoc reporting interface is determined by the data source's metadata, which is created and modified through the Data Source Wizard or Pentaho Metadata Editor.

**Important:** The old ad hoc reporting tool is still available for customers who need to edit legacy reports, however, it has been deprecated and will be phased out in a future release.

### Creating An Ad Hoc Report

The legacy ad hoc reporting tool is available for editing ad hoc reports created with previous releases of Pentaho Reporting. Follow the instructions below to create an ad hoc report:

1. In the **File** menu, select the **New -> Report**.

The ad hoc reporting wizard appears in a new solution browser tab.

2. In the first step of the wizard, select a **Data Source**. The **Details** table will populate with available tables and columns.  
Data Sources are defined by your administrator.
3. In the **Apply a Template** field, select a predefined report template. A thumbnail preview of the template will appear in the **Template Details** field.  
A template specifies a variety of properties in the report that affect its appearance, like font size and background colors for various report elements.
4. Click **Next**.
5. In the **Available Items** list, select the business columns that you want to see in your report, and click and drag them to the **Groups**, **Details**, or **Filters** lists on the right. You must have at least one business column in the Details list for a report to be valid.  
You can select multiple items by holding down the **Ctrl** key. If you want to delete an item, click the **X** in the upper right corner of the field the item is in; if you need to move an item up or down in the list or to other groups, click the up or down arrows at the top of the **Groups** list.
6. In the **Preview as** drop-down box, select a preview format, then click **Go**. When the preview appears in a new browser window or tab, verify that it contains the data you selected and that it's presented appropriately.
7. Click **Next** when you're ready to start refining your report.
8. Click the **Level 1** item in the **Groups** list. The **General** options list will appear on the right.
9. Modify the level options to your preference.  
By default, the **Show Group Summary** checkbox is selected; uncheck it if you do not want to see group summary information. The default name for the group summary uses the group name as a variable; you can change this if you like. The options in the **Formatting** lists determine where in the report the information in the selected level will appear.
10. Repeat the above two procedures for other levels that you configured earlier.
11. Click the first item in the **Details** field. Three new options lists will appear on the right.
12. In the **Formatting** field, select the numerical formatting and alignment options appropriate for your situation.
13. In the **Calculation** list, select the function you want to use to refine the element you selected. For instance if you selected a Business Column that contains product prices, clicking on **Sum** would add all of the prices together.
14. Click **Add a Constraint**. The field will expand to show the name of the element, a conditional drop-down box, a text field, and a checkbox.  
This specifies the exact constraint you are applying to the element, meaning that you are decreasing the amount of detail by adding a higher level of specificity.
15. Select a conditional symbol from the drop-down box, then type in a value in the text box.  
If there is more than one constraint in the list, you will have the option of adding conditional operators for the constraints via a drop-down box to the left of each item in the list, meaning you can specify AND or OR conditionals on each constraint.
16. Add further constraints as necessary by clicking **Add a Constraint** again. Remove a constraint by clicking its checkbox and then clicking the **X** at the top of the list.
17. In the **Sort Columns** field, click **Add** to specify how each element in the Details list should be sorted, then select the sort order from the drop-down box.
18. Repeat the above steps for any other items in the **Details** list.
19. Click the first item in the **Filters** list. The **Constraints** list will appear on the right.
20. Add constraints as necessary, per the above instructions for adding constraints to items in the Filters list.  
For string-type Business Columns, you will have the option of searching the database tables that apply to the column. When this option is available, it is accessible via a magnifying glass icon to the right of the text box.
21. Repeat the above instructions for additional filters.

**22.** Click **Next** to move on to the next screen.

**23.** To set the header, footer, description, paper type, and page orientation, change the values accordingly.

PDF is the only output type that has a concept of a page, so the **Page** portion of the **Header** and **Footer** sections only applies to PDFs.

**24.** Click either the **Save** or **Save As** button to save your report, or select **Save** from the **File** menu. In the ensuing file dialog, navigate to the location you want to save the report to, type in a filename for the report, and click the checkboxes next to the file formats you want to save in.

You can continue to modify your report after it's been saved; just click the **Save** button to update the saved report after you've made changes.

 **Note:** The Save dialog does not list output types; instead, it pulls the currently selected preview output type. By default that is HTML, so that will also be the default format to save as. If you want to save as a different output type, select it from the Preview drop-down list before saving.

You now have a complete ad hoc report in the format or formats you specified.

## Editing an Existing Report

After you've created and saved a report, you can go back to it later and change its properties.

- 1.** In the upper left pane, navigate to the location of your report. It should appear in the lower left list when you've selected the proper directory.
- 2.** In the lower left pane, right-click the report you want to edit, then click **Edit** in the popup menu.

The ad hoc report wizard will open in a new tab.

## Deleting a Report

After you've created and saved a report, you can delete it using the Explorer-like Pentaho User Console file browser.

- 1.** In the left pane, navigate to the location of your report. It should appear in the lower left list when you've selected the proper directory.
- 2.** Right-click the report you want to eliminate, then click **Delete** in the popup menu.

The selected report will be removed from your computer. Any associated artifacts will not be removed, so some manual cleanup may be required if you want to remove more than just the report.

## Running a Report

After you've created and saved a report, you can execute it manually at any time.

- 1.** In the left pane, navigate to the location of your report. It should appear in the lower left list when you've selected the proper directory.
- 2.** Right-click the report you want to run, then click **Run** in the context menu.

You can alternatively double-click on a report to run it.

- 3.** In the **Run** sub-menu, select one of the following options: **New Tab**, **New Browser Window**, or **Background**.

The options will open the report in a new tab, a new browser window (which may open in a new browser tab, depending on which Web browser you are using and how it is configured), or it will run in the background and inform you when the report is ready to view. The popup dialogue that informs you of the report's completion will ask you if and where you would like to display it.

The selected report will be executed, and display according to the option you selected.

# Using Pentaho Dashboard Designer

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 **Restriction:** Dashboard Designer is exclusive to the BI Suite Enterprise Edition, and requires a Dashboards Enterprise Edition license.

Creating a dashboard in Dashboard Designer is as simple as selecting a layout template, theme, and the content you want to display. In addition to displaying content generated from action sequences, Interactive Reporting, and Analyzer, Dashboard Designer can also include:

- **Charts:** simple bar, line, area, pie, and dial charts created with Chart Designer.
- **Data Tables:** tabular data.
- **URLs:** Web sites that you want to display in a dashboard panel.

Dashboard Designer also has dynamic filter controls, which enables end-users to change a dashboard's details by selecting different values from a drop-down list, and to control the content in one dashboard panel by changing the options in another (content linking).

## Creating a New Dashboard

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You must be logged into the Pentaho User Console. Follow the instructions below to create a new dashboard:

1. In the Pentaho User Console quick launch bar, click **New Dashboard**. Alternatively, you can click **File > New > Dashboard** or click  (New Dashboard) in the tool bar. The New Dashboard page appears.
2. In the edit pane (lower portion of the page), click **Properties**, and enter a title for your dashboard page in the **Page Title** text box.  
The name you entered appears on the top left corner of the dashboard. This name helps you identify the page if you want to edit, copy, or delete it later.
3. Click **Templates** to select a dashboard layout.  
A blank dashboard with the layout you selected appears.
4. Click **Theme** to select a theme for your dashboard.  
The theme you selected is applied to your dashboard.

You now have the basic framework for a Pentaho dashboard.

## Working with the Chart Designer

The Chart Designer allows you to create bar, pie, line, dial, and area charts that can be added to a dashboard. Below are the general steps associated with creating a chart:

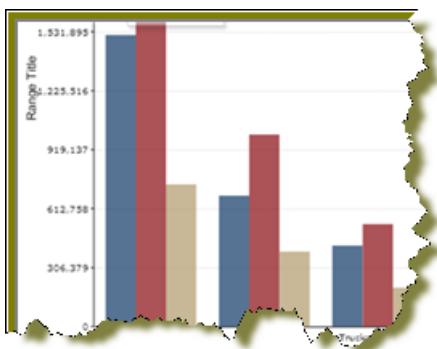
1. Select a data source.
2. Build a query.
3. Set the data definitions: values, series, category.
4. Select a chart type and theme.
5. Enter labels for the chart title, and x,y axes.
6. If applicable, adjust scaling and label rotation.
7. Place your chart in the dashboard.
8. Save your dashboard.

If you are new to charting, here are some minimal guidelines that may help you determine what type of chart is best suited for the data you want to present in your dashboard:

### Bar Charts

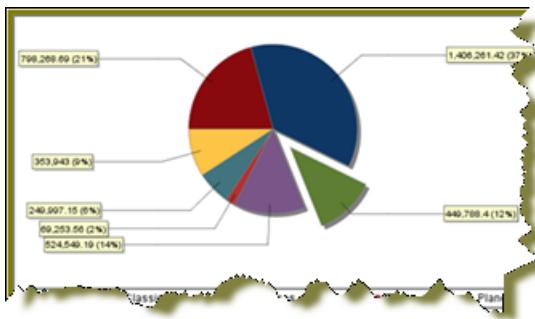
If you want to compare items during a specific time period, consider using a bar chart. Key words to think about when creating a bar chart are *compare* or *rank*. For example if you want to compare items sold to show which one made the most profit, you might create a bar chart that ranks the products from the lowest

to highest profit. The bar's length determines its ranking; the label identifies the item. Bar chart data can be presented horizontally or vertically depending on your requirements.



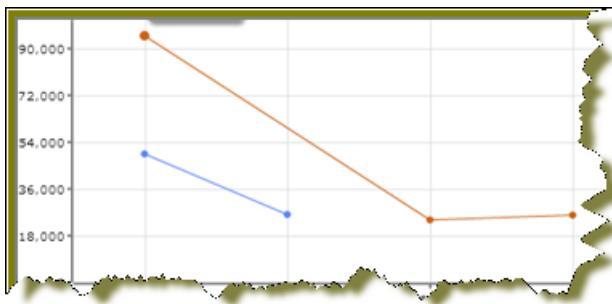
### Pie Charts

If you are comparing parts of a whole, consider using a pie chart. Key words associated with charts include, *portion*, *share*, and *percentage*. If for example, you want to demonstrate the proportion of the company's budget spent on health insurance, use a pie chart. To make the chart easier to read limit the number of slices to five. Pie charts can also be *exploded*, which means certain slices are pulled away from the remainder of the chart for emphasis.



### Line Charts

Line charts are useful for showing changes over time. Key words associated with data that is best suited for a line chart are *trend*, *growth*, and *decline*. If, for example, you want to show how product sales have changed over five years, use a line chart. The slope of the line helps users quickly identify the direction of the trend.



### Dial Charts

Dial charts are often associated with Key Performance Indicators (KPIs). Dial charts are circular and contain a scale, a needle, and one or more dial sectors. The dial sector is used to identify a specified area on a dial chart using a particular color. For example, you could have a dial plotting inventory with a minimum dial value of 10000 and a maximum dial value of 50000. There could be a red dial sector for the region between 2000 and 4000 indicating that if the needle is in this area, there is a danger of a supply inventory shortage.



## Area Charts

Area charts can be used to show a comparison of the same thing during different points in time. Area charts are not designed to provide exact data but they do give users visual clues of the relative sizes of the items they are representing.



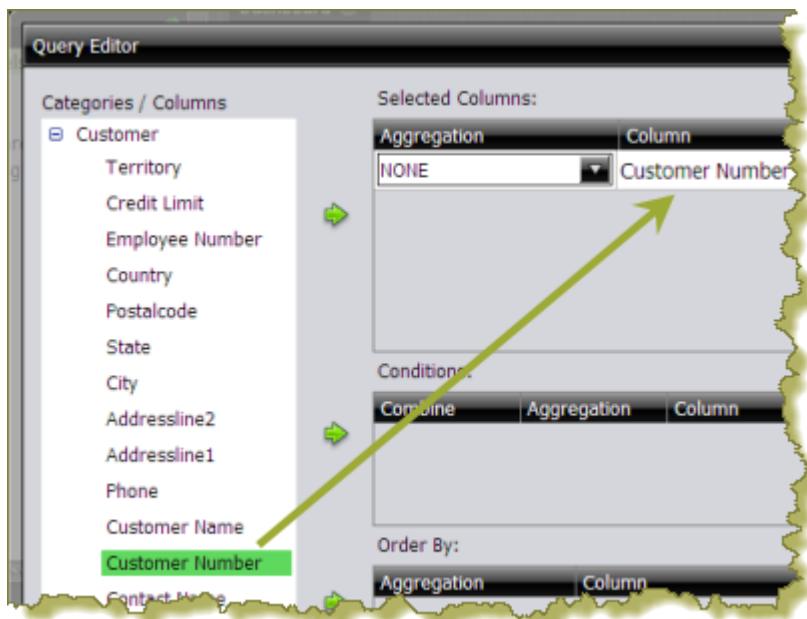
## Adding Data to a Chart

Before you can start creating a chart you must select a data source that contains the data you want to use. You must then define the data that will be displayed in the chart.

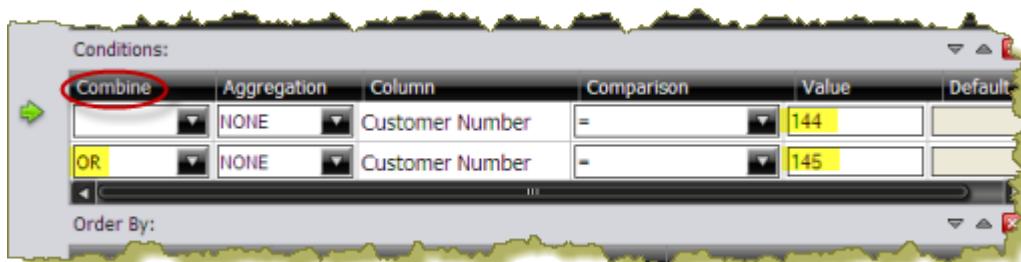
**Note:** If you are unsure what chart type is best for displaying your data, see [Working with the Chart Designer](#) on page 41 for more information.

Follow the instructions below to add data to your chart:

1. In the Dashboard, choose a dashboard panel and click (Insert) and select **Chart**. The **Select a Data Source** dialog box appears.
2. Select the data source from the list of available choices. The data source contains the content you want to display in your chart. The **Query Editor** appears.
3. The Query Editor allows you to retrieve dynamic data from a database for display in a chart. Defining your query is the first step in ensuring that the correct data is selected. In the Query Editor, click (+) next to a category name to display its associated table columns.
4. Click the small green arrow to place the column name under **Selected Columns**. In the example below, the **CustomerNumber** column has been selected and moved under Selected Columns. Notice that the column names appear under Selected Columns. Continue adding columns as needed.



- Now add the **Conditions**; these are your constraints that filter what you are selecting. You can add multiple conditions. In the example below, the search is limited to customer numbers.



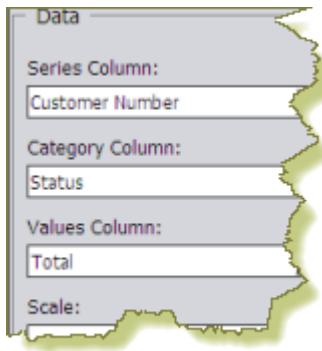
Under **Combine**, you can select your constraint (and, or, and not, or not) from the drop-down list. Under **Comparisons** you can click the drop-down list to display options for comparisons, =, <, >, and so on; (for example, where the customer number is *equal* to 144 *or* 145). You can also select an aggregation type from the drop-down list for table columns that contain numeric data. The table below contains a definition for each aggregate type:

Aggregate Type	Description
SUM	Sums a column's values
COUNT	Counts a column's values
AVG	Averages a column's values
MIN	Selects the minimum column value
MAX	Selects the maximum column value

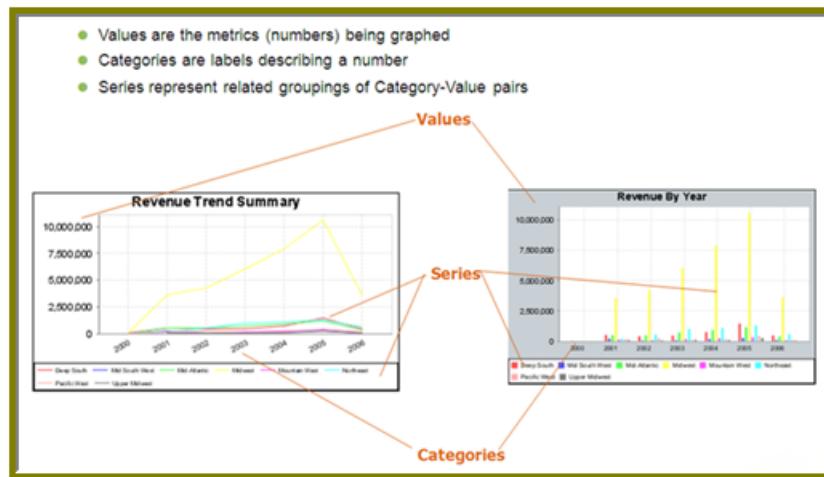


**Note:** Click **Preview** at any time to view the data associated with your query.

- Add the columns that you want to **Order By**. The ordering of the selected data is accomplished by one or more columns in a table. For example, you can sort the data by customer name and address.
- Click **OK** in the Query Editor when you are done.  
The Chart Designer appears.
- Under **Data**, click the drop-down arrow to display and select the table columns.



Data Definition	Description
Series Column	Series show up as the individual columns on a bar chart and as individual lines in a line chart. Area charts display each series as a point.
Category Column	Categories are displayed as bars or groups of bars on the x-axis (horizontal axis). In line charts, categories are usually associated with time periods. In area charts, the x-axis displays the category labels.  Note: If you don't want to display categories, select <b>None</b> .
Values Column	The value is always numeric. The value determines the height of columns in a bar chart and the height of lines in a line chart. In area charts, the y-axis values determine the heights of the points.



A preview of the chart appears in a box in the upper-right corner of the Chart Designer as you select your options.

- Under **Chart Type**, click on a chart type to select it.

 **Note:** By default, pie and dial charts display in "animated" Flash mode. You can turn animation off by disabling the **Animated** check box in the Chart Designer. Animated charts bring focus to important aspects of your data. For example, animation allows you to bring out a data point if it reaches a critical value, such as high or low sales numbers.

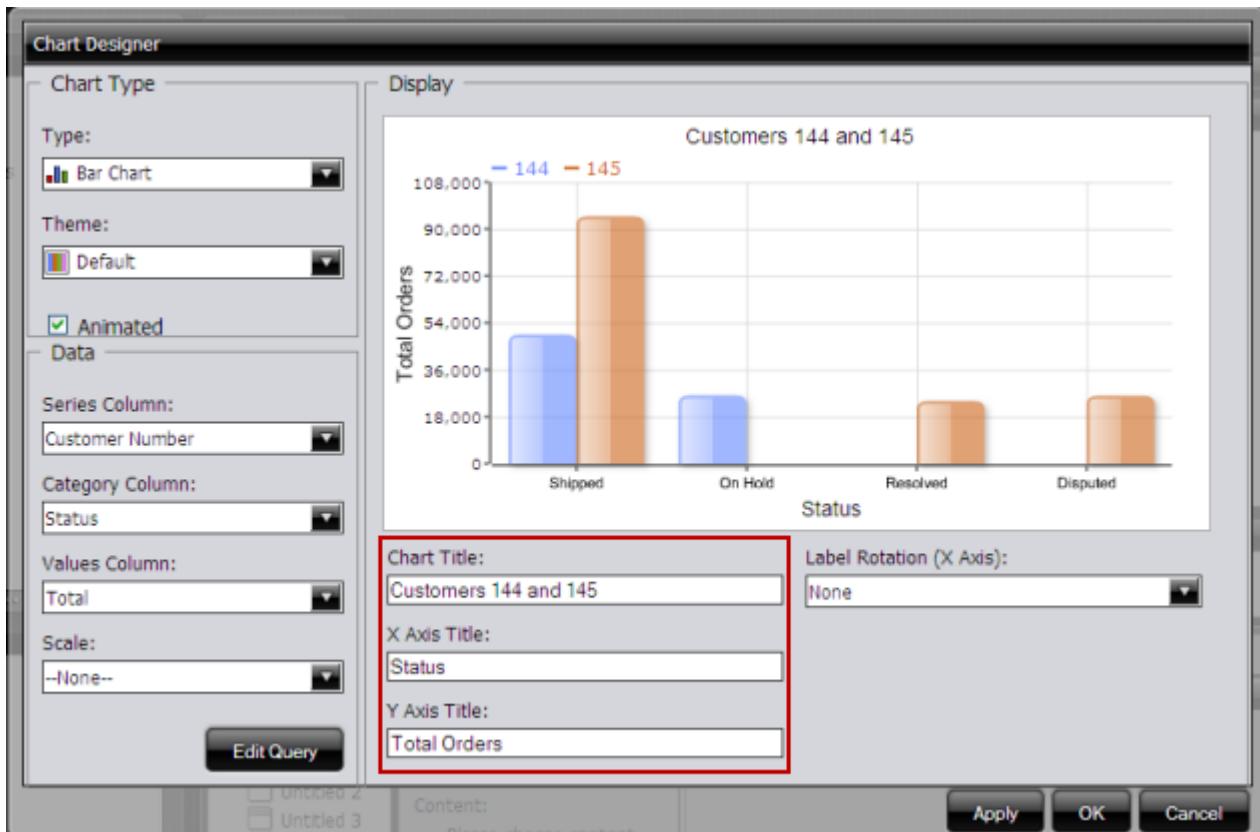
If you selected a pie or dial chart, see [Working with Pie Charts](#) on page 46 or [Working with Dial Charts](#) on page 47, respectively.

10.Under **Theme**, select a theme from the list.

The theme is applied to your chart.

11.Enter the labels for the **Chart Title**, **X Axis Title** (horizontal axis), and **Y Axis Title** (vertical axis).

Entries are displayed in the chart preview.

