Getting Started Guide

Pentaho BI Suite 4.0

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This guide provides you with a brief overview of the client tools and server applications that make up the Pentaho BI Suite. Also included, are step-by-step instructions for installing the Pentaho BI Suite on Windows devices. Post installation walk-throughs include a quick introduction to Sample reports and exercises for creating a simple Interactive Report and a Pentaho Analyzer report. You will also learn how to add the reports you created to a dashboard and how to define a data source.

Once you complete the installation and exercises, you will be able to start taking advantage of many of the features that are included in this release of the Pentaho BI Suite.
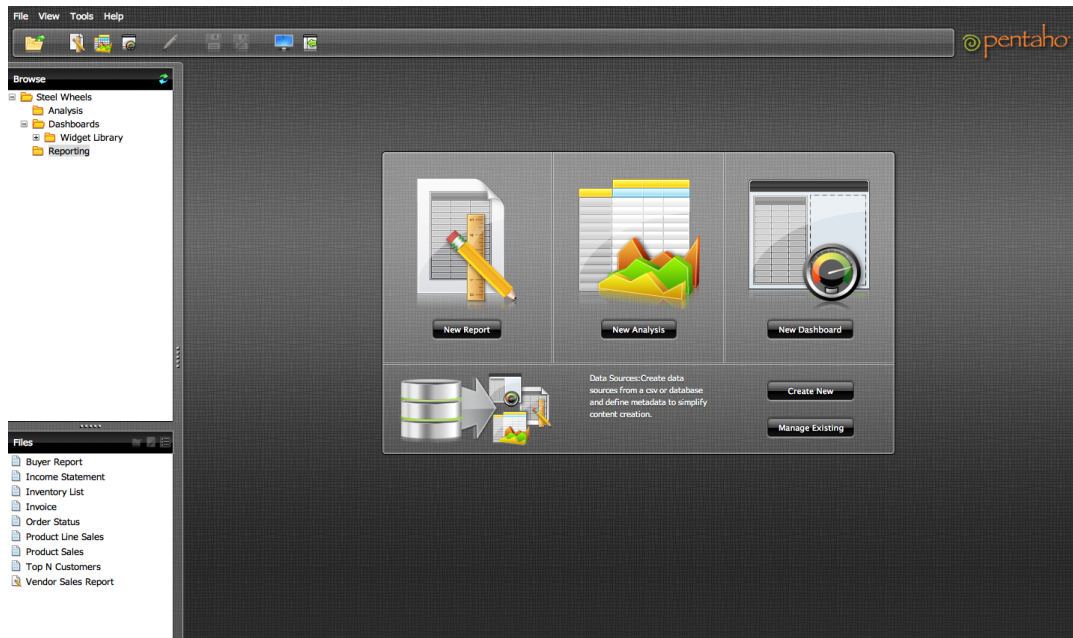
Important: The scope of this document is limited to the topics described in the paragraph above. If you need further information deploying the Pentaho BI Suite or have custom configuration requirements, contact your Pentaho Sales Representative or send an email to supportadmin@pentaho.com.

Business intelligence implementations can be complex. For this reason, we provide you with tools that support you through your evaluation period and beyond. Your trial evaluation entitles you with access to the Pentaho Knowledge Base where you can find articles, manuals, and tech tips that cover basic and advanced topics associated with implementing the Pentaho BI Suite. In addition, the Pre-Sales portal provides you with access to recorded Webcasts that give you basic understanding of the features and functionality offered by the Pentaho BI Suite.

Note: Refer to your Welcome email for details about how to access the Knowledge Base and Pre-Sales portal.

Successful implementations start with training and support. Pentaho trainers are experts in the industry and offer a wide range of affordable classroom, online, and on-site training services to meet your knowledge requirements. Our support team will help you become productive quickly.

Before You Begin

The sections that follow provide you with information about the Pentaho components included in this release and system requirements for installation.