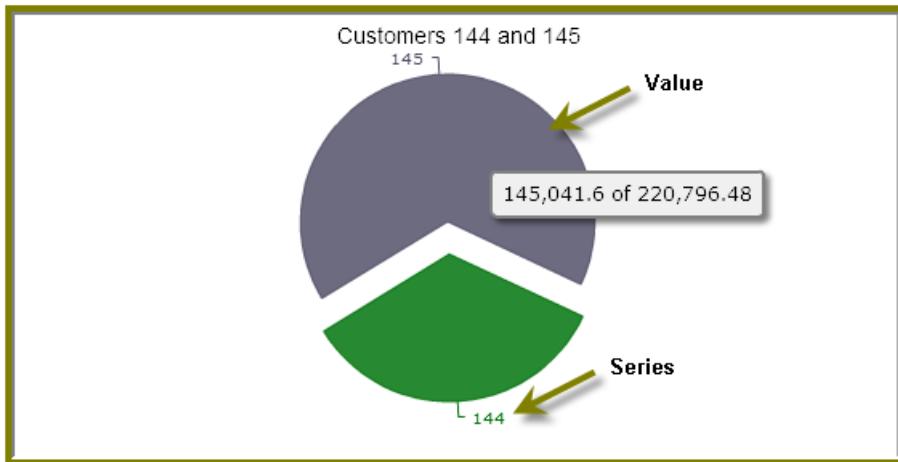


12.Click **Apply** to see the chart preview.

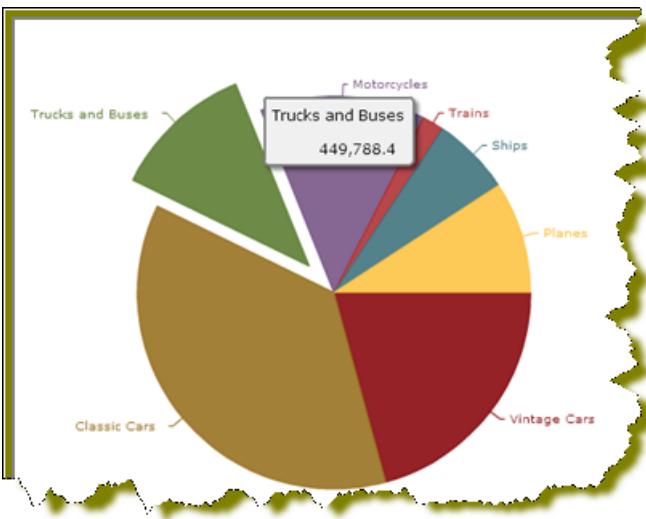
13.Click **OK** display your chart in the dashboard panel.

## Working with Pie Charts

A pie chart gives dashboard consumers an immediate visual clue of the relative sizes of the shares of a whole. Categories are represented by individual slices. The size of the slice in a pie chart is determined by the value.



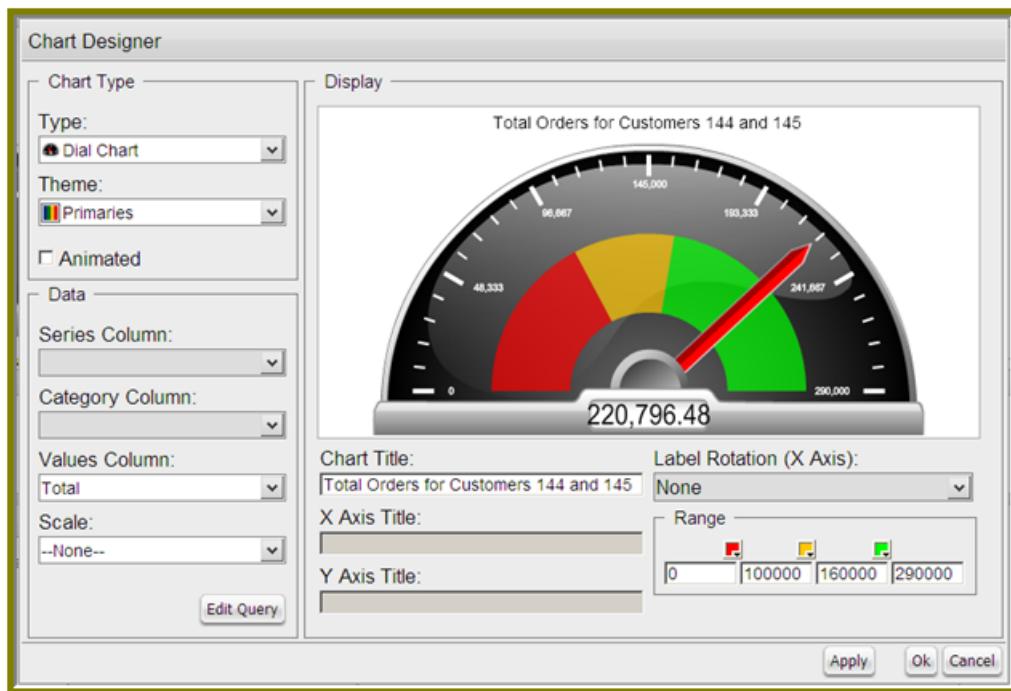
You can animate a pie chart if you want its pieces to be *exploded*, which means that the individual slices of the pie can be pulled away from the rest of the pie.



To animate a pie, enable **Animated** check box in the Chart Designer.

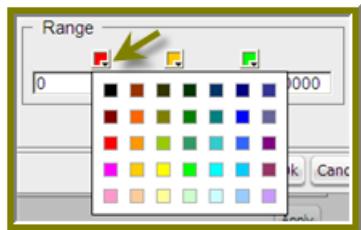
## Working with Dial Charts

For dial charts to display correctly, you must enter values for your range and the chart title. In the example below, the dial chart preview is displaying ranges associated with sales. Notice that each dial sector is represented by a color, red, yellow, or green. The needle is positioned in the 220796.48 range, indicating that total orders, while not stellar, are not near the danger zone indicated by the red sector in the dial.



### Changing Dial Sector Colors

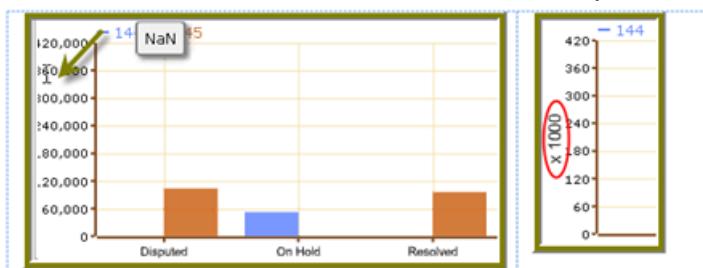
You can change the color of a dial sector by clicking the small down arrow in the color boxes associated with Range. Select a color from the palette so that you can preview it on your dial chart. Click **Apply** to preview your dial chart. Click **OK** to place your dial chart into the dashboard.



### Correcting Scaling Issues

Use the scaling feature in instances where numeric values in a chart are so long that they affect the display.

1. Preview your chart in the Chart Designer.
2. Under **Scale**, click to display the drop-down list of scaling options. In the example below, the scaling option used is "1000." Notice the change in the display of numeric values when scaling is applied. Users of the chart can see actual values when they hover over the bars in the chart.



3. Click **OK** to display the chart in the dashboard.

**Note:** The scaling feature is available for all chart types except pie.



## Rotating Chart Axis Labels

If your chart axis labels become unreadable because they are too long, **Label Rotation** may correct the problem.

1. In the Chart Designer, display your chart.
2. Under **Label Rotation**, select **Diagonal** or **Vertical** and click **Apply**.  
The labels display with the rotation you set.
3. Click **OK** to display the chart in the dashboard panel.

## Editing a Chart

Follow the instructions below to edit a chart.

1. In the Dashboard Designer, select the panel that is displaying the chart you want to edit.
2. In the upper right corner of the panel click  (Edit)  
The Chart Designer appears.
3. Click **Edit Query**.  
The Query Editor opens.
4. Edit the query as needed and click **OK**.  
The Chart Designer appears.
5. Select the appropriate data definitions to build the chart.
6. If applicable, change the chart type and theme and click **Apply** to see a preview of the edited chart.
7. Click **OK** to display the chart in the dashboard.

## Adding a Data Table to a Dashboard

The Data Table feature allows you to display a tabular representation of a database query in a dashboard. It also allows you and consumers of the dashboard to manipulate the display of the data in the data table, while in the dashboard. For example, users can resize, sort, and change the order of columns. Follow the instructions below to add a data table to your dashboard.

1. Select a panel in the Dashboard Designer.
2. Click  (Insert) and select **Data Table**.  
The **Select a Data Source** dialog box appears.
3. Select a data source from the list of available data sources and click **OK**.  
The Query Editor opens.
4. Begin building your query. Click (+) next to the category name to display its associated table columns. When the column names appear, click to select the column that contains the data you want displayed in your data table.
5. Click the small yellow arrow to place the column name under **Selected Columns**.
6. Now add the **Conditions**; these are your constraints that filter what you are selecting. You can add multiple conditions.  
Under **Combine**, you can select your constraint (and, or, and not, or not) from the drop-down list. Under **Comparisons** you can click the drop-down list to display options for comparisons, =, <, >, and so on; (for example, where the customer number is *equal* to 144 or 145). You can also select an aggregation type from the drop-down list for table columns that contain numeric data. The table below contains a definition for each aggregate type:

Aggregate Type	Description
SUM	Sums a column's values
COUNT	Counts a column's values
AVG	Averages a column's values
MIN	Selects the minimum column value
MAX	Selects the maximum column value



**Note:** Click **Preview** at any time to view the data associated with your query.

7. Add the columns that you want to **Order By**. The ordering of the selected data is accomplished by one or more columns in a table. For example, you can sort the data by customer name and address.
8. Click **OK** in the Query Editor when you are done.  
The Data Table appears in the dashboard panel.

## Updating the Data Table Display

You can edit the data table display directly in the dashboard panel.

### Sorting Column Data

To change the sort order data under a column, click the drop-down arrow in the header and choose **Sort Ascending** or **Sort Descending**. You can also hide one or more columns by disabling the appropriate check boxes next to the column names.

First Name	Last Name	Employee ID
Gerard		1102
Loui		1337
Larry		1501
Anthony		
Pamela	Castillo	
Jeff	Firrelli	
Julie	Firrelli	
Andy	Fixter	1611
Martin	Gerard	1702
Gerard	Hernandez	1370
Leslie	Jennings	1165
Barry	Jones	1504
Peter	Marsh	1612

### Adjusting Column Width

You can adjust the width of a column by clicking the right border of the column header and dragging it to the right or left. Release the mouse button when you are done.

### Moving Columns

To move the placement of a column, click and drag the column it to the appropriate location in the Data Table as shown in the example below:

First Name	Last Name	Employee ID
George	Varian	1323
Foon Yue		1286
Leslie	Thompson	1166
Mary	Patterson	1056
Steve	Patterson	1216
Mami	Nishi	1621
Diane	Murphy	1002
Peter	Marsh	1612
Barry	Jones	1504
Leslie	Jennings	1165
Gerard	Hernandez	1370
Martin	Gerard	1702
Andy	Fixter	1611

## Paginating

The pagination feature allows you to page through a large number of records.

A screenshot of the Pentaho Dashboard Designer interface. A table titled 'Untitled 1' displays employee data with columns for First Name, Last Name, and Employee ID. The table has 23 rows. A context menu is open over the table, showing options like 'Sort Ascending', 'Sort Descending', and 'Columns'. At the bottom of the table, there are navigation arrows and a page indicator 'Page 1 of 2'. To the right of the table, a message says 'Displaying 1 - 20 of 23'.

First Name	Last Name	Employee ID
Gerard		1102
Louie		1337
Larry		1501
Anthony		
Pamela	Castillo	
Jeff	Firrelli	
Julie	Firrelli	
Andy	Fixter	1611
Martin	Gerard	1702
Gerard	Hernandez	1370
Leslie	Jennings	1165
Barry	Jones	1504
Peter	Marsh	1612

## Adding a Report Designer Report to a Dashboard

Follow the instructions below to add a report created with Report Designer.

1. Select a panel in the Dashboard Designer.
2. Click (Insert) and select **File**.  
A browser window opens.
3. Locate the appropriate report file.
4. Click **Select** to place the report inside the dashboard panel.

Pagination control arrows at the top of a report allows you to scroll through long reports. Notice that the report file name, *Inventory.prpt*, appears under **Content:** in the dashboard edit pane in the sample below. This sample report contains parameters. You can enter values manually and link them to a dashboard filter in the text boxes under **Source**. When the report renders again, the parameter value(s) you entered are included in the report.

The screenshot shows a dashboard titled "Steel Wheels" with a report panel. The report displays three rows of toy car data:

Vendor	BAR CODE	SKU	Name	Scale	On Hand	Cost	MRP
Autoart Studio Design		S12_1099	1968 Ford Mustang	1:12	68 units	\$ 95	\$ 120
Carousel DieCast Legends		S24_1628	1968 Shelby Cobra 427 S/C	1:24	8,197 units	\$ 29	\$ 50
		S24_2840	1958 Chevy Corvette Limited Edition	1:24	2,542 units	\$ 16	\$ 30

Each row includes a description below it:

- Description: Hood, doors and trunk all open to reveal highly detailed interior features. Steering wheel actually turns the front wheels. Color dark green.
- Description: This diecast model of the 1968 Shelby Cobra 427 S/C includes many authentic details and operating parts. The 1:24 scale model of this iconic lightweight sports car from the 1960s comes in silver and its own display case.
- Description: The operating parts of this 1958 Chevy Corvette Limited Edition are particularly delicate due to their precise scale and require special care and attention. Each car rotates wheels, working steering, opening doors and trunk. Color dark green.

The dashboard edit pane on the left shows an object named "Untitled 1" with a Content tab containing "Inventory.prt" and a Parameters tab with the following values:

Name	Source
line	Classic Cars Planes Ships Trains
HideBarSection	TRUE
showNotes	FALSE
output-target	table/html/page-mode=page

**Important:** If you select a Report Designer file to place in a dashboard, but do not supply values for required parameters, the report will show up blank.

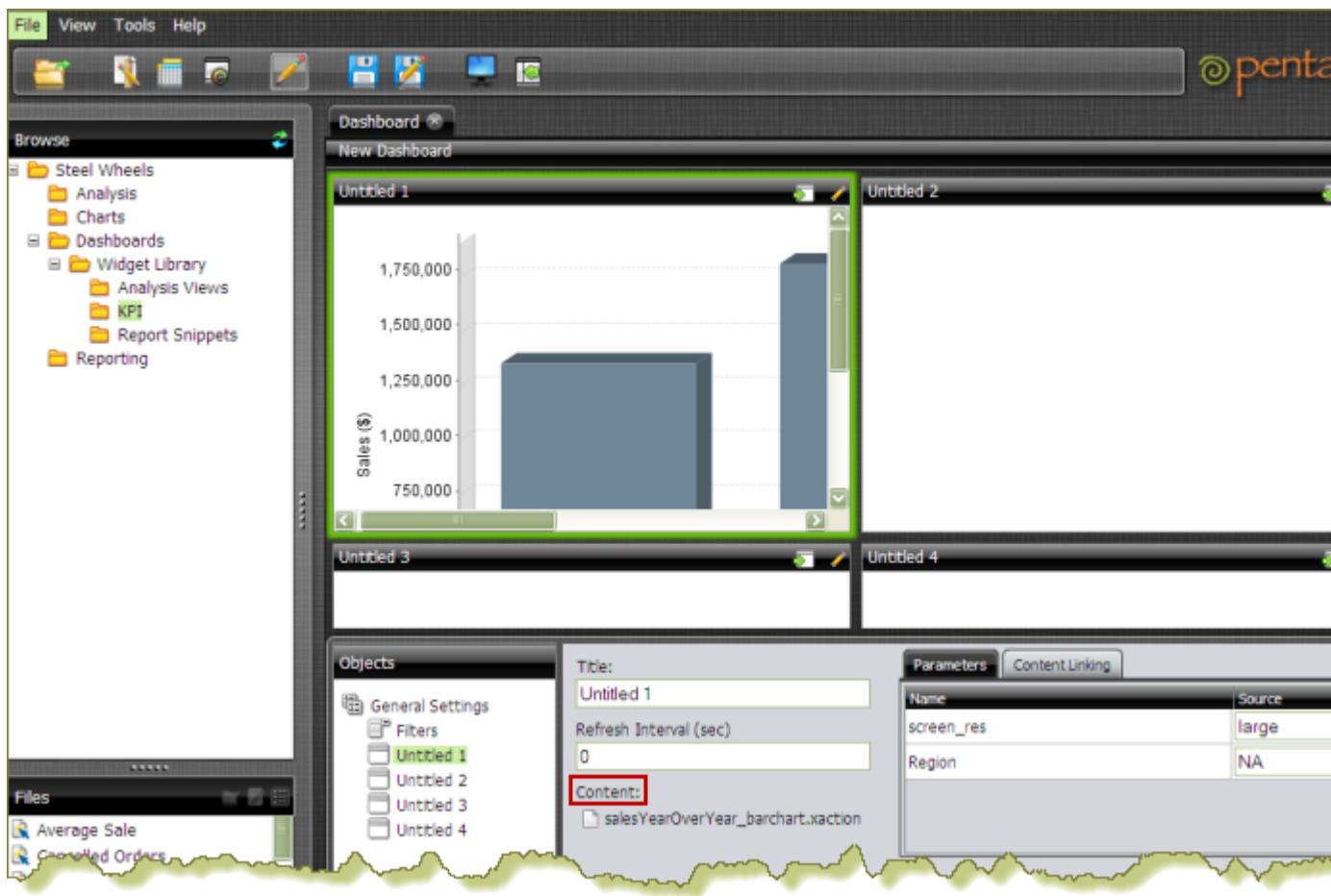
## Adding an Action Sequence to a Dashboard

Follow the instructions below to display the contents of an .xaction file in a dashboard.

**Note:** Generally, .xaction files are provided to you by an administrator. An .xaction file may contain a report, a chart, or other type of content.

1. Select a panel in the Dashboard Designer.
2. Click (Insert) and select **File**.  
A browser window opens.
3. Locate the appropriate .xaction file.
4. Click **Select** to place the contents of the file inside the dashboard panel.

Notice that the file name appears under **Content:** in the dashboard edit pane of the sample below. This sample chart contains parameters, (*screen\_res*, *Region*), and default values (*large*, *NA*).



5. Save your dashboard.

## Adding an Analyzer Report to a Dashboard

Follow the instructions below to display an Analyzer report in a dashboard.

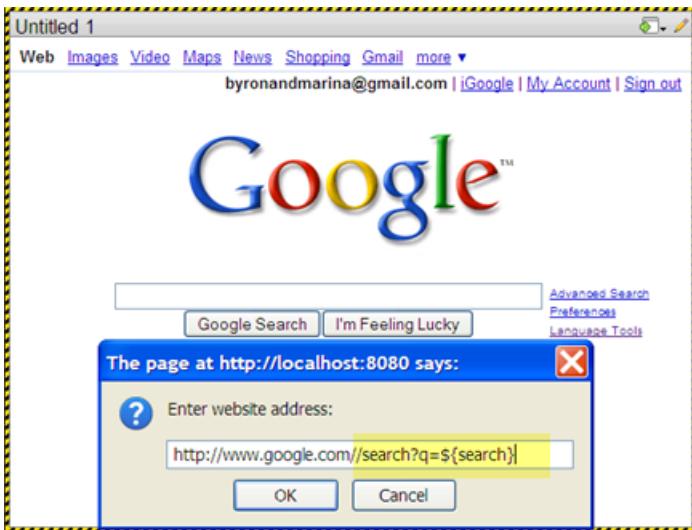
1. Select a panel in the Dashboard Designer.
2. Click (Insert) and select **File**.  
A browser window opens.
3. Locate the appropriate Analyzer report and click **Select**.  
The Analyzer Report appears inside the dashboard panel.

## Adding a Web Site to a Dashboard

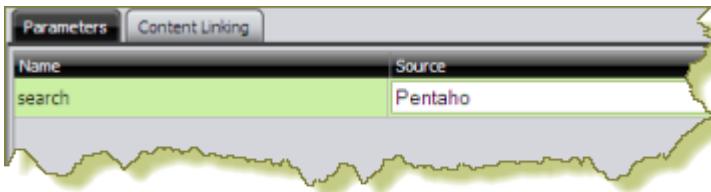
Follow the instructions below to display contents of a Web site in a dashboard panel. You may need administrator privileges to display a Web site content in a dashboard.

1. Select a panel in the Dashboard Designer.
2. Click (Insert) and select **URL**.  
The **Enter Web site** dialog box appears.
3. Enter the Web site URL in the text box and click **OK**.

In the example below, a search parameter has been added to the URL.



When the parameter displays in the edit pane of the dashboard, you can enter a value for the parameter in the text box next to the parameter name.



4. If applicable, click (Edit) to make changes.
5. Save your dashboard when you are done.

## Implementing Filters

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Filters display a subset of data based on the dashboard user's point of view. For example, a European user may only want to see EMEA region sales data, whereas the dashboard's default region is the NA region.

**Note:** To ensure that a filter links to the correct content in a dashboard, the content to which you are linking (data table or chart) must contain at least one parameter.

Below are general instructions below for adding filters to your dashboard:

1. In the dashboard page, under **General Settings**, select **Filters**.  
The Filter Editor appears on the right. No filters are listed if this is the first time you are assigning filters.
2. To display a filter toolbar to users of the dashboard, enable **Show Filter Toolbar**.  
A placeholder for the filter toolbar appears at the top of the dashboard.
3. Click (Add) to start adding filters.  
The **Filter Properties** dialog box appears.
4. In the **Filter Properties** dialog box, type a display name for the control label. For example, "Region."
5. Enable **Display Name as Control Label** if you want users to see the display name in the filter toolbar.
6. Select your control type. Control types define how your filter values are selected; for example, in a drop down list, radio button, checkbox, and so on.

The table below contains a description of each control type.