Components Included in this Release

The diagram below provides you with a simple architectural view of the components that make up the Pentaho BI Suite. A brief description of each component is included in the sections that follow.
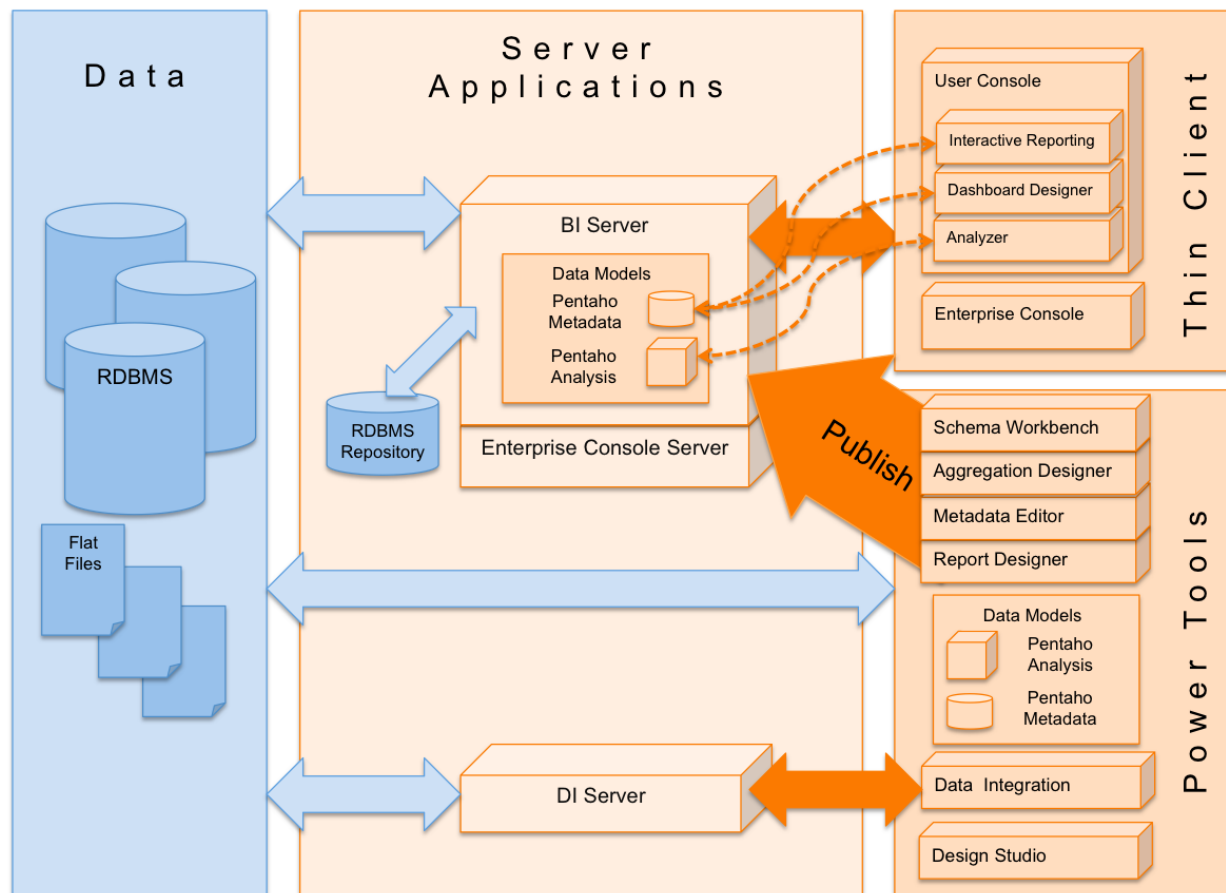
Thin Client Tools

The Pentaho User Console is the primary web-based end user interface to view, create, and schedule reports, Interactive reports, Analyzer reports and dashboards as well as applying access permissions to them.

User Console Interface	Description
Pentaho Interactive Reporting	Pentaho Interactive Reporting provides a highly interactive and easy to use web-based design interface for the casual business user to create simple and ad hoc operational reports, without depending on IT or report developers. Feature Highlights: • Accesses Pentaho Metadata data sources. • Easy and live interaction with reports, designed specifically for the most casual type of user • Drag and drop designer to add, move, and delete fields directly within the report canvas • Inline formatting, filtering, sorting, grouping, aggregations and summary calculations • WYSIWYG (What You See Is What You Get) report design and editing • Template-based report creation for immediate productivity
Pentaho Analyzer	Pentaho Analyzer provides intuitive, interactive analytical reporting letting non-technical business users quickly understand business information against Pentaho Analysis data sources. Feature Highlights: • Accesses Pentaho Analysis data sources • Web-based, drag-and-drop report creation • Advanced sorting and filtering • Customized totals and user-defined calculations • Chart visualizations
Pentaho Dashboard Designer	Dashboard Designer empowers business users to create rich, interactive dashboards with little or no training. Feature Highlights: • Creating a dashboard is as simple as selecting your layout, theme, and the content you want to display. • Include any type of Pentaho reports, external web pages, or dashboard internal elements (charts and data grid) that access Pentaho Metadata data sources. • Add dynamic filter controls making it easy for end users to filter the entire contents of their dashboard using a simple pick list • Drive content within a dashboard using other dashboard content

The Pentaho Enterprise Console is an administration tool that is used to manage users, groups, and schedules. It also serves to configure, monitor and access audit reports of the Pentaho system.