Control Type	Description
Drop Down	Users select a filter value from a drop-down list.
List	Users select a filter value from a scrolling list. This filter control supports multiple selections.
Radio button	Users click a radio button to select a filter value.
Checkbox	Users enable a checkbox to select a filter value. This filter control supports multiple selections.
Button	User click a button to select a filter value. This filter control supports multiple selections.
Text Field	Users enter a text string or number into a text field manually.
Date Picker	Users examine filter values based on calendar date.

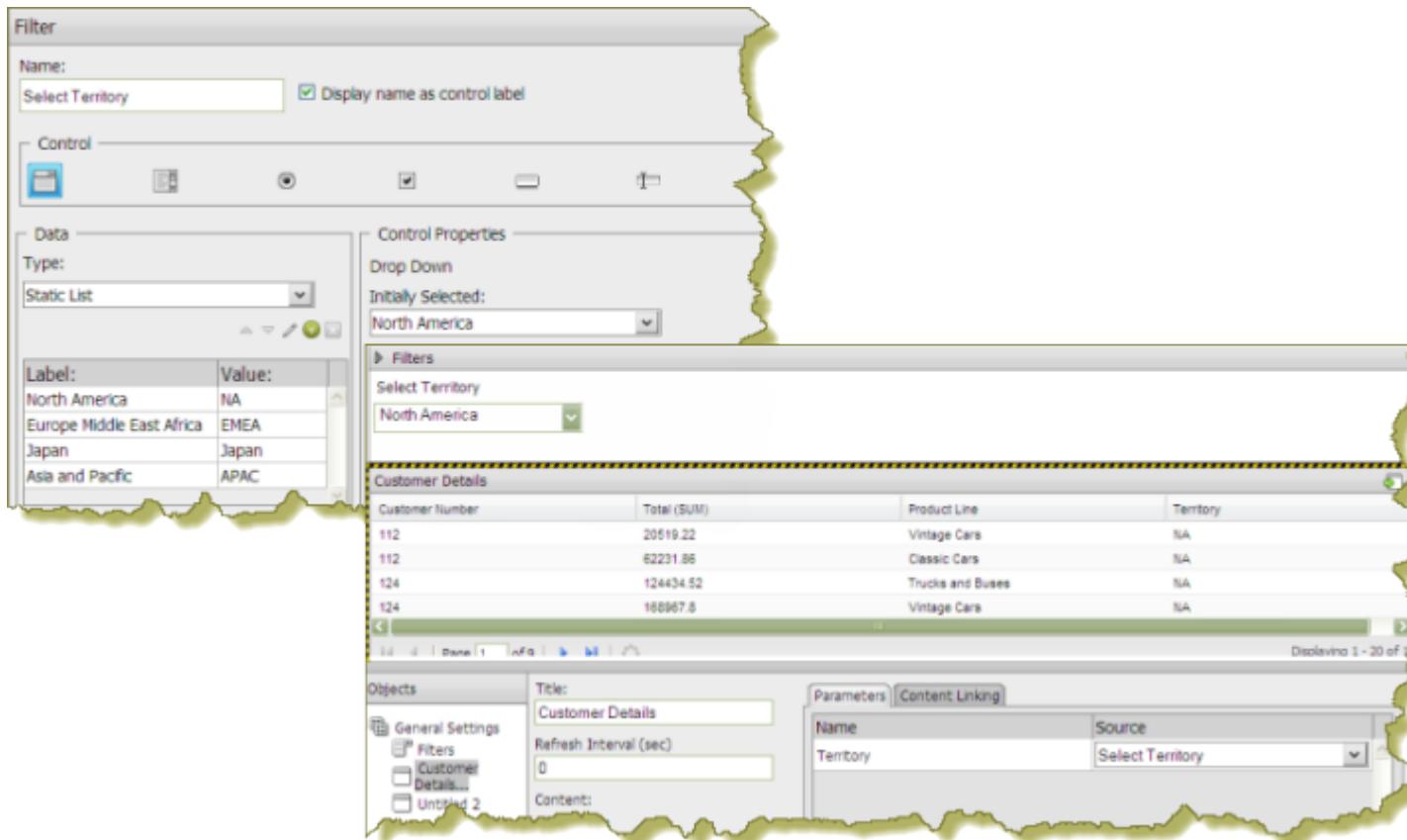
Your dashboard now has a filter.

If you plan to provide hard-coded names and values for your dashboard users, or produce a dynamic filter list, continue on to the next few sections.

### Creating a Static List of Options

You must have a data table or chart that contains at least one parameter for your filter control to function correctly.

When you create a static list, you define a static list of options to present to the dashboard user. Each option consists of a display name that appears in a drop-down list and a value that is used to restrict the data query in the filter toolbar as shown in the example below:



Follow the instructions below to create a static list:

1. In the dashboard page, under **General Settings**, select **Filters**.  
The Filter Editor appears on the right. No filters are listed if this is the first time you are assigning filters.
2. To display a filter toolbar to users of the dashboard, enable **Show Filter Toolbar**.  
A placeholder for the filter toolbar appears at the top of the dashboard.
3. Click (Add) to add a filter.  
The **Filter Properties** dialog box appears.
4. Click on an icon to select your **Filter Control** type. In the example above, the (Drop Down) control was used.
5. Ensure that **Static List** is selected under **Type**. Static List is the default selection.
6. Click (Add).  
The **List Value** dialog box appears.
7. In the **List Value** dialog box, enter the label and a value for the first option in the list. The label is the option that is visible to dashboard users; the value is passed as the parameter's source value.
8. When you are done adding labels and values, click **Close** to exit the List Value dialog box.
9. In the Filter Control dialog box, change the label (filter option) that will appear first in the filter control selecting another label from the list under **Initially Selected**.
10. In the dashboard, select your chart or data table. Click the **Parameters** tab and choose another **Source** for the parameter from the list. That source should be the name of your filter control; in this example, **Select Territory**.

The screenshot shows a dashboard with a 'Customer Details' data table. Above the table is a 'Filters' section with a dropdown menu set to 'North America'. Below the table are 'Objects' settings for 'Customer Details', including a 'Parameters' tab where the 'Territory' parameter's 'Name' is 'Territory' and its 'Source' is 'Select Territory'.

The original default value (Source) for the {Territory} parameter was **NA** but for the filter to display correctly, the **Source** was changed to **Select Territory** in the dashboard so that the filter control could drive the content in the data table.

**11.** Click **OK** to exit the **Filter Control** dialog box.

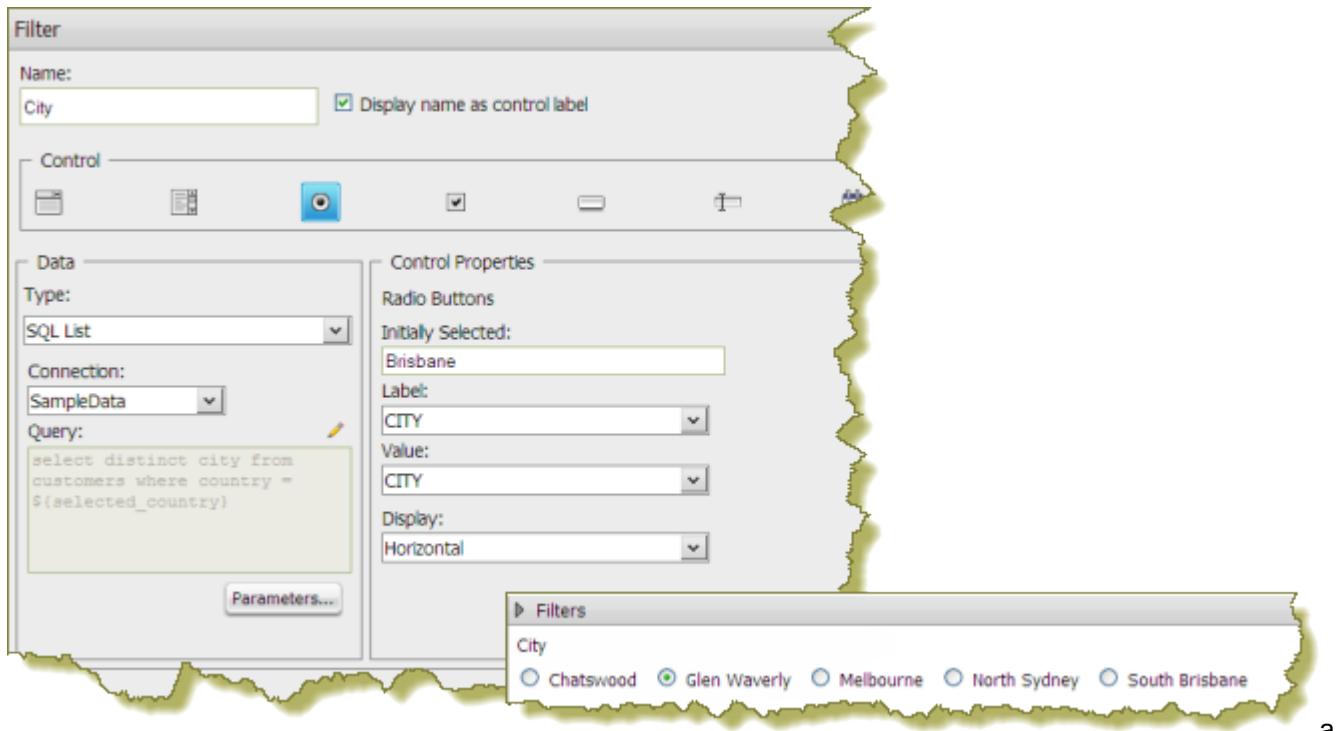
The filter options are displayed to the dashboard user when viewing the data table.

**12.** Click **OK** to exit the Filter Properties dialog box and save your dashboard.

## Creating a SQL List

You must have a data table or chart that contains at least one parameter for your filter control to function correctly.

When you create an SQL List, you are using a SQL query to dynamically retrieve a list of display names and corresponding values directly from a relational database as shown in the example below:



 **Note:** You must have administrative permission to create SQL-based filters.

Follow the instructions below to create a SQL List:

1. In the dashboard page, under **General Settings**, select **Filters**.  
The Filter Editor appears on the right. No filters are listed if this is the first time you are assigning filters.
  2. To display a filter toolbar to users of the dashboard, enable **Show Filter Toolbar**.  
A placeholder for the filter toolbar appears at the top of the dashboard.
  3. Click  (Add) to add a filter.  
The **Filter Properties** dialog box appears.
  4. In the **Filter Properties** dialog box, enter a **Name** for your filter.
  5. Enable the **Display Name as Control Label**, if appropriate.
  6. Click the appropriate icon to select your filter control. In the example above, the Radio Button control was selected.
  7. Under **Type**, select **SQL List**.
  8. Select the data source (**Connection**) that contains the content you need to set options from the drop-down list.
  9. Click  (Edit) to display the **Query** input text box.
  10. Type the SQL query in the area provided for you. If you enter a parameter query, use the following format **`\${parametername}`** and provide a default value for the parameter.
  11. Click **Test** to ensure that your SQL query is displaying the correct values.
-  **Note:** Use a SQL query that returns two columns — one for the display name and one for the value.
12. Adjust your SQL query as needed and click **OK**.
  13. Under **Control Properties**, enter a **Default Label/Value** for the *initially selected* option in your filter control.
  14. Select a **Label** to display in the filter control; this is the user-friendly name that users will see in the dashboard.

**15.**Select the **Value**; this is the field that is passed as the parameter's source value.

**16.**If applicable, select your **Display** type from the list.

 **Note:** Some filter controls allow you to choose the position of your filter options. If you have a long list of options, for example, a list of cities, you can change the Display type to horizontal.

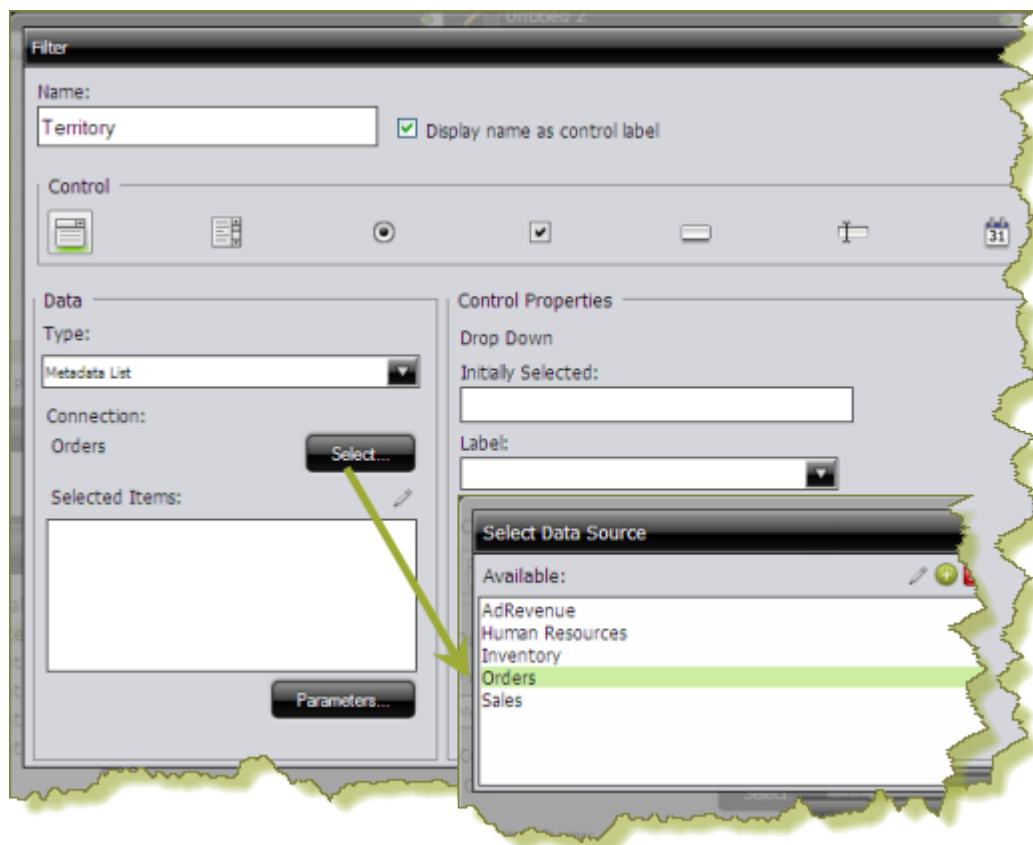
**17.**Click **OK**.

The list of values appear in the filter toolbar in the dashboard.

## Creating a Metadata List

You must have a data table or chart that contains at least one parameter for your filter control to function correctly.

When you create a Metadata List, you are defining a query to retrieve a list of display names and corresponding values from a metadata data source provided by your administrator.



1. In the dashboard page, under **General Settings**, select **Filters**.

The Filter Editor appears on the right. No filters are listed if this is the first time you are assigning filters.

2. To display a filter toolbar to users of the dashboard, enable **Show Filter Toolbar**.

A placeholder for the filter toolbar appears at the top of the dashboard.

3. Click  (Add) to add a filter.

The **Filter Properties** dialog box appears.

4. In the **Filter Properties** dialog box, enter a **Name** for your filter.

5. Under **Data Type**, select **Metadata List**.

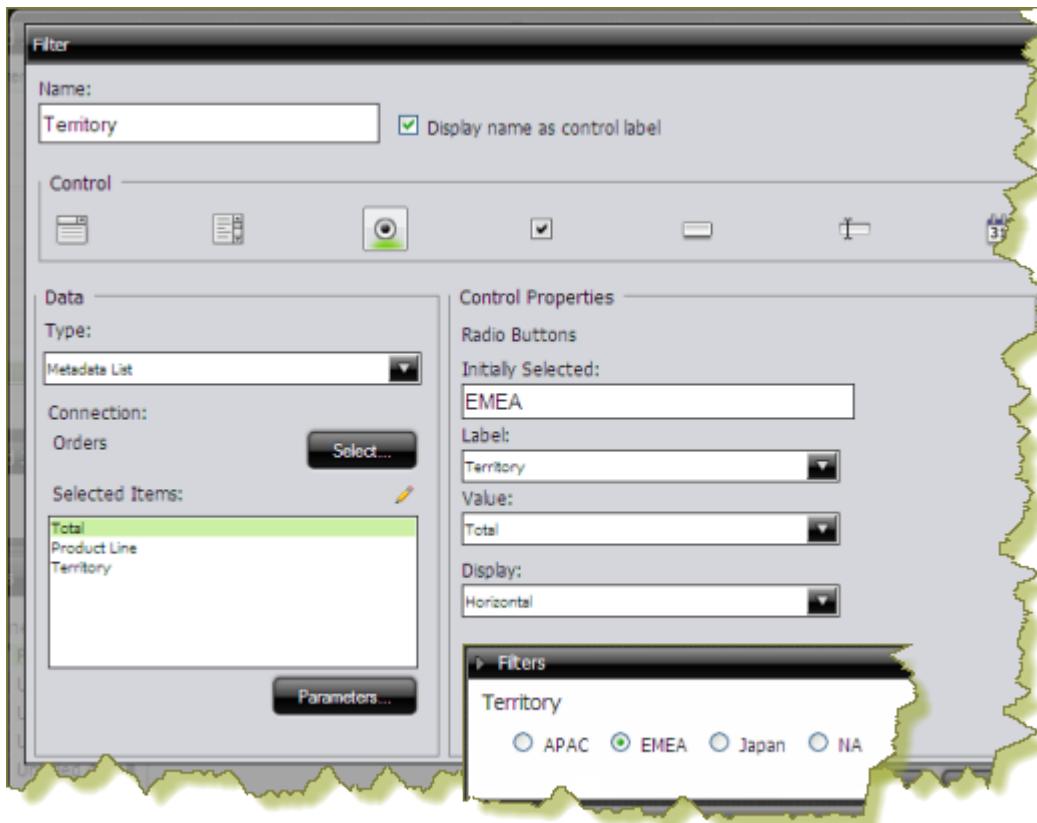
6. Click **Select** to choose the data source that contains the content you need to set options from the drop-down list and click **OK**.

The **Query Editor** opens.

7. In the **Query Editor**, build a query to select either a single column (that represents both a name and a value), or two columns representing the display names and corresponding values.

 **Note:** If a single column query is defined the values of that column will be used for both the display names and the values.

8. Click **OK** to exit the Query Editor.  
Your options appear under **Selected Items** in the Filter Properties dialog box.
9. Under **Control Properties**, enter a **Default Label/Value** for the *initially selected* option in your filter control.



10. Select a **Label** to display in the filter control; this is the user-friendly name that users will see in the dashboard.
11. Select the **Value**; this is the value in the database that is associated with the Label you selected in the previous step.
12. If applicable, select your **Display** type from the list.

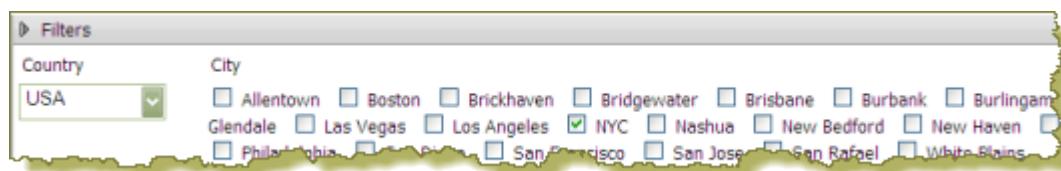
 **Note:** Some filter controls allow you to choose the position of your filter options. If you have a long list of options, for example, a list of cities, options may not appear correctly in the user console unless you change the Display type to **Horizontal**.

13. Click **OK**.

The list of values appear in the filter toolbar in the dashboard.

## Creating a Cascading Filter

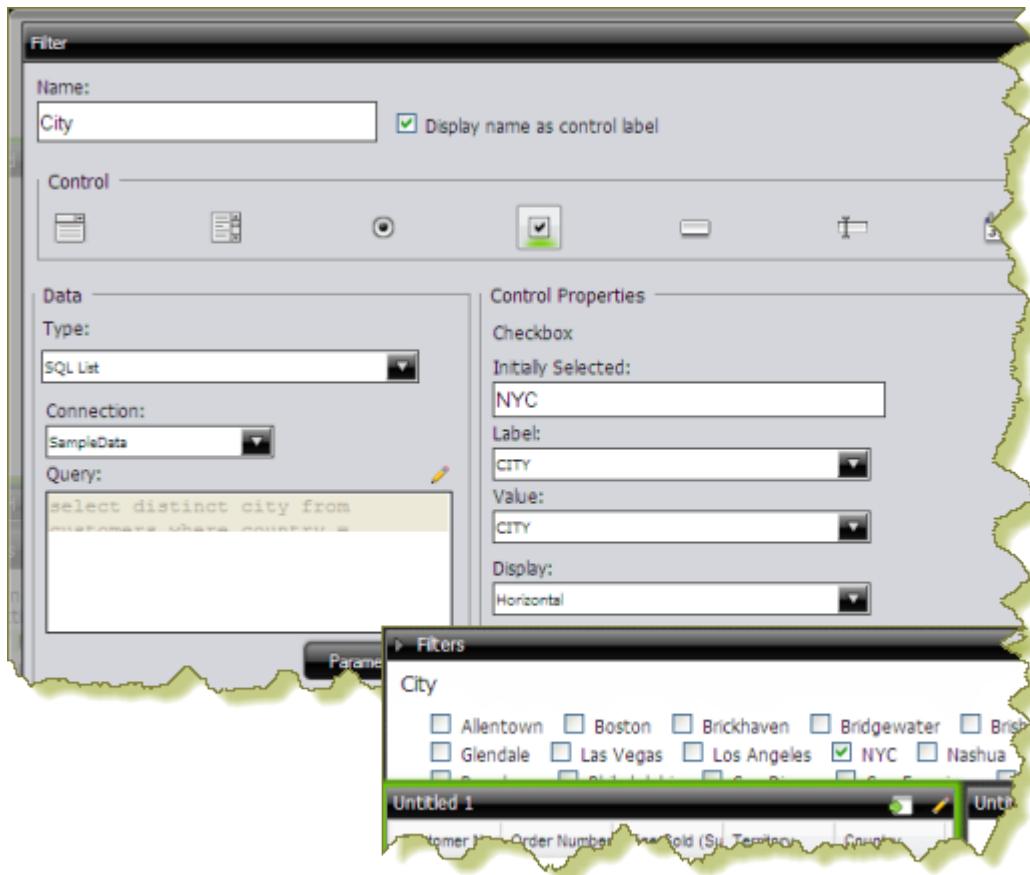
A cascading filter changes based on a value a user selects. When the value in the drop down list, (Country), changes, the filter is automatically applied to the second filter, (City) thus changing its values.