Power Tools

The Power Tools are desktop applications that allow you to create a rich BI solution:

Power Tool	Description
Report Designer	Report Designer is a visual design environment that makes it easy for report authors to quickly create sophisticated pixel perfect reports against a wide range of data sources addressing the demands of operational, financial and production reporting. These reports can be executed as a stand alone report within the User Console or used within a Pentaho Dashboard. In addition, it creates detailed charts and Pentaho Interactive Reporting and Report Wizard templates. It is geared towards experienced and power users, who are familiar with the report design concepts and the datasources used.
Pentaho Data Integration	Data Integration is an intuitive, graphical, drag and drop design environment that provides powerful Extraction, Transformation and Loading (ETL) features. In addition, Pentaho Data Integration provides you with Agile BI capabilities that collapse the multi-step and lengthy BI project cycles into a single integrated design, modeling, and visualization process. Agile BI drives close collaboration between BI application developers and end-users.
Pentaho Metadata Editor	Metadata Editor builds Pentaho metadata data sources, a data model representation of a relational database where business users can create queries without having to know SQL. Pentaho Dashboards and Pentaho Interactive Reporting are primary tools to access this data source. Additionally, a data model designer can tag useful attributes to secure or format columns in a data model which can be inherited in a report (prpt) and interactive report (prpti)).
Pentaho Schema Workbench	Schema Workbench builds Pentaho Analysis data sources, (ROLAP cubes) facilitating data exploration and analysis for business users without having to know MDX.
Pentaho Aggregation Designer	Pentaho Aggregation Designer is a graphical environment used to increase query performance of a Pentaho Analysis (Mondrian OLAP) schema through the creation of aggregate tables.
Pentaho Design Studio	Design Studio is used to create Action Sequences (.xaction). Action Sequences define lightweight, success oriented process flows within the Pentaho BI Server. It enables full customization and integration between all components within the Pentaho BI Suite.

Server Applications

BI Server primarily supports the Pentaho User Console, serves users reporting, analysis and dashboard content and contains the services for security, scheduling, Pentaho Metadata and Pentaho Analysis.

Enterprise Console Server supports the Enterprise Console and contains services for security, scheduling and repository management and the configuration of the BI Server.

Data Integration Server (DI Server) is a dedicated, enterprise class server for ETL and Data Integration. It is used to execute Data Integration jobs and transformation and provides services such as scheduling, content management including revision history and security integration.

System Requirements

Below are the system requirements for each Pentaho component included in this release:

Hardware Requirements

The Pentaho BI Suite software does not have strict limits on computer or network hardware. As long as you meet the minimum software requirements, (note that your operating system will have its own minimum hardware requirements), Pentaho is hardware agnostic. Below is the recommended set of system specifications:

RAM	At least 2GB
Hard drive space	At least 1GB
Processor	Dual-core AMD64 or EM64T

Software Requirements

The system requirements listed below apply to the BI Suite. The BI Suite graphical installation utility, works on Windows, Linux or Mac OS X.

In terms of operating systems, Windows XP with Service Pack 2, modern Linux distributions (SUSE Linux Enterprise Desktop and Server 10 and Red Hat Enterprise Linux 5 are officially supported.

No matter which operating system you use, you must have the Sun Java Runtime Environment (JRE) version 1.6 (sometimes referenced as version 6.0) installed.

Installing the Pentaho BI Suite

It is assumed that you will follow the default installation instructions and that you are installing to a local device (localhost). If you have have custom configuration requirements, such as installing the Pentaho BI Suite on a remote server, contact your Pentaho Sales Representative.

Follow the instructions below as you go through each step in the installation wizard. See the troubleshooting section at the end of this document if you run into port conflict issues.

Note: You must disable any anti-spyware software before installing the Pentaho BI Suite. Some types of software firewalls and anti-virus scanners may also block the BI Server or prevent it from operating normally.

1.   Click Next in the Welcome page.

2.   Read and accept the License Agreement.

3.   Click Default to accept the default installation.

4.   Specify the location in which to install the Pentaho BI Suite or accept the default.

5.   Type and retype password to set the repository "root" user, the BI server publish password, and the admin user for the Pentaho Enterprise console.

6.   Click Next to start installing the Pentaho components.

7.   Once the installation is complete, you can choose to view the installation summary and launch the Pentaho User Console. Accept the default choices. This document and Pentaho User Console home page appears. Some installations may prevent the browser from opening. In these instances, you must open the console manually. Keep your console open and available as you step through the exercises in this document.

Logging into the Pentaho User Console

The Pentaho User Console opens automatically after installation. Below are instructions for logging into the Pentaho User Console if you inadvertently close the browser window.

1.   Go to Start -> Programs -> Pentaho Enterprise Edition -> User Console Login or open a browser and go to http://localhost:8080/ or or the hostname, IP address, or domain name of the machine you installed the BI Server to.

2.   Enter the credentials, joe/password (all lowercase letters), to open the Pentaho User Console launch page. Joe is a sample user with administrative privileges to the Pentaho User Console.

3.   The Pentaho User Console launch page appears.

Starting and Stopping the Servers

To start or stop any of the servers in the Pentaho BI Suite, go to Start-> All Programs -> Pentaho Enterprise Edition -> Server Management; then, select the server you want to start or stop.

Accessing the Client Tools

To access the Design (client) tools in the Pentaho BI Suite, go to Start -> Programs -> Pentaho Enterprise Edition -> Design Tools; then, select the client tool.

Examining Sample Reports

The Steel Wheels sample reports included in your installation of the Pentaho BI Suite provide you with real world examples of reports you can create using the both the Web-based and client-based reporting tools. Here we will highlight a few reports and explain them.

Inventory List Report

This report was created using the client tool, Report Designer. This report is located under Steel Wheels -> Reporting -> Inventory List.

You can examine the source report in Report Designer. Go to Start -> Programs -> Pentaho Enterprise Edition -> Design Tools ->Report Designer. When Report Designer Welcome page opens, go to Samples -> Operational Reports and select Inventory List.

The Inventory List report features:

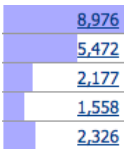|	
Versatile layout capabilities allows the mixing of columnar and form type layouts.	
Flexible design capabilities where subsequent repeating rows field element can be hidden, formatted or styled and elements can have dynamically set width and position.	
Conditionally color elements by setting the background color based on a formula expression.	
Generate sophisticated bar codes for all major symbologies; EAN, UPC, ISBN, EAN13, Code39, Code128, UPCE to name a few.	
Produce data driven hyperlinks to access external content.	
Produce data driven hyperlinks to launch other Pentaho reports.	
Pick from an assortment of selection controls (buttons, drop down list boxes, list boxes, checkboxes, options) to pass values to report parameters to drive report data.	

Top 5 Product Lines by Territory — Your report is ready. Rows: 20 Columns: 9

Territory	Line	2003 Sales	2003 Quantity	2003 Unit Sales	2004 Sales	2004 Quantity	2004 Unit Sales	2005 Sales	2005 Quantity	2005 Unit Sales
APAC	Classic Cars	$115,011	1,052	$109	$199,372	1,785	$112	$97,574	1,015	$96
	Vintage Cars	$111,639	1,243	$90	$147,212	1,587	$93	$105,688	1,067	$99
	Motorcycles	$60,789	654	$93	$63,159	540	$117	$65,870	658	$100
	Trucks and Buses	$11,298	91	$124	$80,634	801	$101	$53,735	488	$110
	Planes	$42,663	456	$94	$67,681	723	$94	$11,082	151	$73
APAC Total		$341,400	3,496	$98	$558,057	5,436	$103	$333,948	3,379	$99
EMEA	Classic Cars	$691,273	5,853	$118	$1,015,790	8,976	$113	$384,538	3,463	$111
	Vintage Cars	$263,695	3,094	$85	$504,062	5,472	$92	$83,324	1,094	$76
	Motorcycles	$141,836	1,428	$99	$204,042	2,177	$94	$161,260	1,501	$107
	Trucks and Buses	$228,699	2,261	$101	$185,421	1,558	$119	$86,859	836	$104
	Planes	$154,519	1,723	$90	$209,128	2,326	$90	$128,008	1,464	$87
EMEA Total		$1,480,021	14,359	$103	$2,118,443	20,509	$103	$843,989	8,358	$101
Japan	Classic Cars	$120,696	898	$134	$42,071	307	$137	$18,835	122	$154
	Planes	$60,556	677	$89	$49,177	547	$90	-	-	-
	Trucks and Buses	$44,498	415	$107	$13,349	102	$131	-	-	-
	Motorcycles	$16,485	205	$80	$31,959	380	$84	$4,176	44	$95
	Vintage Cars	$22,888	308	$74	$21,470	229	$94	$7,979	84	$95
Japan Total		$265,123	2,503	$106	$158,026	1,565	$101	$30,990	250	$124
NA	Classic Cars	$587,428	4,959	$118	$581,043	5,017	$116	$237,791	2,105	$113
	Vintage Cars	$281,727	3,268	$86	$324,815	3,576	$91	$191,727	1,871	$102
	Motorcycles	$178,109	1,744	$102	$291,421	2,809	$104	$55,020	568	$97
	Trucks and Buses	$135,936	1,289	$105	$252,572	2,563	$99	$61,281	597	$103
	Planes	$90,016	977	$92	$202,942	2,224	$91	$60,985	592	$103
NA Total		$1,273,216	12,237	$104	$1,652,792	16,189	$102	$606,803	5,733	$106
Grand Total		$3,359,761	32,595	$103	$4,487,319	43,699	$103	$1,815,730	17,720	$102

Available fields (14) for: SteelWheelsSales

Description	Image
Control when elements display on a report based on report parameters. **Show Bar Section** TRUE	
Fine tune the presentation of report sections (Table of Contents) or elements based on the output type. **Output Type** PDF	

Top Five Product Lines by Territory

The Top 5 Product Lines by Territory report, shown below, was created using the thin client tool, Pentaho Analyzer. This report is located under Steel Wheels -> Analysis -> Top 5 Product Lines by Territory.