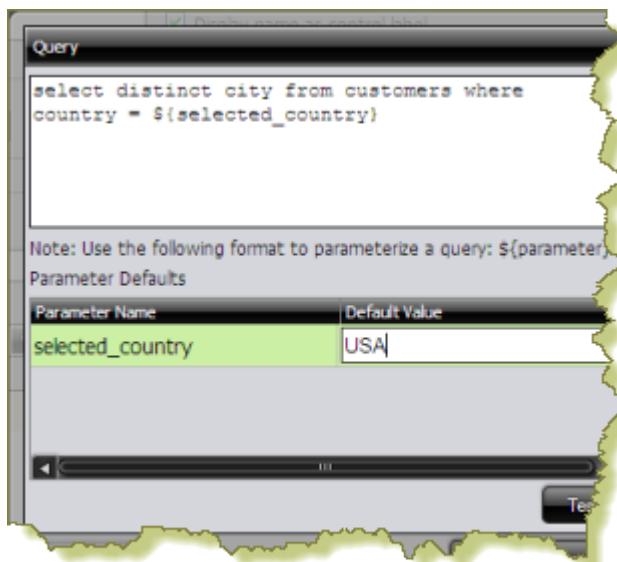
The example above was created using a Metadata List for the drop down filter (Country).



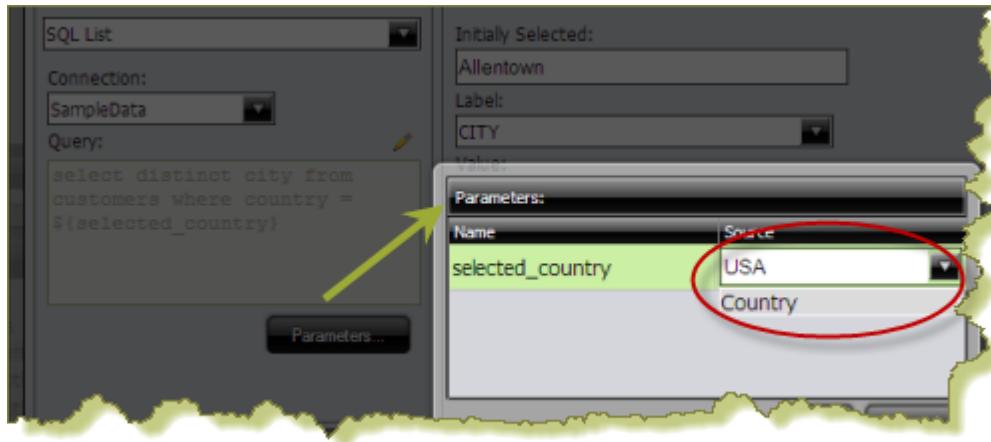
A SQL List that included a parameter, `#{selected_country}`, in its associated query was used for the checkbox filter (**City**).



The **Default Value** for the **selected\_country** parameter was set to **USA** with New York City (**NYC**) as the initially selected value for the checkbox filter.



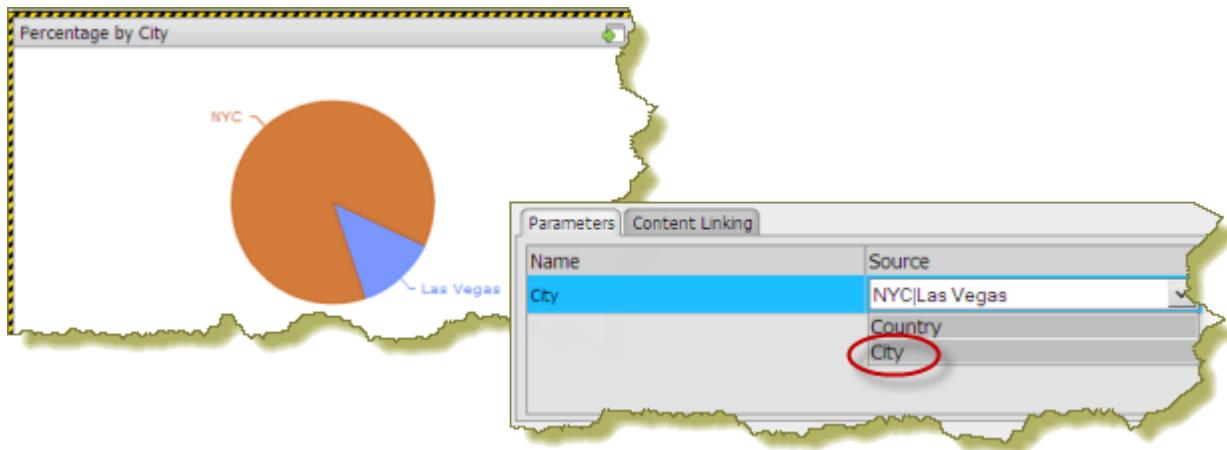
To link the City filter to the Country filter, another **Source** for the **selected\_country** parameter was chosen. The alternate source is the **Country** filter.



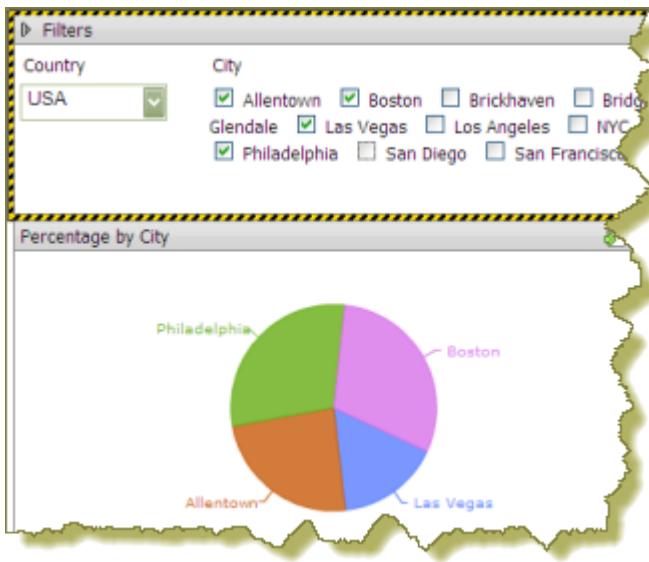
Once the filters are linked, users can select a country and then select a city (or cities) in the country of their choice.

Using this example, the report designer can now add a data table, chart, or other content in the dashboard that can be driven by the filter he or she just created. Suppose the designer decides to add a pie chart to the dashboard. The pie chart will display the percentage of sales per city.

In the Query Editor, the report designer creates a parameter, **{City}**, with an extended default value: **NYC|Las Vegas**. The resulting pie chart displays values for New York City and Las Vegas. Under the Parameters tab associated with the pie chart, the **Source** value for the City parameter is changed to the **City** filter.



When the report is saved, users of the dashboard can see results for a country and multiple cities within that country.



## Editing Filters

You can edit filters as needed. Follow the instructions below to edit filters:

1. In the dashboard page, select an existing dashboard.
2. Under **Objects**, click **Filters** to display the filters associated with the dashboard you selected.
3. Select the filter you want to edit and click . The **Filter Properties** dialog box appears.
4. Make your changes as needed and click **OK** to update the filter-related options in the dashboard.

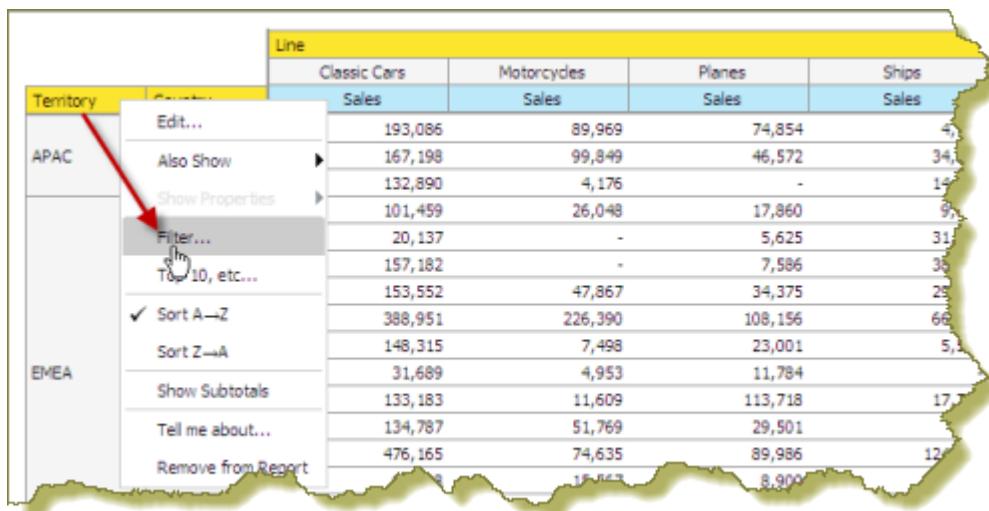
## Linking Dashboard Filters to Analyzer Parameters

This process only applies to dashboards that include parameterized Analyzer reports. You must have an Analyzer report with a query parameter in it in order to proceed.

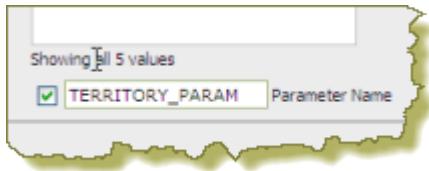
The instructions below explain how to parameterize an Analyzer report.

1. In Analyzer, select a field in your report to which you want to link; then, right-click and choose **Filter**.

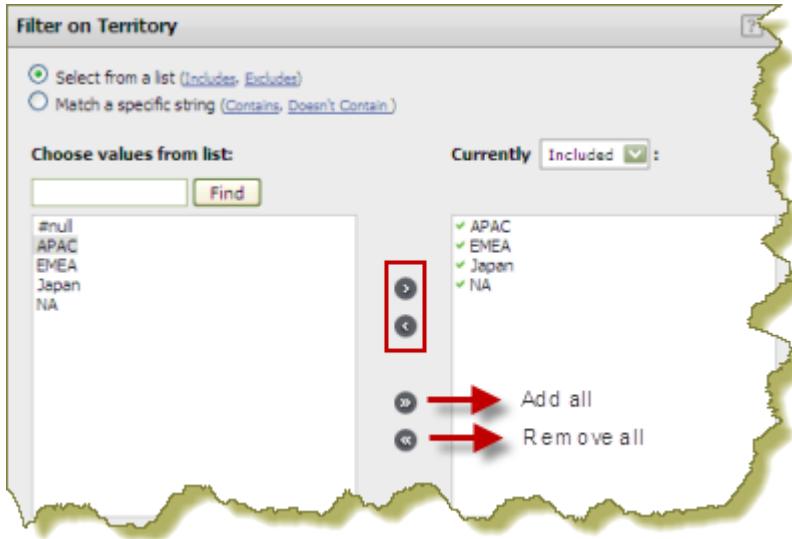
In the example below, data will be filtered by **Territory**.



2. In the **Filter** dialog box, enter a name for the parameter in the **Parameter Name** text box and click the check box to enable it.



3. Select the values you want associated with the parameter. Use the arrows to add values to the box on the right.



4. Click **OK** to exit the Filter dialog box.
5. Save your Analyzer report.

In the upper left corner of the report, you can see that a filter is in use. Click (Edit) to edit your filter; click to delete the filter.

Territory	Country	Line	
		Classic Cars	Motorcycles
APAC	Australia	193,086	89,9
	New Zealand	167,198	99

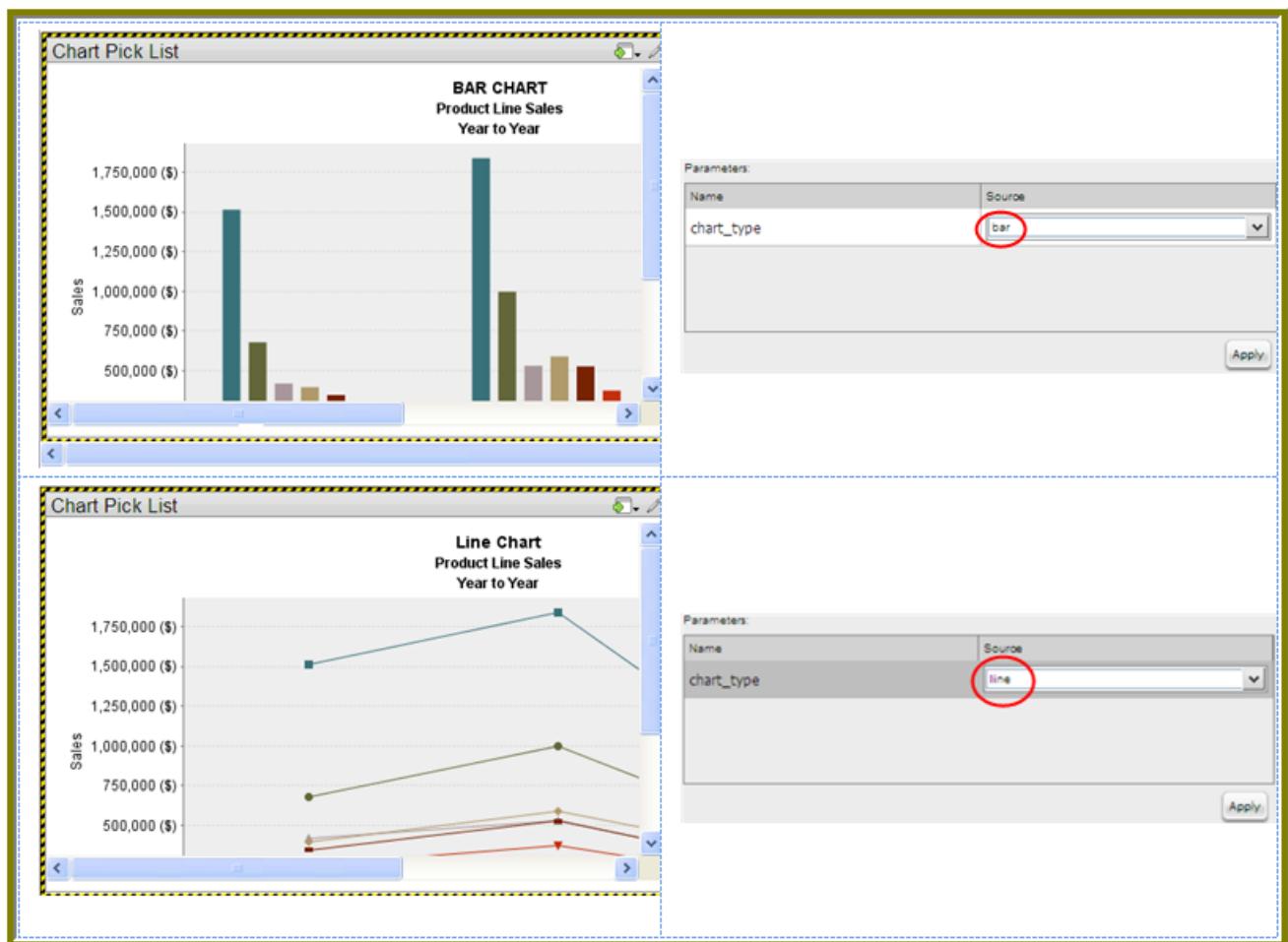
6. Create a dashboard and drag the Analyzer report into a panel.

The name of the parameter appears in the lower portion of the dashboard under **Parameters**.

7. Add a filter to the dashboard based on the parameter you created in your Analyzer report.  
The filter appears in the dashboard.

## Dashboard Parameters

If you are placing a file, such as an .xaction or .prpt, inside a dashboard panel, it is possible that the author of the file, defined meaningful parameters for the content. If previously defined, the parameters and their associated default values, appear under **Parameters** in the edit pane of the dashboard. In the example below, when the chart initially rendered, it displayed a parameter called, "chart\_type" with a default value called, "bar." A user can change the value of the parameter to see the content rendered as a pie, line, or area chart.

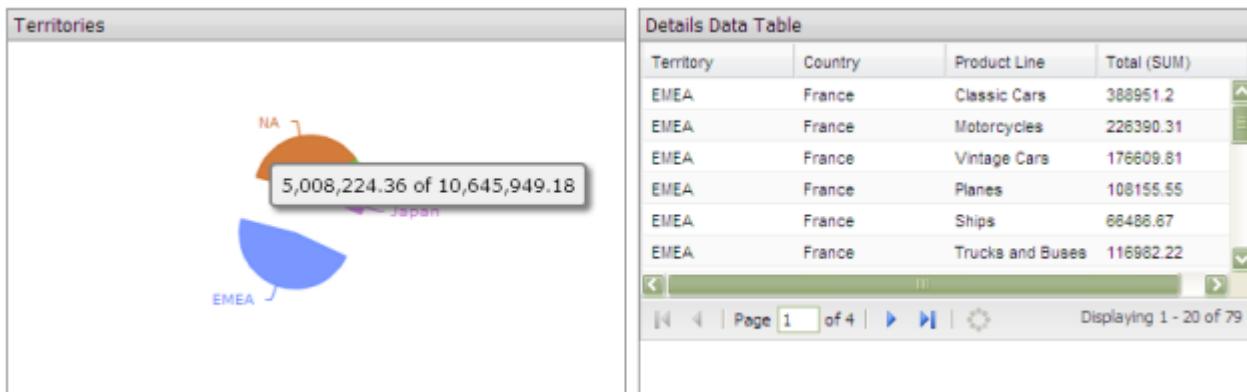


Parameter names are "hard-coded," in the file; that means they cannot be changed. Neither can you change the number of parameters associated with a file. When you create a chart using the Chart Designer, embed a URL into a dashboard, or create a data table, you can change both the name and value of a parameter.

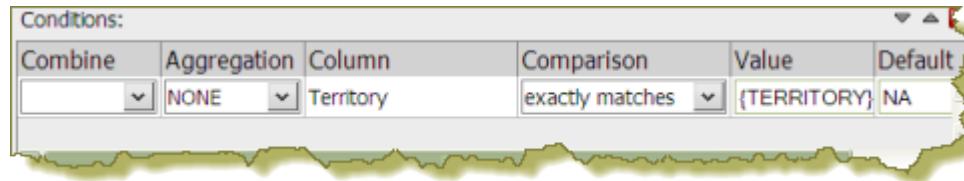
## Creating Chart or Data Table Parameters With the Query Editor

When you place a chart in a dashboard panel, you use the Query Editor to retrieve data from a database for display on your chart or data table. If applicable, you can add Conditions or constraints that filter the data so that the chart or data table displays the information you want dashboard consumers to see.

Using parameters is critical if you plan on using dashboard filters or linking content in one dashboard panel to content on another dashboard panel. For example, suppose you create a pie chart and you want to filter details associated with an exploded pie slice in the adjoining data table as shown in the example below. In this instance, you must use a parameter that allows the data table to update when a dashboard consumer clicks on a pie slice. Optionally, you can parameterize the query condition so that the content is updated based on a user interaction, such as changing a filter value.

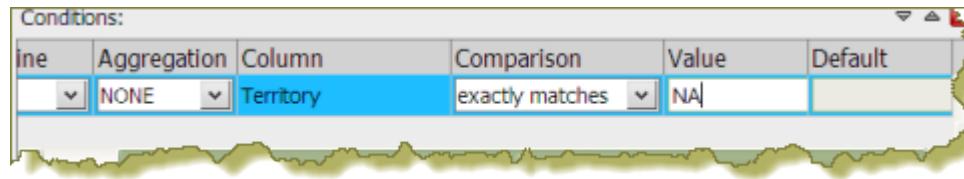


To create a parameter, in the **Value** field, type the name of the parameter inside curly braces, as in **{Parameter Name}**. In the example below, the designer created a parameter called, **{TERRITORY}**; the default value, or source, for the parameter is, "NA" (North America). When a chart or data table renders, it displays data associated with North America. Remember that this is a *default value*. When you enclose a parameter name with curly braces, you are creating a *parameter query*. That means, that users can change the query dynamically by replacing the default, "NA," with a different territory acronym, (for example, EMEA), when the query runs.



You can define multiple default parameter values by adding a pipe (|) between the values, as in NA|EMEA|APAC.

Suppose a dashboard designer chooses to limit the data to North America (NA) exclusively? In this instance, he or she would not include the curly braces around "NA," (as shown in the example below), and **Default** (value) is disabled. This is an example of a static query.



## Using Content Linking to Create Interactive Dashboards

Depending on your needs, you can create a "static" dashboard, which contains content in each panel that is separate but related. For example, you may provide users with a bar chart that contains total sales figures by region. Additionally, you may provide a data table that displays sales details for each state in a specific region. You may also want to provide sales data associated with each salesperson in a specific region. The content in your dashboard is useful to dashboard consumers, but to make it more "interactive," you may want to consider using *content linking*.

The content linking features in dashboards allow you to associate (link) content in one dashboard panel to content on another dashboard panel as long as query parameters have been defined. These features are particularly helpful for drilling down or for dynamic filtering; for example, when dashboard consumers explode a single slice in a pie chart to launch content in a data table associated with that pie slice. In this instance, dashboard consumers are moving from a summary view to a detailed view interactively.

You can use content linking if your dashboard panel contains a data table, chart, .xaction, .prpt, and Analyzer report.

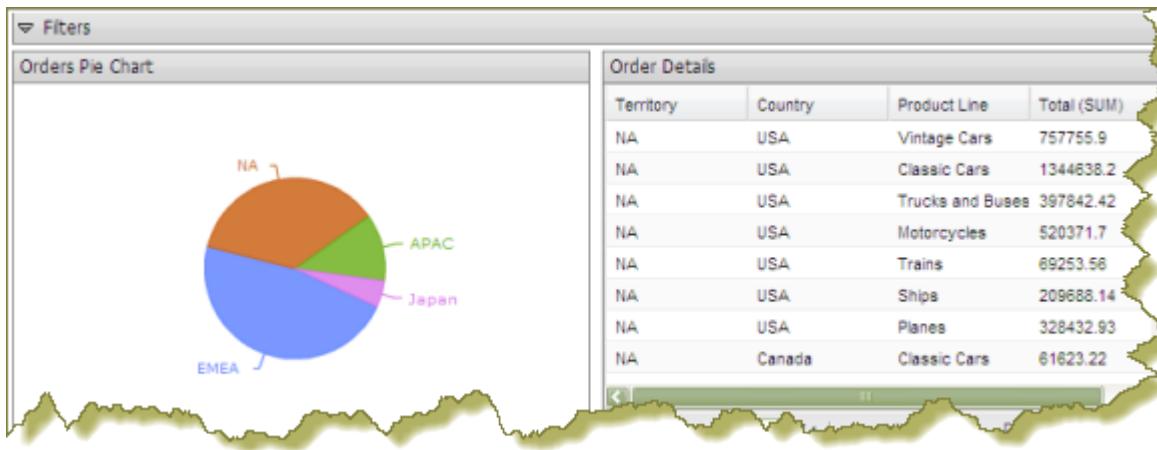
### Content Linking and Query Parameters

Query parameters are required for content inside a dashboard panel to receive values used to filter data from a filter control. They are also required when receiving values from content in other dashboard panels that are broadcasting values associated with Content Linking. The way in which query parameters are defined is different depending on the type of content you are placing inside your dashboard panels:

### Linking Charts and Data Tables

Below are general instructions for linking charts and data tables in a dashboard. This is just an example. You must adjust the instructions when working with your own data.

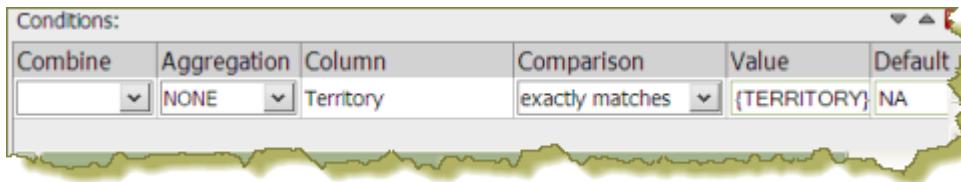
1. Create a simple dashboard that contains a chart and a data table. At this point, none of the content has been linked and you have a "static" dashboard.



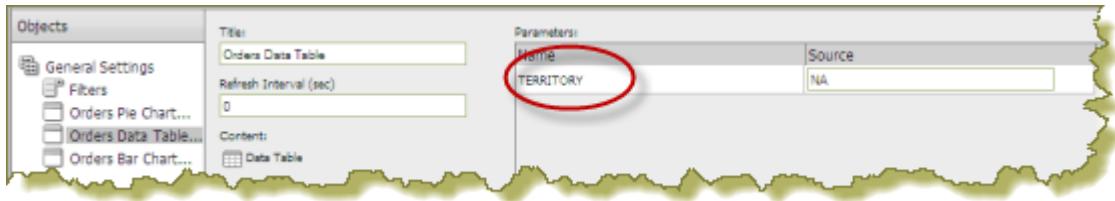
Notice the pie chart in the example above. You want dashboard consumers to click a slice (NA, APAC, Japan, EMEA) and have the data table on the right update with the values associated with that slice exclusively. For example, if a report consumer clicks the EMEA slice, the data table will display values associated with EMEA and nothing else. To get the correct filter display, you must first create a parameterized query that drives the content in the data table.

2. Add a parameterized condition to the query for the data table by specifying a parameter name in curly braces in the **Value** text box; then, provide a default value for that parameter in the **Default** text box. In the example below, a parameter called **TERRITORY** with a default value of **NA** has been created.

 **Note:** Parameterizing a query, as described here, allows you to pass values dynamically and update the chart based on events triggered by other elements of the dashboard such as a user selecting an item from a filter control or following links defined in content associated with another panel in the dashboard.



In the Pentaho User Console, click the data table and examine its available parameters. In the example below, there is an available parameter called **TERRITORY** with a default source value of NA (North America). There are no more other sources that control the **TERRITORY** parameter.

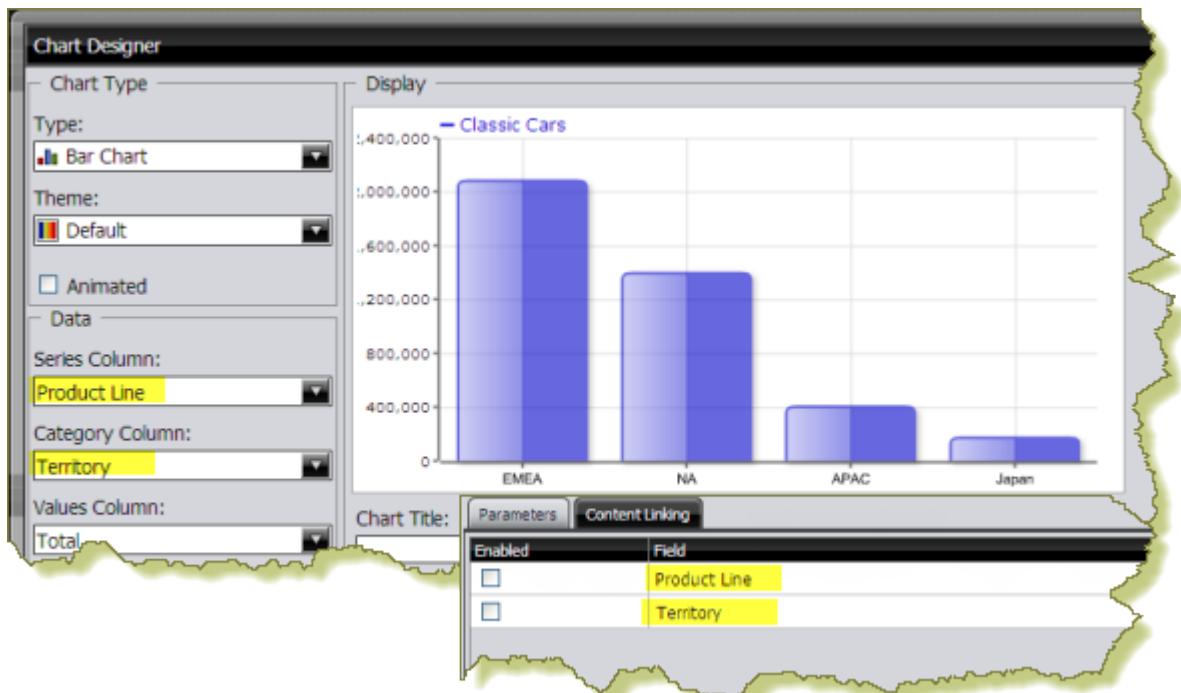


3. To enable content linking, select the chart. Click the **Content Linking** tab then click the check box next to the field name you want enabled for content linking. Click **Apply**.

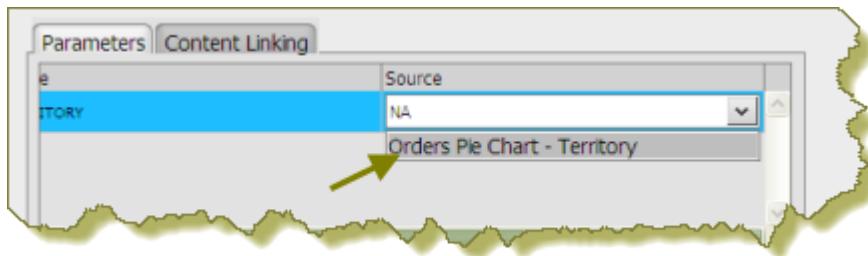


This step enables content linking on the chart series; in this example, the chart series is **Territory**. When you enable content linking on a chart series, you make the series value available as a source of parameters for content in other dashboard panels.

 **Note:** For bar, line, and area charts, content linking can be enabled on the **Series** column. It can also be enabled on the **Category** column if the Category column is defined.



4. Click the data table to display the available parameter, then click the down arrow, (in the **Source** text box), to display a new source for the parameter. Select the new source. In the example below, the new source is **Orders Pie Chart - Territory**. Click **Apply**.



The new source for the parameter corresponds to the title of the dashboard panel that contains the chart as shown in the example above. This new source will now drive the display in the data table.

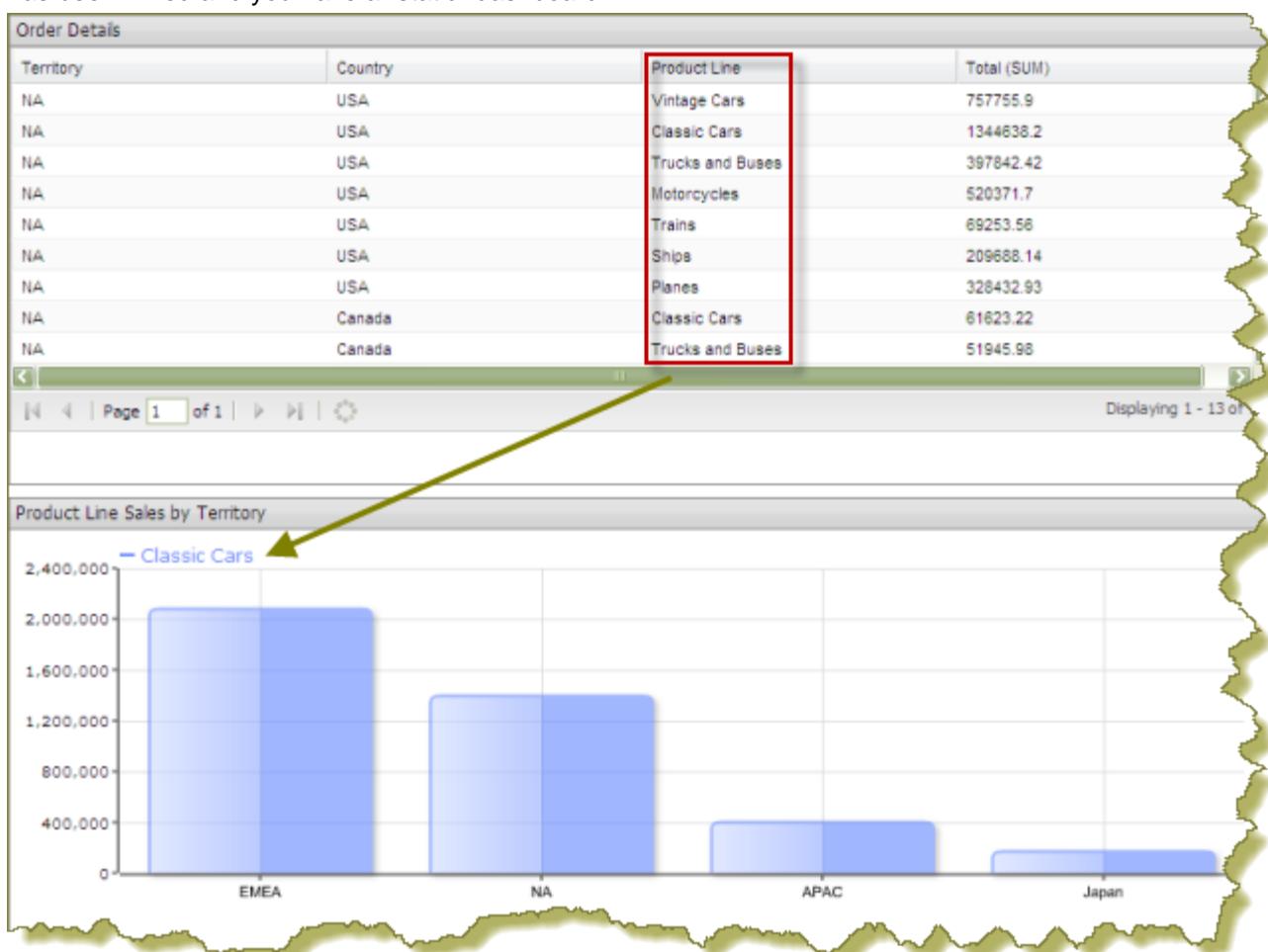
- Save your dashboard. See [Saving Your Dashboard](#) on page 81.

When users click a pie slice or bar in a chart, the data table displays content associated with that specific pie slice or bar.

## Linking Columns in a Data Table to Content in other Dashboard Panels

The instructions that follow show you how to link a chart to a column in a data table. You must adjust the instructions when working with your own data.

- Create a simple dashboard that contains a data table and a bar chart. At this point, none of the content has been linked and you have a "static" dashboard.



Notice the data table in the example above. You want dashboard consumers to click on a product in the **Product Line** column and have the bar chart update with information about sales by territory for that specific product line.

2. Add a parameterized condition to the query for the bar chart by specifying a parameter name in curly braces in the **Value** text box; then, provide a default value for that parameter in the **Default** text box. In the example below, a parameter called **Productline** with a default value of **Classic Cars** has been created.

The screenshot shows the Pentaho Dashboard Designer's Query Editor. On the left, there's a tree view of categories: Customer, Orders, Products, and Payments. The main area is titled "Selected Columns:" and contains three rows of data:

Aggregation	Column
NONE	Territory
NONE	Product Line
SUM	Total

Below this is a "Conditions:" section with a table:

Line	Aggregation	Column	Comparison	Value	Default
	NONE	Product Line	exactly matches	{Productline}	Classic Cars

3. In the Chart Designer, set the data definitions for the series, category and values columns associated with your bar chart and click **OK**.
4. Under **General Settings**, select the data table and click the **Content Linking** tab. Enable content linking on the column in your data table that will filter content in your chart. Each of the columns in a data table are able to broadcast values to other dashboard components.

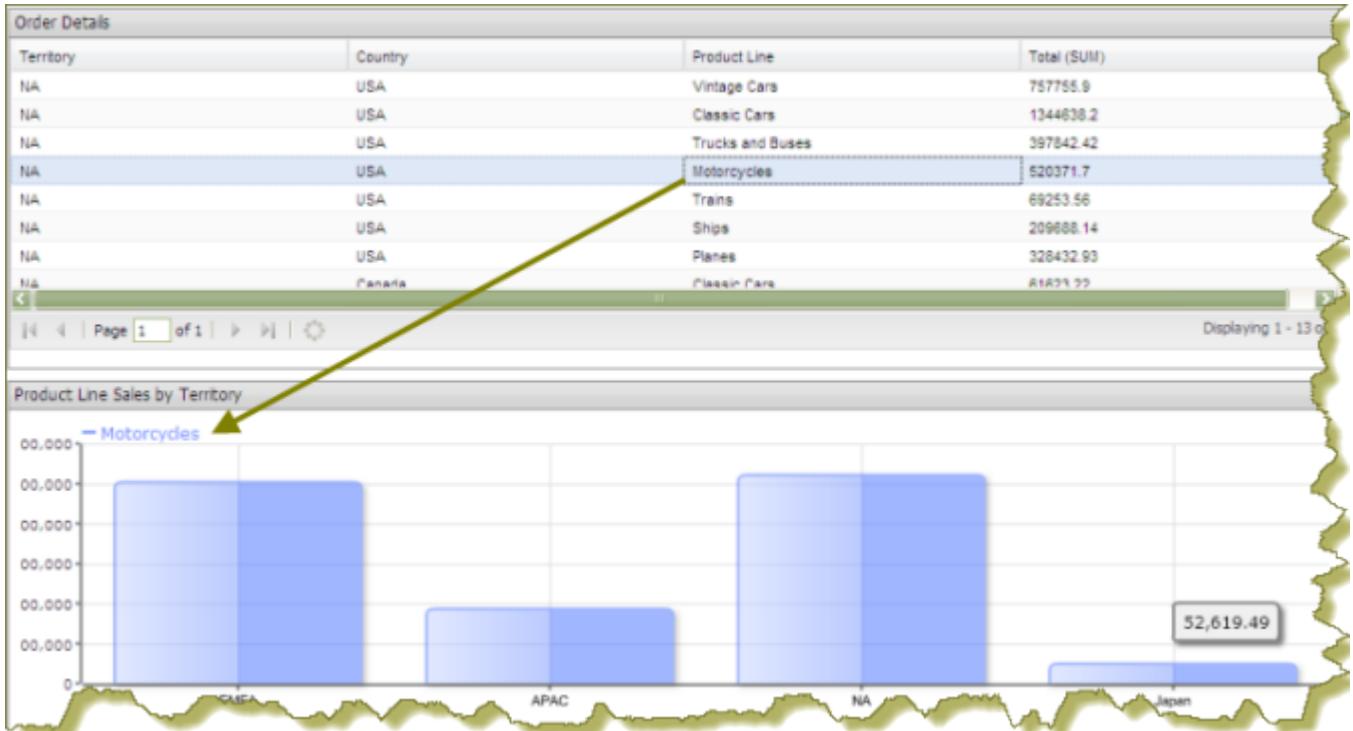
The screenshot shows the "General Settings" dialog for a chart. On the left, there are fields for "Title" (Order Details), "Refresh Interval (sec)" (0), and "Content" (Data Table). On the right, the "Content Linking" tab is selected. It shows a table with columns "Enabled" and "Field". The "Product Line" row has its "Enabled" checkbox checked (indicated by a red circle).

5. Under **General Settings**, select the chart and click the **Parameters** tab. Click the down arrow, in the **Source** text box to display another source for the parameter you created. In the example below, notice that **Order Details - Product Line** , (this is the name of the dashboard panel that contains the data table), can now be selected as a source for the **Productline** parameter.

The screenshot shows the "Parameters" tab for a chart. It lists a single parameter named "Productline". The "Source" dropdown menu is open, showing "Classic Cars" and "Order Details - Product Line". A yellow arrow points from the text "Order Details - Product Line" to the dropdown menu.

6. Save your dashboard. See [Saving Your Dashboard](#) on page 81 for instructions.
7. In the data table, select an item in the column that has content linking enabled. The content in the chart updates in response to the item that was clicked in the data table.

In the example below, the **Product Line** column was enabled for content linking.



## Creating Content to Content Links in an Analyzer Report

Below are general instructions for creating content links in an Analyzer report, (inside a dashboard), that can be used to drive the parameter values of content in other dashboard panels. You must adjust the instructions when working with your own data.

1. Create a simple dashboard that contains an Analyzer Report and a data table. At this point, none of the content has been linked and you have a "static" dashboard.

Untitled 1

No Filter in use

Your report is ready

Territory	Line						
	Classic Cars	Motorcycles	Planes	Ships	Trains	Trucks and Buses	Vintage Cars
APAC	411,956	189,818	121,426	38,393	9,907	145,666	36,121
EMEA	2,091,601	507,138	491,655	427,265	138,506	500,979	851,200
Japan	181,601	52,619	109,733	33,016	16,802	57,848	52,311
NA	1,406,261	524,549	353,943	249,997	69,254	449,788	798,200

Untitled 2

Customer Name	City	State
American Souvenirs Inc.	New Haven	CT
Auto-Moto Classics Inc.	Brickhaven	MA
Boards & Toys Co.	Glendale	CA
Cambridge Collectables Co.	Cambridge	MA
Canadian Gift Exchange Network	Vancouver	BC
Classic Gift Ideas, Inc	Philadelphia	PA
Classic Legends Inc.	NYC	NY
Collectable Mini Designs Co.	San Diego	CA
Collectables For Less Inc.	Brickhaven	MA
Corporate Gift Ideas Co.	San Francisco	CA
Dyno Graphics Inc.	Albuquerque	NM

In the example above, when content linking is achieved, the list of territories (APAC, EMEA, Japan, and NA) will become hyperlinks that, when clicked, will update customer details data table. To get the correct filter display, a parameterized query that drives the content in the data table must be created.

- Add a parameterized condition to the query for the data table by specifying a parameter name in curly braces in the **Valuetext** box; then, provide a default value for that parameter in the **Default** text box. In the example below, a parameter called **TERRITORY** with a default value of **NA** has been created.

**Note:** Parameterizing a query, as described here, allows you to pass values dynamically and update the chart based on events triggered by other elements of the dashboard such as a user selecting an item from a filter control or following links defined in content associated with another panel in the dashboard.

Conditions:					
Combine	Aggregation	Column	Comparison	Value	Default
<input type="button" value="NONE"/>		Territory	exactly matches	{TERRITORY}	NA

Under **General Settings**, click the data table and examine its available parameters. In the example below, there is an available parameter called **TERRITORY** with a default source value of NA (North America). A drop-down arrow in the **Source** text box indicates that there are additional values to control the available parameter. In this example, there are no additional source values that control the **TERRITORY** parameter.



- Under **General Settings**, select the Analyzer report. Click the **Content Linking** tab then click the check box next to the field/column name you want enabled for content linking. Click **Apply**.



In the Analyzer report, the values under the **Territory** become hyperlinks.

Territory Sales by Product Line			
No Filter in use			
Territory	Line		
	Classic Cars	Motorcycles	Planes
APAC	411,956	189,818	1,234
EMEA	2,091,601	507,138	1,234
Japan	181,601	52,619	1,234
NA	1,406,261	524,549	1,234

- Under **General Settings**, select the data table and examine its available parameters. Notice that there is a drop-down arrow in the **Source** text box. Click the down arrow to display and select a new source value for the available parameter. Click **Apply**.
- Save your dashboard. See [Saving Your Dashboard](#) on page 81.

In the example below, content linking was applied. When users click on a territory hyperlink in the Analyzer report, the data table updates and displays customer-related details associated with that specific territory exclusively.