The Top 5 Product Lines by Territory analysis report features:

One click subtotal items for a dimension.	
Leverage Pentaho Analysis for fast Top/Bottom queries.	
Quickly visualize and compare values using the Data Bar.	
Add color scale range to easily determine outliers and median values.	

| Drill on a data cell to view supporting data. | |

Regional Sales Performance Dashboard

Regional Sales Performance, shown below, is a dashboard which contains three filters, two charts, (created using Chart Designer -- Sales Mix and Recent Sales), and an Analyzer report (Product Performance). This dashboard is located under Steel Wheels -> Dashboards -> Regional Sales Performance. Dashboards feature an interactive drag-and-drop interface that allows business users to quickly assemble content into multiple panels and the ability to link content within the dashboard or outside of the dashboard.
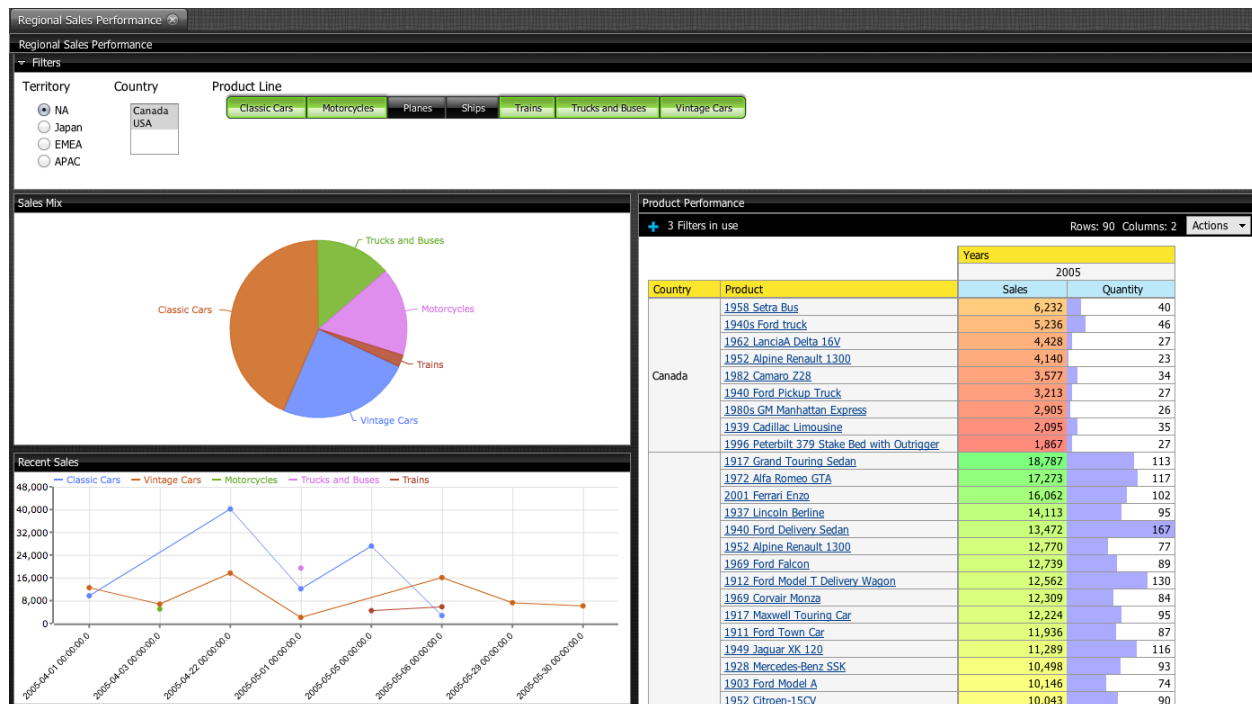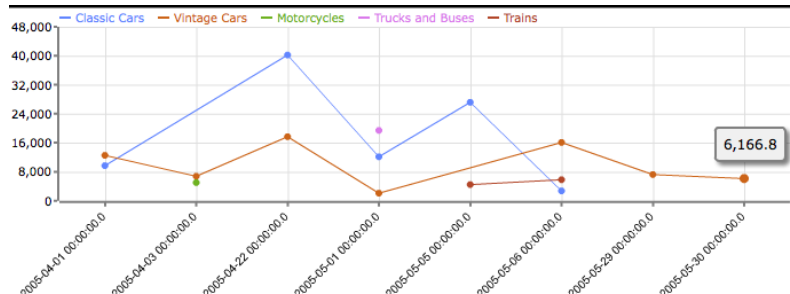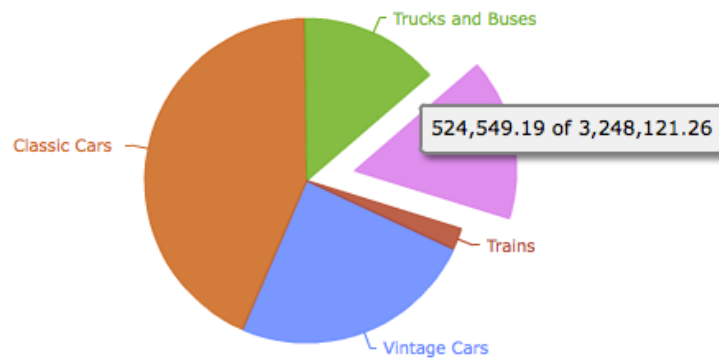

The Regional Sales Performance dashboard features:

| Pick from an assortment of selection controls (buttons, drop down list boxes, list boxes, checkboxes, options) to pass parameters to any dashboard panel. | |

Build dashboard interactive flash-based charts (bar, line, pie, area, dial).	
Display any Pentaho generated content.	