Territory Sales by Product Line

No Filter in use

Your report is ready. Rows: 4

Territory	Line						
	Classic Cars	Motorcycles	Planes	Ships	Trains	Trucks and Buses	Vintage Cars
Sales	Sales	Sales	Sales	Sales	Sales	Sales	
APAC	411,956	189,818	121,426	38,393	9,907	145,666	364,55
EMEA	2,091,601	507,138	491,655	427,265	138,506	500,979	851,0
Japan	181,601	52,619	109,733	33,016	16,802	57,848	52,35
NA	1,406,261	524,549	353,943	249,997	69,254	449,788	798,269

Customer Details

Customer Name	City	State
AV Stores, Co.	Manchester	null
Alpha Cognac	Toulouse	null
Amico Models & Co.	Torino	null
Atelier graphique	Nantes	null
Auto Associee & Cle.	Versailles	null
Auto Canal+ Petit	Paris	null
Baane Mini Imports	Stavern	null
Bavarian Collectables Imports, Co.	Munich	null
Blauer See Auto, Co.	Frankfurt	null

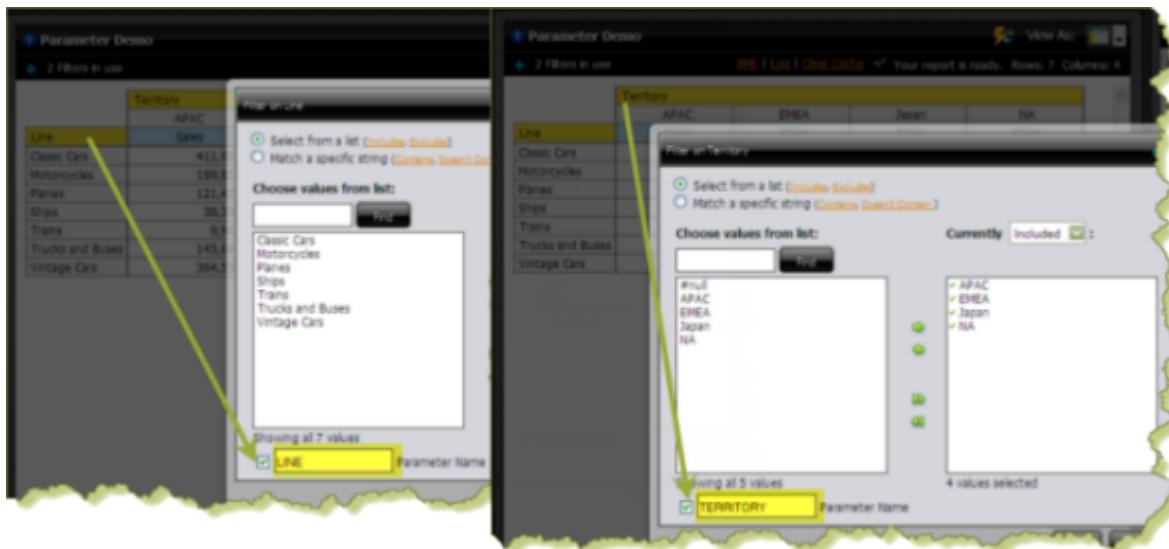
## Linking an Analyzer Chart to a Report

You can create content-to-content links between an Analyzer chart and any other parameterized report such as a Report Designer report, a data table, or another Analyzer report.

Below are general instructions for linking an Analyzer chart to a report. You must adjust the instructions when working with your own data.

1. Create a simple dashboard that contains an Analyzer chart and a parameterized report. The example above displays an Analyzer chart and an Analyzer Report displayed as a table view. At this point, none of the content has been linked and you have a "static" dashboard.

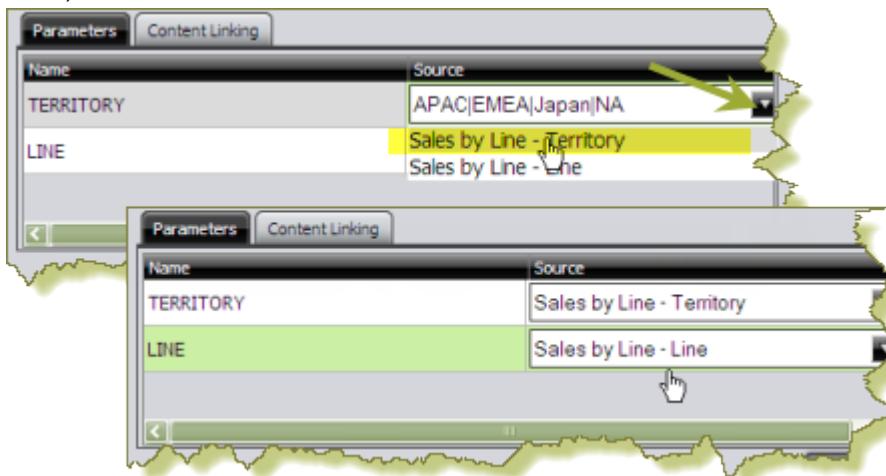
Hypothetically, if you want users to be able to click on a bar in the bar chart and update the Analyzer table view, the table must contain at least one parameter. In the example below, there are two parameters, (LINE and TERRITORY), associated with the Analyzer table.



2. Under **General Settings**, select the Analyzer chart. Click the **Content Linking** tab then click the check box (or check boxes) next to the field/column name you want enabled for content linking. Click **Apply**.



3. Under General Settings, select the Analyzer Report (table view) and click the **Parameters** tab. Click the down arrow, in the **Source** text box to display another source for the parameters you created. In the example below, notice that **Sales by Line**, (this is the name of the dashboard panel that contains the chart), can now be selected as a source for both the TERRITORY and LINE parameters.



4. Save your dashboard. See [Saving Your Dashboard](#) on page 81.

In this example, content linking is applied when users click on a bar in the bar chart. The data table updates and displays sales details for a product line in a specific territory.

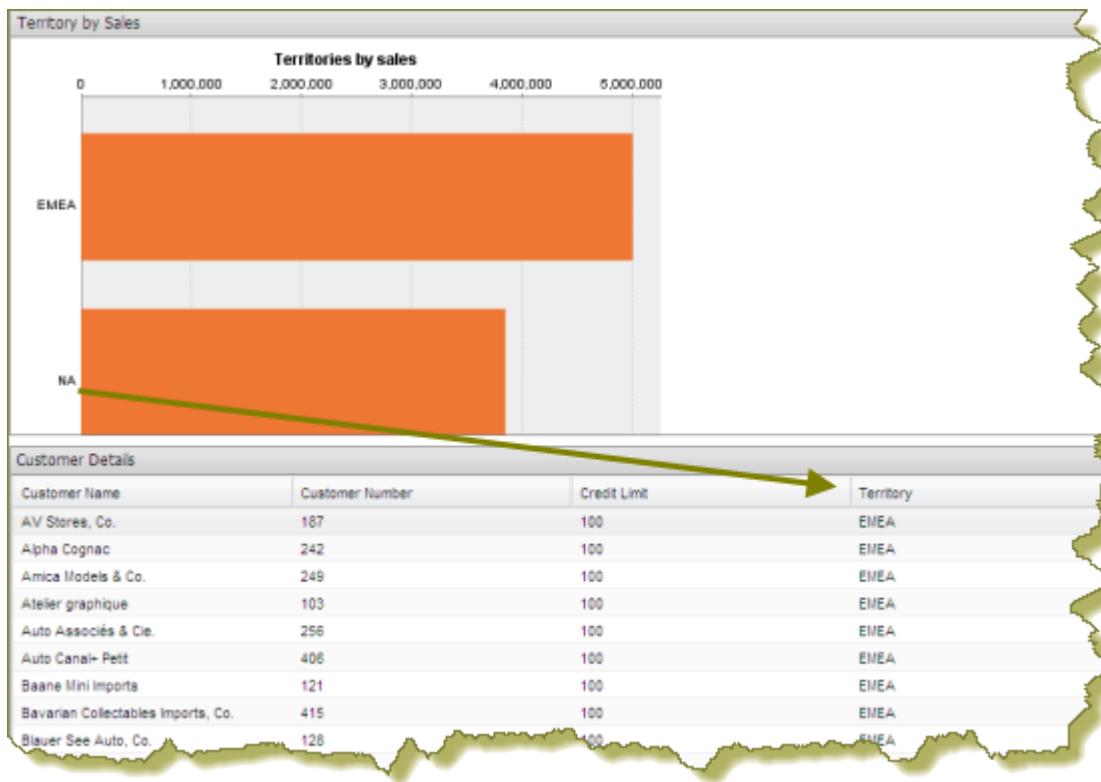


## Linking an Action Sequence Parameter to Content in other Dashboard Panels

To complete this task you must have an action sequence (.xaction) that contains at least one parameter. For information about defining parameters in an action sequence see the *Creating Action Sequences* guide available in the [Knowledge Base](#).

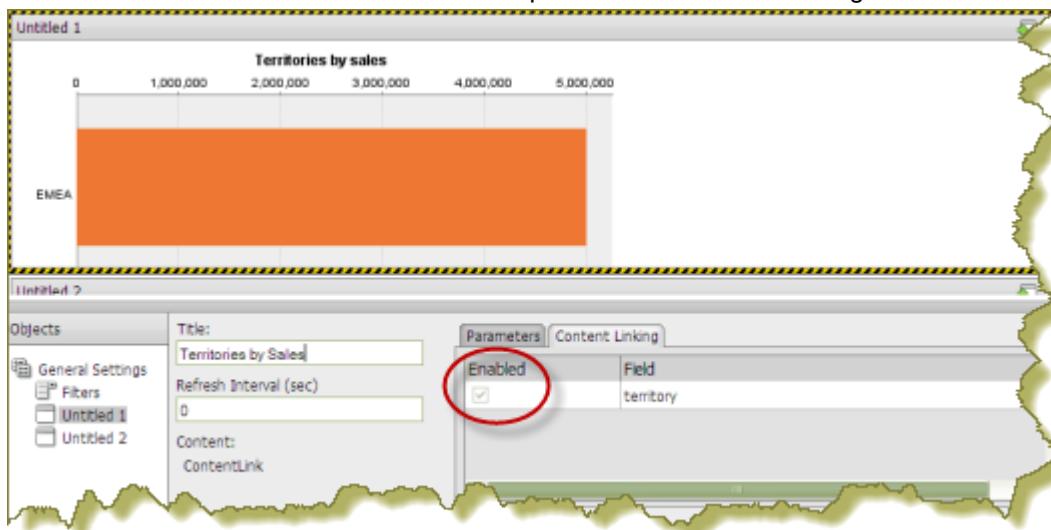
Below are general instructions for allowing an Action Sequence parameter to drive the filter associated with content in another dashboard panel. You must adjust the instructions when working with your own data.

1. Create a simple dashboard that contains an action sequence file and a data table. At this point, none of the content has been linked and you have a "static" dashboard.



Notice the chart (action sequence file) in the example above. You want dashboard consumers to click on a territory (APAC, EMEA, etc.), bar and have the data table update with information about that territory specifically.

- Under **General Settings**, select the action sequence file and click **Content Linking**. If parameters have been defined in the action sequence, they will appear as values to be enabled for content linking. Parameters are hard-coded in the action sequence and cannot be changed.

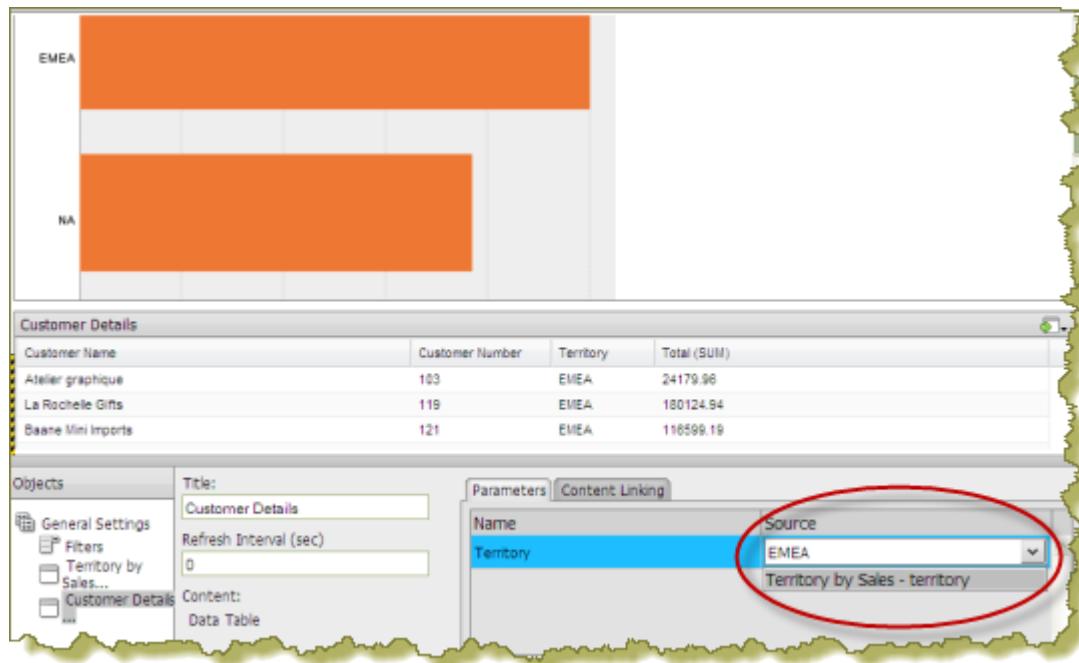


- Add a parameterized condition to the query for the data table by specifying a parameter name in curly braces in the **Value** text box; then, provide a default value for that parameter in the **Default** text box.

**Note:** Parameterizing a query, as described here, allows you to pass values dynamically and update the chart based on events triggered by other elements of the dashboard such as a user

selecting an item from a filter control or following links defined in content associated with another panel in the dashboard.

Under **General Settings**, click the data table and examine its available parameters. In the example below, there is an available parameter called **TERRITORY** with a default source value of EMEA. A drop-down arrow in the **Source** text box indicates that there is an additional value to control the available parameter. The value comes from the parameter in the action sequence.



4. Save your dashboard. See [Saving Your Dashboard](#) on page 81.
5. In the action sequence file click on an object such as a bar as shown in the example above.  
The content in the data table updates in response to the object that was clicked in the action sequence.

## Controlling a Dashboard Parameter From a PRPT Hyperlink

You must have a report (.prpt) that contains a hyperlink before you can complete this task. See the *Report Designer User Guide*, (available in the Pentaho Knowledge Base), for instructions about adding hyperlinks to a report.

The instructions that follow show you how a link inside a Report Designer report (.prpt) can drive a parameter in content on another dashboard panel. You must adjust the instructions when working with your own data.

1. Create a simple dashboard that contains a .prpt report and a data table. At this point, none of the content has been linked and you have a "static" dashboard.

The screenshot shows a dashboard with two panels. The top panel is titled "Product Line Share by Territory" and contains a list of territories: APAC, EMEA, Japan, and NA. The bottom panel is titled "Customer Sales by Territory" and displays a data table with columns: Product Line, Customer Number, Total (SUM), and Territory. The data table lists various product categories and their sales figures across different territories.

Product Line	Customer Number	Total (SUM)	Territory
Classic Cars	103	16560.3	EMEA
Motorcycles	103	5307.98	EMEA
Vintage Cars	103	2311.68	EMEA
Motorcycles	119	48325.29	EMEA
Planes	119	53515.43	EMEA
Vintage Cars	119	16043.54	EMEA
Ships	119	15035.99	EMEA
Classic Cars	119	22031.68	EMEA
Trucks and Buses	119	25173.01	EMEA
Classics		38917.72	EMEA

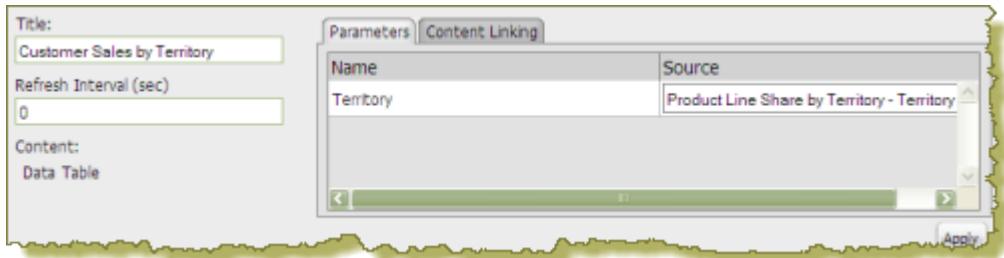
Notice the report (.prpt) in the example above. You want dashboard consumers to click on a territory (APAC, EMEA, etc.), hyperlink and have the data table update with information about that territory specifically.

- Under **General Settings**, select the report (.prpt) and click the **Content Linking** tab. Click the checkbox next to the field you want used for content linking.
- Add a parameterized condition to the query for the data table by specifying a parameter name in curly braces in the **Value** text box; then, provide a default value for that parameter in the **Default** text box. In the example below, a parameter called **TERRITORY** with a default value of **NA** has been created.

The screenshot shows the "Conditions" section of the Content Linking tab. It includes a table with columns: Combine, Aggregation, Column, Comparison, Value, and Default. The "Column" column is set to "Territory", "Comparison" is "exactly matches", "Value" is "{TERRITORY}", and "Default" is "NA".

**Note:** Parameterizing a query, as described here, allows you to pass values dynamically and update the data table based on events triggered by other elements of the dashboard such as a user selecting an item from a filter control or following links defined in content associated with another panel in the dashboard.

- Under **General Settings**, select the data table and click the **Content Linking** tab. Click the drop-down arrow, in the **Source** text box to display another source for the parameter you created. In the example below, notice that **Product Line Share by Territory - Territory** , (this is the name of the dashboard panel that contains the .prpt), is now selected as a source for the **Territory** parameter.



## 5. Save your dashboard. See [Saving Your Dashboard](#) on page 81.

When content linking is achieved, the data table updates when a link in the report (.prpt) is clicked as shown in the example below.

Product Line	Customer Number	Total (SUM)	Territory
Classic Cars	148	81217.91	Japan
Vintage Cars	148	15863.72	Japan
Trains	148	13278.71	Japan
Ships	148	14155.52	Japan
Trucks and Buses	148	4432	Japan

## Saving Your Dashboard

Follow the instructions below to save your dashboard:

1.



In the Pentaho User Console toolbar, click (Save) to open the **Save** dialog box.

2. In the **File Name** text box, type a file name for your dashboard.
3. Enter the path to the location where you want to save your dashboard. Alternatively, use the up/down arrows or click **Browse** to locate the solution (content files) directory in which you will save your dashboard.
4. Click **Save**.

## Editing Your Dashboard

Follow the instructions below to edit an existing dashboard:

1. In the lower left corner of the Pentaho User Console, (under Files), select an existing dashboard file. The dashboard panels and their related content appear.

2. Click  (Edit) from the console toolbar to go into Edit mode.
3. Click  (Edit) in the upper-right corner of the dashboard panel you want to edit.

 **Note:** Some content such as action sequence files (.xaction) and Report Designer files (.prpt) cannot be edited directly in the dashboard. In such instances,  (Edit) is disabled.
4. Make your changes as needed.
5. In the toolbar, click  (Save As) to open the **Save As** dialog box.
6. In the **File Name** text box, type a file name for your dashboard. Alternatively, use the up/down arrows or click **Browse** to locate the solution (content files) directory in which you will save your dashboard.
7. Click **Save**.  
The name of your dashboard file appears in the list under **Files** in the lower left portion of the Pentaho User Console.

## Adding Content to a Dashboard Using Drag-and-Drop

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Follow the instructions below to add an existing chart, table, or file to your dashboard panels using the drag-and-drop feature.

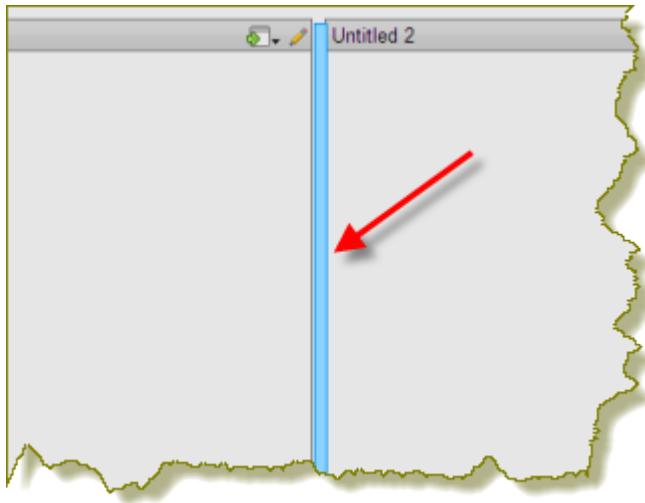
1. Create a new dashboard. See [Creating a New Dashboard](#) on page 41 for specific instructions.
2. In the left pane of the Pentaho User Console, under **Files**, locate to the content (chart, table, or file) you want added to your dashboard.
3. Click and drag the content into a blank panel on your dashboard. You will see the "title" of the content as you move it around the dashboard. Notice that the title background is red; it turns green when you find a panel where the content can be dropped.  
Repeat steps 2 and 3 until your dashboard contains all the content you want to display. To swap content from one panel to another, click the title bar of the panel that contains the content you want moved and drag it over the panel you want swapped. You will see the swap icon as you are moving the content.  
If you are working with an existing dashboard, you can perform steps 2 and 3 steps; however, a warning message appears when you try to place content in a panel that already contains content. The new content will override the existing content.
4. Save your dashboard.

## Adjusting Whitespace in Dashboard Panels

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Sometimes you must adjust the whitespace in dashboard panels, (or the filter panel), so that content appears correctly. Follow the instructions below to adjust whitespace.

1. Open an existing dashboard.
2. In the lower pane, click **General Settings** and then click the **Properties** tab.
3. Click **Resize Panels**.  
The whitespace between the dashboard panels turns blue.
4. Adjust the panel size by clicking and holding the left mouse button down as you move the blue lines (whitespace) around. Release the mouse button when you are satisfied with the positioning of the panel.

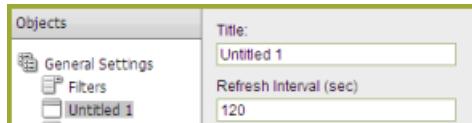


5. Click **Close** in the lower right corner of the dashboard to exit resize layout mode.
6. Examine the dashboard contents to make sure they are placed correctly. You can return to the resize layout mode if you need to make additional changes.
7. Save your dashboard.