Creating an Interactive Report

Follow the instructions below to begin creating a simple Interactive Report.

1. In the Pentaho User Console Launch page, click New Report. Alternatively, go to File > New > Interactive Report in the Pentaho User Console Launch page or click New Interactive Report in the toolbar.

2. Select Orders from the list under Select a Data Source. As you become more familiar with Interactive Reporting features, you can add your own relational or flat file (CSV) data sources.

3. Click Get Started in the Interactive Report overview box to close it.

4. Click Hide Tips in the lower right corner of the report canvas for easier viewing. The categories and fields associated with the Orders data source are listed under Data in the right pane.

5. Click-and-drag Product Name, (under Products), from the right pane.

6. When dragging, notice the green horizontal line that appears as you are about to place the field into the report.
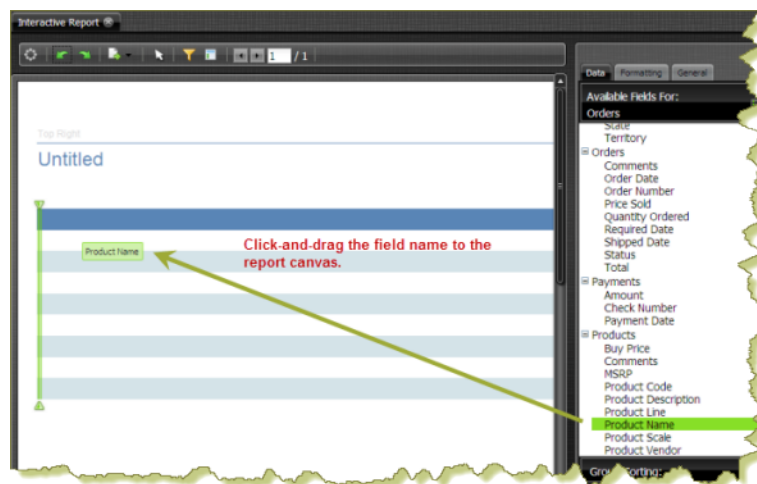
7. Double-click on Product Scale, (under Products).

8. Double-click on Quantity Ordered, (under Orders).

9. Double-click Total, (under Orders). Your report should now have four columns, Product Name, Product Scale, Quantity Ordered, and Total.

10. Click and drag Territory, (under Customers), above the column headers in the report. This will group the Products by Territory.

11. Click and drag Product Vendor, (under Products), above the column headers in the report. This will group the Products by Territory and then by Product Vendor.

12. Now, you can see per Territory and by Vendor the volume of sales and quantities sold for each

product.

Refining Your Interactive Report

Follow the instructions below to refine some of the elements in your Interactive Report.

1. Click to select the data cells of the Total column in your report. Diagonal lines appear when you have selected an element in your report.

2. In the right pane, click the Formatting tab. The formatting options appear.

3. Under Numeric Format, select $#,### from the list. The numeric format is applied to the Total column.

4. Adjust your column widths. Select the column and move your cursor up to the left of the column header until you see a short vertical line and a small arrow. Move the arrow left or right to resize the column.

5. Click the Total column header and drag the entire column next to the Product Name column. An alternate way of moving a column, is to click on the small arrow next to the column name and select Move -> Left (or Right) from the menu.

6. Double-click the Total column header to display an input text box.

7. Type the word, "Sales", in the text box and press <Enter>.

8. Double-click the report name, (Untitled), and type Vendor Sales Report in the text box, press <Enter>.

9. Click the small arrow next to the Sales column header to display the context menu.

10. Select Summary -> Sum so that the report displays the total sales for each vendor.

11. Click the small arrow next to the Sales column header to display the context menu. Select Sort -> Descending to display sales figures from the highest to the lowest.

12. Double-click in the group footer, type Total.

Adding a Filter to Your Report

Filters are used to restrict or limit the data that is presented in a report. For example, you can limit the data in a report to a certain region, such as West or South. In your report, you will restrict the data to display information for the North America only. Follow the instructions below to add a filter to your report:

1. Under the Data tab, right-click Territory (from the Customer category) and select Filter. The Filter (on Territory) dialog box appears.

2. In the Filter dialog box, click Select from a list (Includes, Excludes). The list of filter values, (APAC, EMEA, Japan, NA) appears.

3. Select NA (North America) from the list in the left pane, then click ⊙ (Add Selected) to the right pane and click OK. A small number one (1) appears on the Filter icon in the toolbar indicating that the report contains a single filter. A filter icon also appears next to the Territory field name under Data in the right pane.

4. Save your report.

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 Vendor Sales Report Exercise.

3. Double-click the Steel Wheels folder, then open the Reporting folder. The path to the folder which will contain your report appears in the Location text box.