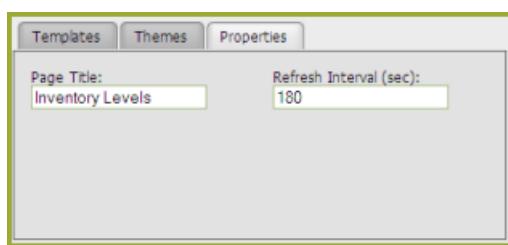
## Setting the Refresh Interval

The content in your dashboard may need to be refreshed periodically if users are examining real-time data. You can set refresh intervals for individual panels on your dashboard or for the entire dashboard.

To set the refresh interval for *individual panels* in the dashboard, select the panel that contains the content you want refreshed. Under **Refresh Interval (sec)** enter the interval time in seconds and click **Apply**.



If you want the *entire dashboard* to refresh, click the **Properties** tab in the dashboard and set your refresh interval.



# Administration and Advanced User Topics

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The tasks and topics in the sections that follow are targeted to administrators and advanced users.

## Adding a Data Source in the Pentaho User Console

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The Data Sources feature allows you to connect to your data so that the data can be used to create reports, (such as Interactive Reports, Analyzer Reports, and Dashboards), in the Pentaho User Console.

Using the Data Source Wizard, you can quickly add, edit, and delete **CSV File**, **SQL Query**, and **Database Table(s)** data sources in the Pentaho User Console.

Below is a quick description of each data source type:

Data Source Type	Description
CSV File	Data originating in a CSV file is extracted and staged in a database table on the Pentaho BI Server. A default Pentaho Metadata (Reporting) Model and a Mondrian (OLAP) Schema are generated for use in Interactive Report, Dashboard, and Analyzer.
SQL Query	A SQL query written against a relational database is used to establish the context of the data source. Data available for report creation is confined to the scope of the data source's query. A default Pentaho Metadata (Reporting) Model and a Mondrian (OLAP) Schema are generated for use in Interactive Report, Dashboard, and Analyzer.
Database Table(s) Reporting Only	Data originates in a one or more relational database tables that is often operational or transactional in nature. Using the Data Source Wizard, database tables can be selected and joined. A default Pentaho Metadata (Reporting) Model is generated for use in Interactive Report and Dashboard only.
Database Table(s) Reporting and Analysis	Data originates in one or more relational database tables arranged in a star schema with a single fact table. Using the Data Source Wizard, multiple dimension tables can be selected and joined to the single fact table. A single table containing both fact and dimensional information can also be used for this data source type. A default Pentaho Metadata (Reporting) Model and a Mondrian (OLAP) Schema are generated for use in Interactive Report, Dashboard, and Analyzer.

You can restrict access to a data source by individual user or user role; by default, authenticated users are limited to view-only permissions. (See "Assigning Data Source Permissions for the Pentaho User Console" in the **Pentaho Security Guide** for more information.) This means that they are limited to selecting a data source from a list of available options.

 **Note:** Non-administrative users of the Pentaho User Console do not see icons or buttons associated with adding, editing, or deleting a data source.

The **Data Source Wizard**, which allows you to set up access to a relational data source or CSV data source in the Pentaho User Console, is available in the following instances:

- When you click the **New Data Source** button on the Pentaho User Console Quick Launch page
- When you select **File -> New -> Data Source** in the Pentaho User Console menu bar
- When you select **File -> Manage -> Data Sources** from the Pentaho User Console menu bar and click  (Add)
- When you click  (Add) in the **Select Data Source** dialog box when creating an Interactive Report.
- When you click  (Add) in the **Select Data Source** dialog box when creating a chart in a Dashboard
- When you click  (Add) in the **Select Data Source** dialog box when creating a data table in a Dashboard
- When you click **Create New Data Source** when creating a new Analyzer report

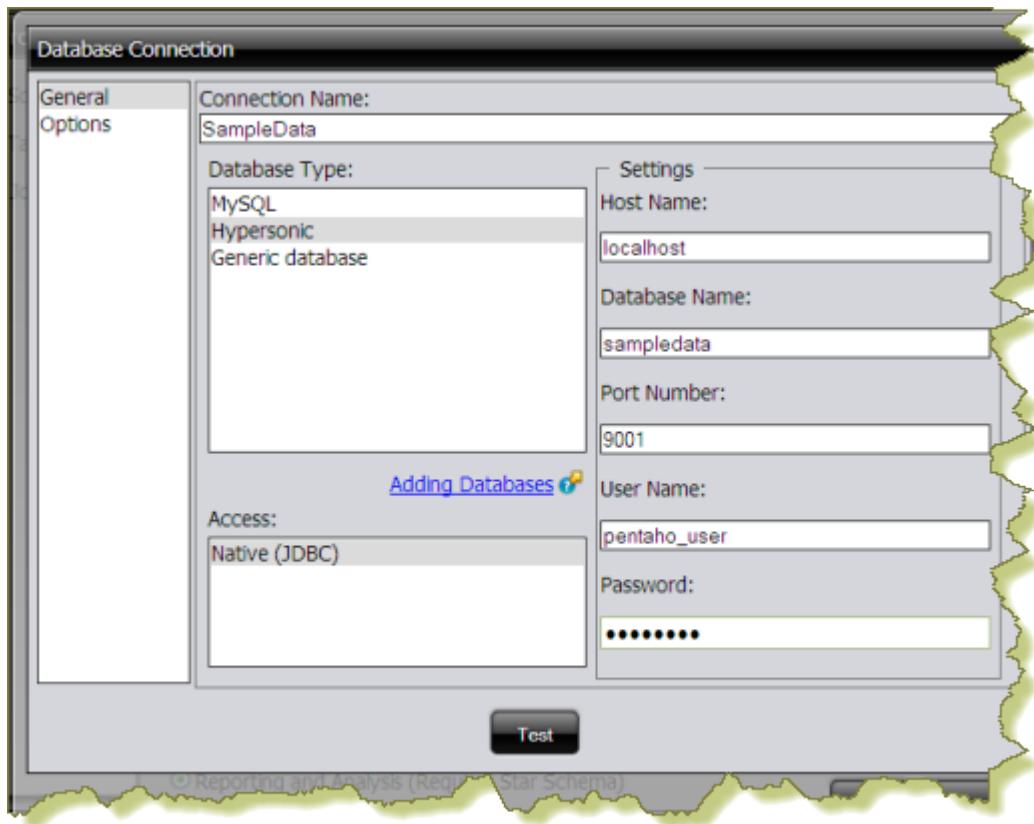
 **Note:** The following characters are not allowed in Data Source Wizard source names: \$ < > ? & # % ^ \* ( ) ! ~ : ; [ ] { } |

## Connecting to Your Database

If you are creating a SQL Query data source or Database Tables data source, you must first connect to the database that contains data you want to access, (if a database connection does not already exist). Existing database connections appear in a list under **Connection** in the Data Source Wizard.

Follow the instructions below to connect to a database:

1. In the Pentaho User Console launch page click **Create New**.  
The Data Source Wizard opens.
2. Under **Data Source Name** type a name that for the data source that makes it easily recognizable.
3. Under **Source Type**, select your data source type, either SQL Query or Database Table(s).
4. If not already configured, click  (Add) to define a connection to the database that contains the content you want to access. The **Database Connection** dialog box appears.



 **Important:** Click the [Adding Databases](#) hyperlink if you need help connecting to your database.

5. In the **Connection Name** text box, enter an easy-to-remember name that identifies the data you are accessing.
6. Select a **Database Type** from the list.  
Text fields for required settings associated with your connection type appear under **Settings** on the right.
7. Enter the appropriate connection information for your database type.  
Consult the [Appendix: List of JDBC Class Names](#) *A comprehensive list of JDBC databases and their associated class names and connection strings*, for more information.
8. In the Database Connection dialog box, click **Test** to test your connection and click **OK**.  
A success message appears if your settings are correct. The connection name appears in the list.

## Creating a SQL Query in the Pentaho User Console

Follow the instructions below to create a SQL Query data source. In addition to allowing you to connect to your database (using JDBC), you must also enter a SQL statement that defines the "scope," (similar to a database view), of your data source.

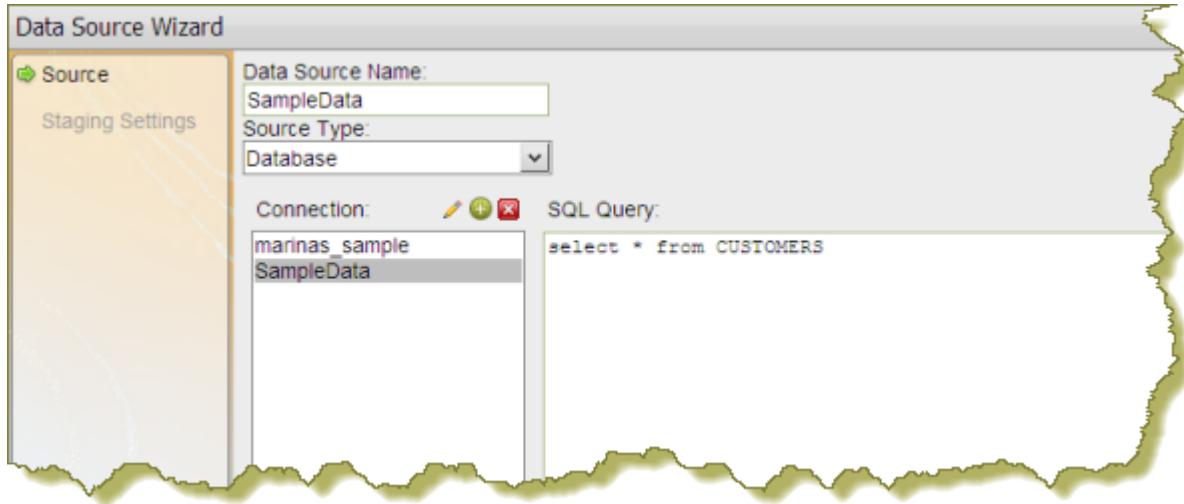
 **Note:** In the context of the Pentaho User console, a SQL Query "data source" is a combination of a connection plus a query. Pentaho recommends that you use the Pentaho Metadata Editor to create SQL Query data sources for a production environment.

You can customize how columns are presented to users who are building queries against the new data source; for example, you can define "friendly" column names and select options that define how data is aggregated (sum, min., max., etc.), and more.

Once you create the data source, it is available to users of the Interactive Reports, Analyzer, and Dashboards.

You must be logged on to the Pentaho User Console as an administrator to follow the instructions below. Additionally, your database must be up and running in order for you to complete the steps required in the Data Source Wizard.

1. In the **Data Source Wizard**, type a name for the new data source in the **Data Source Name** field.  
 **Note:** The name of the data source is important because it becomes the name of the data source displayed in Analyzer, Interactive Report, and Dashboards.
2. Under **Source Type**, select **SQL Query** as your data source type.
3. Select a database connection from the list under **Connection**. If your connection is not available, you must define a connection. See [Connecting to Your Database](#) for instructions.
4. Under **SQL Query**, enter your SQL Query. Click **Preview** to ensure that your query returns data.



5. Click **Close** to exit the Preview window.
6. Click **Finish**.  
In the background, after you click **Finish**, a default metadata model is generated based on the query for use in Analyzer, Interactive Report, and Dashboards. See [Editing a Database Connection in the Pentaho User Console](#) on page 95 for instructions about changing connection details.

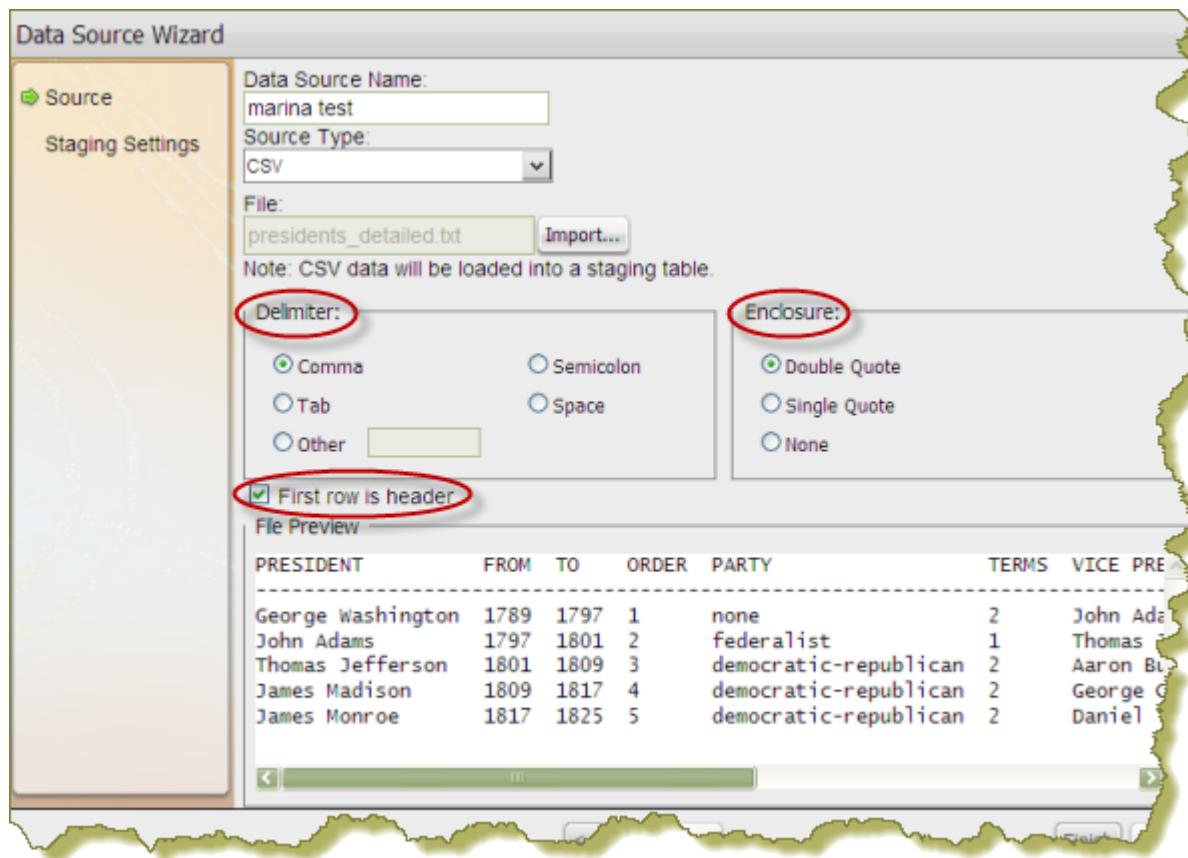
## Creating a CSV Data Source in the Pentaho User Console

Follow the instructions below to create a CSV-based data source. For testing purposes, you can save an Excel spreadsheet as a CSV file.

1. In the **Data Source Wizard**, type a name that identifies your new data source in the **Data Source Name** field.
2. Under **Source Type** select **CSV File** from the list to define a CSV file as your data source and click **Next**.
3. Click **Import** to open the **Import File** dialog box.
4. Click **Browse** to search for your CSV file; click **Import** when you locate the file.  
The Import File dialog box closes and the CSV file is uploaded to the BI Server. You can click **Cancel**, if necessary, and select different file.

 **Note:** Notice that a preview of the contents of your file appears in the lower portion of the wizard page. If items are not aligning correctly, it is because you must specify your delimiter and enclosure types. Go on to the next step.

5. Specify the delimiter and enclosure types. Enable **First row is header** if the first row of your CSV file is a heading for columns in the file.



**Important:** You must make selections under **Delimiter** and **Enclosure** for the Metadata table to build correctly. In the example line, 1 , 4 , 5 , 02/12/77 , "String Value" the commas are delimiters and the quotation marks around "String Value" is the enclosure.

The **File Preview** window displays the first few lines of your CSV file based on the selections you made for specifying the delimiter, enclosure, and header. Once the columns align correctly in the preview you will know that the delimiter and enclosure have been set correctly.

6. Click **Next** to display more details about the columns in your source file and to edit staging-related settings.

**Note:** Notice that all columns are enabled in this step. Click **Deselect All** to disable all columns. You can then select the columns that require formatting individually. Click **Select All** to enable all columns again, if necessary.

7. If applicable, change the **Name** and **Type** values. Use the drop-down list to display format options for dates and numeric values. Formats are auto-detected based on the contents of your data source; however, if you see a format option that is not correct, enter it manually in the appropriate **Source Format** text box.

**Note:** Refer to [Sample Date Formats](#) for additional help formatting dates. Refer to [Decimal Formats](#) for additional help formatting numbers.

**Length** indicates the maximum number of characters allowed in a field. **Precision** is the number of digits after a decimal point. Drop-down lists are not enabled for certain data types such as the String data type.

Name	Type	Source Format	Length	Precision
ORDERNUMBER	STRING		13	0
QUANTITYORDERED	NUMERIC	#	4	0
PRICEEACH	NUMERIC	#.	7	2
ORDERLINENUMBER	NUMERIC	#.##	4	0
SALES	STRING	#.###.00	13	0
ORDERDATE	STRING	#.##0	22	0
STATUS	STRING	#.##0.##	15	0
QTR_ID	NUMERIC	#.##0.##	3	0
MONTH_ID	NUMERIC	#.##0.##	4	0
YEAR_ID	STRING	#.##0.##	12	0
PRODUCTLINE	STRING	#.##0.##	18	0

**Important:** Boolean values are rendered as "true" or "false."

8. Click **Show File Contents** to see a sample of the data in your source file. Click **OK** to return to staging and make changes if necessary.
9. Click **Finish** when you have completed your configuration and formatting tasks.

A success message appears indicating the number of rows being loaded into the database and that a default metadata model was created. Enable **Keep default model** to use the default model or click **Customize model now** to customize the model.

The data in your CSV file is extracted and staged in a database table. Your new data source is now available for use in Analyzer, Interactive Report, Ad Hoc Report, and Dashboards. To refine the data and make it more accessible to users of you must use the Data Source Modeler. The model can be further customized to adjust field names, formatting, aggregation types, and dimensional hierarchies (for Pentaho Analysis). See [Customizing an Analysis Data Source](#) on page 93.

### Increasing the CSV File Upload Limit

Follow the instructions below if you need to increase the size of the upload limit associated with CSV files.

1. Go to ...\\biserver-ee\\pentaho-solutions\\system and open the **pentaho.xml** file.
2. Edit the XML as needed; (sizes are measured in bytes):

```

<file-upload-defaults>
    <relative-path>/system/metadata/csvfiles/</relative-path>

    <!-- max-file-limit is the maximum file size, in bytes, to allow to be
        uploaded to the server -->
    <max-file-limit>10000000</max-file-limit>

    <!-- max-folder-limit is the maximum combined size of all files in the
        upload folder, in bytes. -->
    <max-folder-limit>500000000</max-folder-limit>

```

```
</file-upload-defaults>
```

3. Save your changes to the file.
4. In the **Pentaho User Console**, go to **Tools -> Refresh System Settings** to ensure that the change is implemented.
5. Restart the Pentaho User Console.

### Changing the Staging Database

Hibernate is the default staging database for CSV files. Follow the instructions below if you want to change the staging database.

1. Go to `... \pentaho-solutions\system\data-access` and open **settings.xml**.
2. Edit the **settings.xml** file as needed. The default value is shown in the sample below.

```
<!-- settings for Agile Data Access -->
<data-access-staging-jndi>Hibernate</data-access-staging-jndi>
```

 **Note:** This value can be a JNDI name or the name of a *Pentaho Database Connection*.

3. Save your changes to the **settings.xml** file.
4. Restart the Pentaho User Console.

## Creating Database Table(s) Data Sources

The Database Table(s) data source type allows you to create a reporting and/or analysis data source against one or more relational database tables. This data source type is useful for a broad range of use cases including reporting directly against an operational data store (ODS) or creating a connection for OLAP Analysis against a star schema.

When you create a Database Table(s) data source, you are presented with two options: **Reporting Only** or **Reporting and Analysis**. The choice you make depends on the schema structure of the database tables you are accessing and the Pentaho User Console tools being used.

### Reporting Only

If you are accessing data in a relational database that is operational or transactional in nature, or which does not contain a star schema, choose **Reporting Only**. This option creates a data source that can be used in **Interactive Report** and **Dashboard Designer**. When you select the **Reporting Only** option, a Metadata Model is automatically generated and can be refined in the Modeler interface or further extended using **Pentaho Metadata Editor**.

In a production environment, users of the Pentaho User Console get access to data for creating interactive reports and building dashboards from metadata models provided by an administrator. Using Pentaho Metadata Editor (PME), you can restrict what data a user can access down to a table, column, or row.

The default metadata models created when adding new data sources in the Pentaho can be opened in Pentaho Metadata Editor for further customization. For more information, refer to the *Pentaho Metadata Editor Guide* available in the Pentaho Knowledge Base.

 **Important:** If you extend a metadata model in PME, you can no longer use the Modeler to edit the model in the Pentaho User Console.

### Reporting and Analysis

If you are accessing a relational database that contains tables arranged in a star schema, (tables are separated into dimensions related to a single fact-table, such as a data warehouse), choose **Reporting and Analysis**. Additionally, you can create a Reporting and Analysis data source using a single table where the table acts as the single fact table and also contains dimensional information. This option creates a data source that can be used in **Analyzer**, **Interactive Reports**, and **Dashboards**. In this instance, a **Mondrian Schema** and **Metadata Model** are generated and can be refined in the Modeler interface or further extended using Schema Workbench and Pentaho Metadata Editor, respectively.

 **Important:** Metadata Models and Mondrian Schemas that have been extended in Pentaho Metadata Editor and Schema Workbench can no longer be edited in the Modeler.

## Creating a Database Table(s) Data Source (Reporting Only)

Follow the instructions below to create a Database Table(s) data source for reporting.