4. Click Save.

5. Close the report.

You can compare your completed report with the sample report, Vendor Sales Report, available under Reporting in the solution browser. To learn more about Interactive Reporting features, see the Pentaho User Console Guide. Click Help -> Documentation in the Pentaho User Console.

Creating a New Analyzer Report

Follow the instructions below to start creating an Analyzer report.

1. In the Pentaho User Console Launch page, click New Analysis. Alternatively, go to File > New > Analyzer Report in the Pentaho User Console Launch page or click New Analyzer Report in the toolbar.

2. Select your Schema and Cube from the corresponding lists. For the purposes of this exercise, select Steel Wheels: SteelWheelsSales.

3. Click OK. A blank report appears.

4. Click and drag the Territory and Sales fields to the workspace.
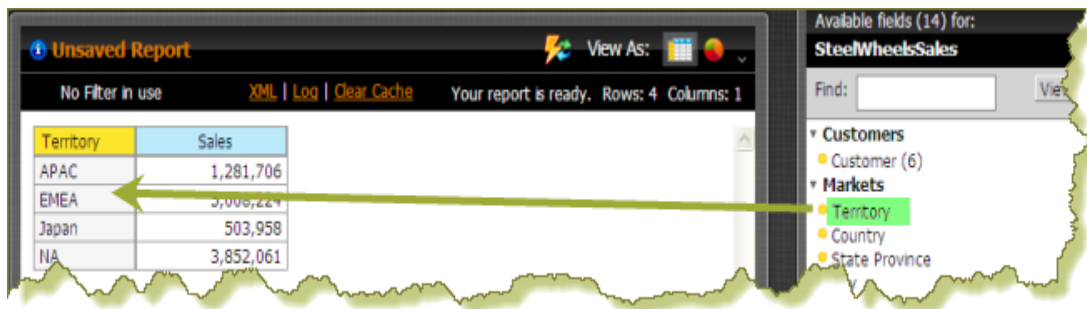
5. Click and drag the Years field and place it above the Territory and Sales columns in the report. A line marker appears as shown below:
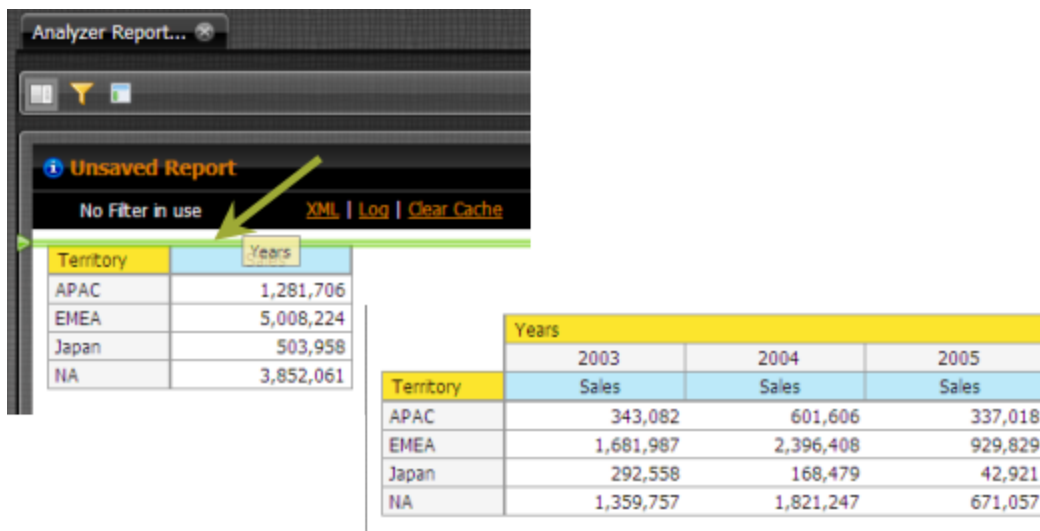
6. Click and drag the Line field and place it next to Territory.