 **Note:** You must be logged on to the Pentaho User Console as an administrator to follow the instructions below. Additionally, your database must be up and running in order for you to complete the steps required in the Data Source Wizard.

1. In the **Data Source Wizard**, type a name for the new data source in the **Data Source Name** field.

 **Note:** The name of the data source is important because it becomes the name of the data source displayed in Analyzer, Interactive Report, and Dashboard Designer.

2. Under **Source Type**, select **Database Table(s)** as your **Source Type**.

3. Under **Connection**, select a database connection.

 **Note:** The database connection allows you to access the database on which the data resides. If you do not have a database connection listed, you must create one. See [Connecting to Your Database](#) on page 85 for instructions.

4. Under **Create data source for** click, **Reporting only** and click **Next**.

A list of available tables that were retrieved from your database appear.

5. Under **Available Tables**, select a table and click  (Add) to move the table under **Selected Tables**. If you add a table you decide not to use, click  (Remove) to remove the table from the list of available tables. To choose multiple tables press the <CTRL> key down as you make your selections; click **Next** when you are done.

 **Note:** While you can create a data source from a single table, the more common scenario is that you will select multiple tables which must then be joined.

6. To define the relationship between tables, click the down arrow under **Left Table** and select a table from the list. Select the appropriate table under **Right Table**.

 **Note:** The only join condition allowed in the Data Source Wizard is an *inner join*; references to left table and right table are not associated with other types of join conditions.

7. Click **Create Join** to define the inner join between each table. All tables must have a join condition; orphan tables are not allowed.

The join relationship for each table is displayed in the lower portion of the dialog box. Click **Delete Join** to delete a selected join.

8. Click **Finish**.

In the background, after you click Finish, a default metadata model is generated for use in Interactive Report and Dashboards. You can choose to keep the default model or customize the model. To customize the model, see [Customizing a Reporting Data Source](#) on page 92 for instructions.

## Creating a Database Table(s) Data Source (Reporting and Analysis)

Follow the instructions below to create a Database Table(s) data source for reporting and analysis.

 **Note:** You must be logged on to the Pentaho User Console as an administrator to follow the instructions below. Additionally, your database must be up and running in order for you to complete the steps required in the Data Source Wizard.

1. In the **Data Source Wizard**, type a name for the new data source in the **Data Source Name** field.

 **Note:** The name of the data source is important because it becomes the name of the data source displayed in Analyzer, Interactive Report, and Dashboard Designer.

2. Under **Source Type**, select **Database Table(s)** as your data source type.

3. Under **Connection**, select a database connection.

 **Note:** The database connection allows you to access the database on which the data resides. If you do not have a database connection listed, you must create one. See [Connecting to Your Database](#) on page 85 for instructions.

4. Under **Create data source for** click, **Reporting and Analysis (Requires Star Schema)**; click **Next**. A list of available tables appear.
5. Under **Available Tables**, select a table and click small green arrow (Add) to move the table under **Selected Tables**. If you add a table you decide not to use, click small green arrow (Remove) to remove the table from the list of available tables. To choose multiple tables press the <CTRL> key down as you make your selections.

 **Note:** You can create a data source from one Fact and multiple Dimension tables or from a single Fact table with no Dimension tables.

6. In the lower right portion of the dialog box, choose your **Fact Table** from the list and click **Next**.
7. To define the relationship between fact table and the dimension tables, select a dimension table from the list under **Right Table**.

 **Note:** Because there is only one fact table it is only table available under **Left Table**. All dimension tables must join the fact table. The only join condition allowed in the Data Source Wizard is an *inner join*.

8. Click **Create Join** to define the inner join between the fact and dimension table(s). All dimension tables must have a join condition to the fact table; orphan tables are not allowed. The join relationship for each table is shown in the lower portion of the dialog box. Click **Delete Join** to delete a selected join.
9. Click **Finish**.

In the background, after you click Finish, default models are generated for use in Interactive Report, Analyzer, and Dashboard Designer. You can choose to keep the default models or customize the models. To customize, (edit the default models), see [Customizing a Reporting Data Source](#) on page 92 and [Customizing an Analysis Data Source](#) on page 93 for instructions.

### Where Metadata Models and Mondrian Schemas are Stored

All generated Metadata Models and Mondrian Schemas are stored in the following location, \pentaho-solutions\admin\resources\metadata.

 **Important:** Pentaho recommends that you *do not* change the location where models and schemas are stored.

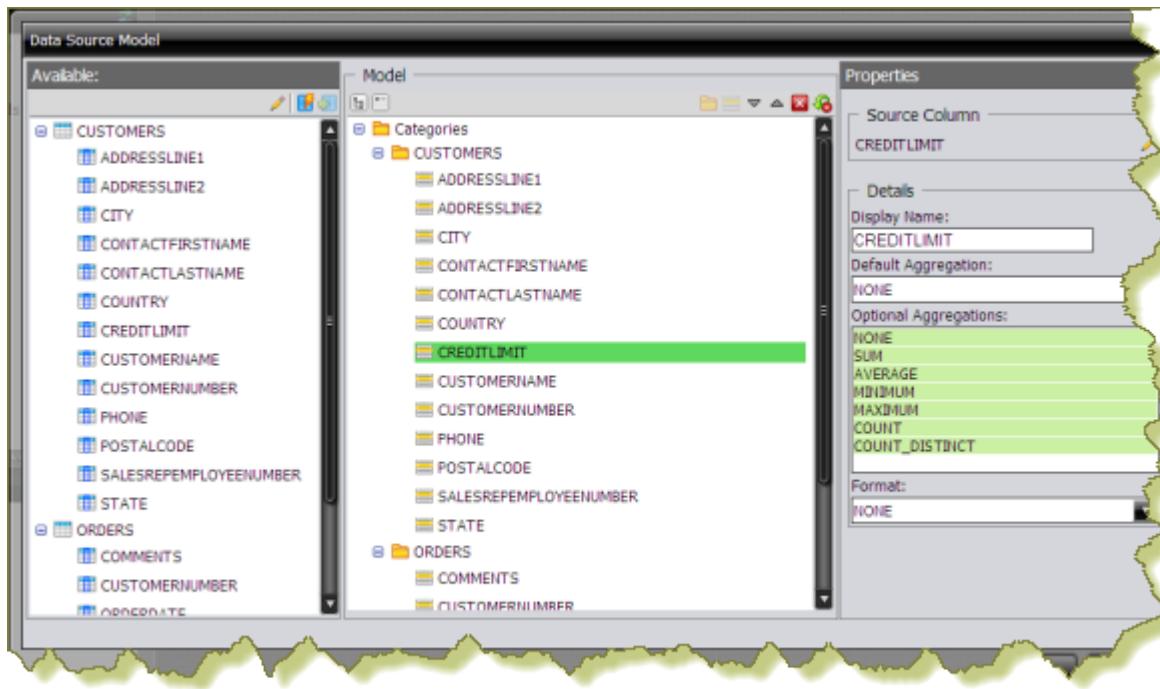
## Using the Modeler to Customize a Data Source

The Data Source Modeler displays if you choose to customize your model in the last step of the Data Source Wizard or if you edit the data source later. The Modeler allows you to design reporting metadata models and analysis (OLAP) models on the fly. The Modeler also allows you to refine and organize your metadata so that it is more accessible to report users.

You can edit a data source in Interactive Report, Pentaho Analyzer, Dashboard Designer, and Data Source Manager. If you are editing a data source while using Interactive Report, select the data source you want to edit from the list of available data sources and click **Edit**. If you are creating a chart or data table in a dashboard, select the data source you want to edit from the list and click  (Edit). If you have created an Analyzer report, click  (Edit) in the upper right corner next to **Available Fields**. You can also edit a data source by navigating to **File -> Manage -> Data Sources** in the Pentaho User Console menu bar and opening the **Select Data Source** dialog box.

### Customizing a Reporting Data Source

The Modeler allows you to further refine your reporting data source. For example, you can add new categories and fields, rename categories and fields, assign aggregation type, and define formatting for fields, or clear the model and start over.



Follow the instructions below to edit a reporting data source:

1. In the **Modeler**, examine your data.

A representation of the physical tables and columns is displayed on the far left portion of the dialog box (under Available). In the center of the dialog box is the default metadata model. The default, auto-generated metadata model, is organized into categories and fields that mirror the physical tables and columns. In the far right portion of the dialog box are the properties associated with a category or field you have selected.

2. Click and drag a category or field into the position you want it to be displayed to users.

Use the Modeler toolbar controls to create new categories and fields. Use the up/down arrows to reorder the categories and fields in a way that makes sense to the consumers of the data. Delete unnecessary fields by clicking (Delete).

Change the properties, (Display Name, Default Aggregation, and Format), associated with a selected field as needed.

**Note:** Click (Clear All) to clear an existing model. Click and drag tables into the Model view to create a new model. You can mix and match fields that derived from different tables, even add fields more than once to different categories.

**Note:** If necessary, click (Edit Source) in the modeler to make changes to Database table selections and joins, edit a SQL query, or CSV flat file (delimiter, enclosure, or header). Click **Finish** to save your updates. If you disable columns that were previously enabled, a prompt appears in the modeler indicating that the data has been deleted. You must adjust the data in the modeler before proceeding.

3. Click **OK** to update the data source.

The updated data source is now available to users.

### Customizing an Analysis Data Source

The Modeler allows you to further refine your analysis-based data source. For example, you can change the field display names, create hierarchies and levels, set an aggregation type, and change formatting.

 **Note:** If you have created a CSV, SQL Query, or a Database Table(s) Reporting and Analysis data source, you can make changes to both the Reporting metadata model and to the Analysis model (Mondrian Schema), independently.

 **Note:** While users are able to create interactive reports, Analyzer reports, and dashboards using the default model that is generated when you first create a data source, the structure of the default Analysis model is "flat." For example, the auto-model process creates a dimension for every table and a hierarchy plus level combination for all columns in that table. In most instances you will want to refine the default model to make the data more easily understandable to your users.

Follow the instructions below to edit an analysis data source:

1. In the **Data Source Modeler**, examine your data.

Measures are numeric values such as sales price, cost, and profit. **Dimensions** are the context that allow users to understand the significance of the measures. For a sales database, the dimensions could include Product, Store, Salesperson and so on. In other words, users can examine the sales figures by store, by product, and by sales. Dimensions can have one or more hierarchies (). Hierarchies contain levels that organize data into a logical structure. Click (+) next to fields under Measures and Hierarchies to display their contents. Moving up and down between the levels of a hierarchy is called *drilling*.

 **Note:** Measures must originate in the fact table; for example, you cannot move numeric fields in a dimension table under **Measures** or an error message is displayed. You cannot place two levels that originate in different tables into a single hierarchy.

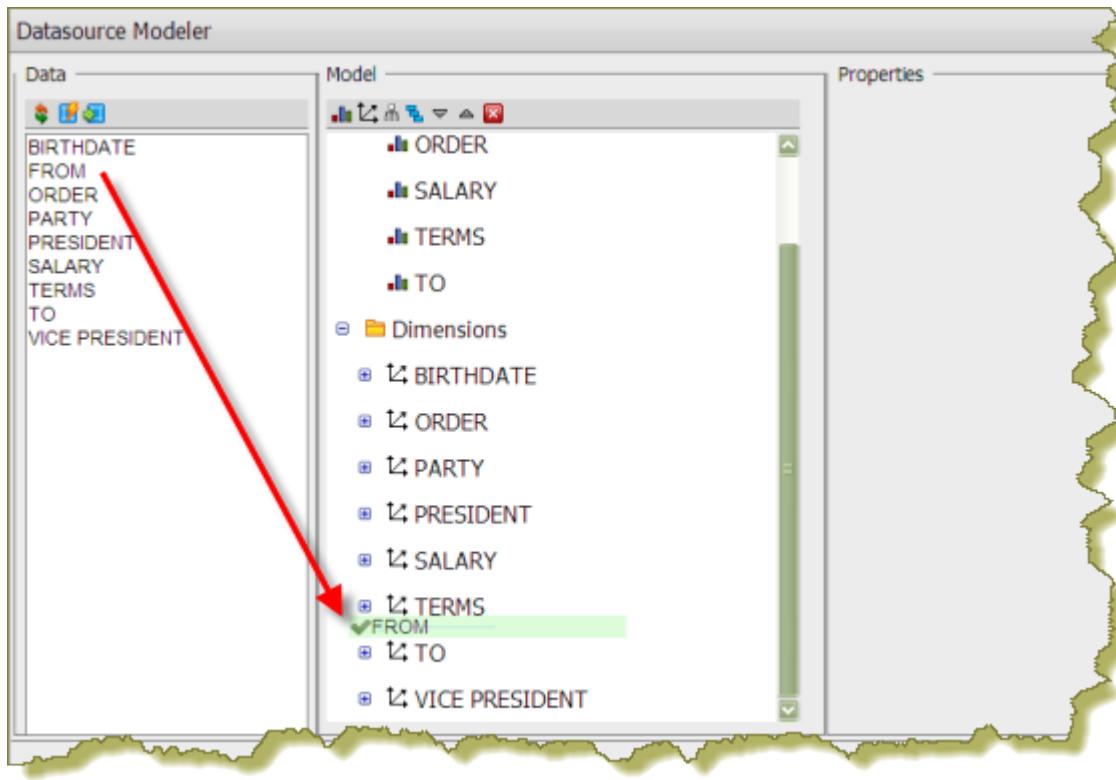
Unnecessary fields can be removed by clicking  (Delete) in the modeler toolbar.

You can move a field under Measures or Dimensions by clicking and dragging the field into its appropriate location. A green check mark indicates that you can place your field without error.

 **Note:** Click  (Clear Model, in the upper right corner) to clear the existing model and start over.

 **Note:** If necessary, click  (Edit Source) in the modeler to make changes to database table selections and joins, edit a SQL query, or CSV flat file. Click **Finish** to save your updates. If you disable columns that were previously enabled, a prompt appears in the modeler indicating that the data has been deleted. You must adjust the data in the modeler before proceeding.

You can also move a field under Measures or Dimensions by clicking and dragging the field into its appropriate location.



2. Click **OK** to update the data source.

The updated data source is now available to users.

## Editing a Database Connection in the Pentaho User Console

Follow the instructions below to edit a database connection in the Pentaho User Console:

1. In the **New Data Source** dialog box, under **Connection**, select the connection you want to edit.
2. Click . The Database Connection dialog box appears.
3. Update the connection information as needed. You can click **Test** to make sure your connection is working correctly.
4. Click **OK** to exit the Database Connection dialog box.

## Deleting a Database Connection in the Pentaho User Console

Follow the instructions below to delete a database connection associated with the Pentaho User Console.

**Important:** If you delete a database connection, all reports, charts, and other content users have created using the connection will no longer render.

1. Under **Connection** in the **New Data Source** dialog box, select the connection you want to delete.
2. Click (Delete). A warning dialog box appears.
3. Click **OK** to delete the connection.

## Deleting a Data Source in the Pentaho User Console

If you have administrative permissions, you can delete data sources associated with ad hoc reports and dashboards in the Pentaho User Console.



**Important:** When you delete a data source all reports or charts that end-users have created based on that data source will no longer render. Deleting a data source also deletes the model associated with that data source.

The delete Data Source option is available in the following instances:

- When you select a data source and click  (Delete) when in the **Select Data Source** dialog box available from **File -> Manage -> Data Sources**
- When you select a data source and click **Delete** in the **Select Data Source** step in Ad Hoc Reports
- When you select a data source and click  (Delete) when creating a chart
- When you select a data source and click  (Delete) when creating a data table

## Scheduling Reports

---

The Pentaho User Console has the ability to run reports at specified intervals, even if user input is required to properly execute the report. The sections that follow explain how to set up and configure private schedules. Private schedules are ad hoc, non-subscription schedules; subscription schedules, also referred to as *public schedules* are set up by an administrator. You must have proper permissions to set up a private schedule.

For more information about schedules, see the demo, [Scheduling, Subscription and Distribution](#), on the Pentaho Pre-Sales Sandbox.

### Scheduling a Report

You can configure the Pentaho BI Server to run reports at regular intervals, or on certain dates and times. Follow the instructions below to create a private schedule.

1. In the left pane, navigate to the location of your report. It should appear in the lower left list when you've selected the proper directory.
2. Right-click the report you want to schedule, then click **Schedule** in the context menu.  
The **New Schedule** window appears.
3. Type in a name to identify the schedule by in the **Name** field, and a group name (for groups of schedules) in the **Group** field. Optionally you can also enter a description of the schedule in the **Description** field.
4. Select an interval from the **Recurrence** drop-down box. If you would like to enter a custom interval, select **Cron** and consult [Quartz Cron Attributes](#) on page 96 to learn the Quartz syntax.
5. Adjust the interval settings accordingly; these settings should be self-explanatory.
6. Click **OK** to complete the schedule.

The report is scheduled to execute at the interval you specified. It will also be listed in My Workspace.

### Quartz Cron Attributes

The Quartz cron engine supports a seven-attribute time declaration with many possible values. The number format is the same for every expression, even if the values are different -- it must be listed as seconds, minutes, hours, day of month, month, day of week, then the year. A space separates each attribute.

Possible values for each attribute should be mostly obvious -- 0 to 59 for seconds and minutes, 0 to 23 for hours, 1 to 31 for days, 1 to 12 for months, 1 to 7 for day of week, and a four-digit year. Alternatively you can use three-letter values for the day of week (MON, TUE, WED, THU, FRI, SAT, SUN), and three-letter values for the month (JAN, FEB, MAR, APR, MAY, JUN, JUL, AUG, SEP, OCT, NOV, DEC).

An asterisk (\*) indicates *all values*, so an asterisk in the minute field would mean that the report runs once every minute. You can specify a range of values with the - (dash) operator, and you can specify multiple

individual values with a comma. If you need to excuse a value in the day of month and day of week field from a cron job, you can use the question mark (?) character to indicate that this value doesn't matter. If you need to split values, you can do so with the slash (/) character -- this operator literally means "every," so \*/15 would mean "Every 15." In the day of month field, you can use the # character to indicate a certain instance of a day of the month, for instance the second Friday of the month would be 6#2. Lastly, you can use a capital L in the day of month and day of week field to indicate "Last," as in the last day of the week. A capital C in either of these fields means "Calendar," and combined with a number means that the report should execute at the interval indicated by the C number according to the loaded calendar. A capital W in the day of month attribute means "Weekday," which only encompasses Monday through Friday. Most of these values can be combined to create unusual cron schedules.

Attribute	Conditionals and Operators
Seconds	, - * /
Minutes	, - * /
Hours	, - * /
Day of month	, - * ? / L W C
Month	, - * /
Day of week	, - * ? / L C #
Year	, - * /

Execute a report at 10:15 AM on every last friday of every month during the years 2008, 2009, and 2010:

```
0 15 10 ? * 6L 2008-2010
```

## Deactivating Schedules

Once you've scheduled a report, you can easily delete the schedule without deleting the report. You must have administrative privileges to delete a schedule.



**Note:** To reliably delete a schedule, suspend the schedule first then delete it from your workspace. After the delete process completes, you may restart the schedule.

1. Click the **My Workspace** button, which is the second one in from the right side of the toolbar.
2. Click the triangle next to the **Waiting** section to see a list of scheduled reports.
3. Click **Cancel** next to the schedules you'd like to delete.

The previously scheduled report will no longer run at the specified interval.

## Refreshing the Reporting Data Cache

By default, reports created with Report Designer and published to the BI Server will have their data sets cached to improve performance. If you are working with a volatile data source and will be regenerating reports frequently, you may need to manually flush the report cache, which will force the Reporting engine to recalculate the result sets for all reports.

To do this, log into the Pentaho User Console as an administrator user, then go to the **Tools** menu, select the **Refresh** sub-menu, and click the **Reporting Data Cache** item.

## Pentaho Interactive Report Settings

The **settings.xml** file for Pentaho Interactive Reporting located at, \pentaho-solutions\system\pentaho-interactive-reporting, can be edited to define page formats, to limit the number of results associated with the filter search list, to set the browser cache, and to define page dimensions. Instructions are included in the file. Edit the file as needed. The settings default values are shown in the sample below.

 **Note:** Always restart the Pentaho User Console after editing and saving the settings.xml file.

```
<?xml version="1.0" encoding="UTF-8" standalone="no"?>
<settings>
    <!-- default template -->
    <default-template>l_jade_1_left_aligned.prpt</default-template>

    <!-- allowed page formats -->
    <!-- uncomment/edit to filter the list of page formats from the reporting
    engine -->
    <!-- <allowed-page-formats>A1,A2,A3,A4,A5,LEGAL,LETTER</allowed-page-
    formats> -->

    <!-- set this to true for production, and false for development/
    localization -->
    <cache-messages>true</cache-messages>

    <!--
        The maximum number of results to be loaded for the Filter search list
        for any
            given search string.
        -->
    <search-list-limit>500</search-list-limit>

    <!-- how far ahead to set the browser's cache -->
    <max-age>36000</max-age>

    <cache>true</cache>

    <!--
        The minimum allowable page dimension, in points (1/72 inches). This
        setting is
            used to filter the list of page formats that the user can select from.
            The default is 3 inches.
        -->
    <minimum-page-dimension>216</minimum-page-dimension>

    <plugin-id>pir_plugin_Release</plugin-id>
    <plugin-version>TRUNK-SNAPSHOT</plugin-version>
    <plugin-build>83</plugin-build>
</settings>
```

## Troubleshooting

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Below are problems that have been discovered by other Pentaho User Console users and testers, and solutions for addressing them.

### Internet Explorer 8 can't preview CSV/PDF/XLS ad hoc report content

Internet Explorer 8 has extra security features that prevent users from downloading content files generated by the ad hoc reporting interface. In order to work around this, you must force IE8 to recognize the BI Server host as an intranet zone.

To do this, go to the **Tools** menu in Internet Explorer, then select **Internet Options**. In the ensuing options screen, click the **Security** tab, then the **Local Intranet** icon. Click the **Sites** button. In the dialogue the

follows, deselect the **Automatically detect intranet network** option, then click **OK** to close this window, then **OK** again to close the Internet Options window.