7. Right-click the Territory column and select Show Subtotals.

8. Right-click the Sales column and select Conditional Formatting -> Data Bar - Green. This allows us to quickly visualize and compare values.
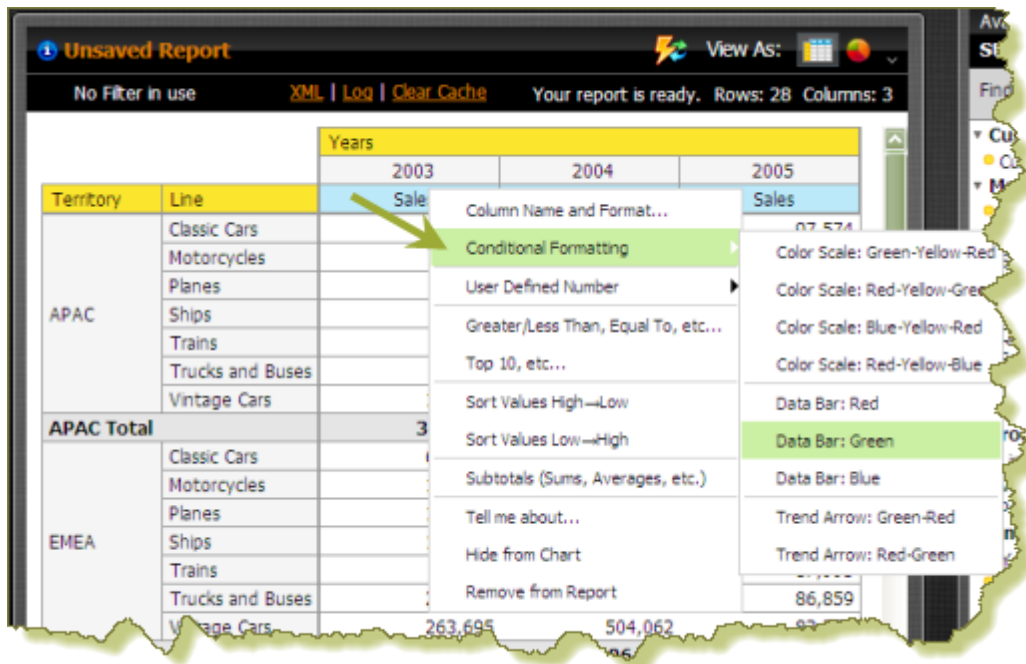
9. Right-click the Sales column and select User Defined Number -> % of Rank, Running Sum.., then in the dialog box select % of Sales. Click Next.

10. Enable Each Territory Column/Row Subtotal (Subtotal is 100%). Click Done. This shows us the product mix (share) of Sales for each territory.

11. Click ![Filter] (Filter) in the toolbar to create a filter for your report. When the filter area appears at the top of the report, click and drag the Territory field (under Available Fields on the right) into the filter area.

12. In the Filter on Territory dialog box, select APAC from the list and click the small green arrow to move it to the box on the right.

13. Enable Parameter Name and type region (lowercase) as your parameter name inthe text box. Click OK.
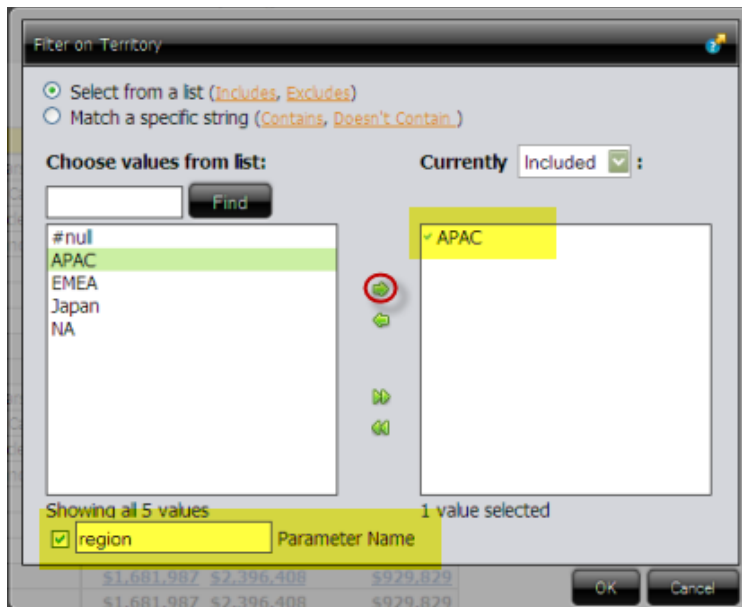
14. The report updates and displays sales data for APAC exclusively.

15. Click the line that separates each column to adjust it for better viewing. Move the line right or left as needed.

At this point, you have a functioning report and you can view your data in chart form.

16. 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 Another Chart Type) you can select a different chart type to display your data.

17. Click Switch to Table Format to return to your table.

18. 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 Territory Line - Sales under /Steel Wheels/Analysis and click Save.

Working with Dashboards

Defining Your Dashboard Look-and-Feel

Follow the instructions below to create a new dashboard:

1. In the Pentaho User Console Launch page, click New Dashboard. Alternatively, go to File > New > Dashboard in the Pentaho User Console Launch page or click New Dashboard in the toolbar.

2. In the edit pane (lower portion of the page), click Properties, and type My Dashboard in the Page Title text box. This is the title for your dashboard page. The name you entered appears on the top left corner of the dashboard.

3. Click Templates and use the scrollbar to examine the different dashboard layouts. The 2 by 2 template is selected by default and is the layout you will use for this exercise.

4. Click Theme to select a theme for your dashboard. Select the theme of your choice. The theme you selected is applied to your dashboard.

Adding Data to Your Dashboard

Follow the instructions below to add data to your dashboard.

1. Select the upper left panel in the Dashboard Designer.

2. Click Reporting in your samples repository (Steel Wheels) to display the list of available reports.

3. Click-and-drag the Vendor Sales Report into the dashboard panel.
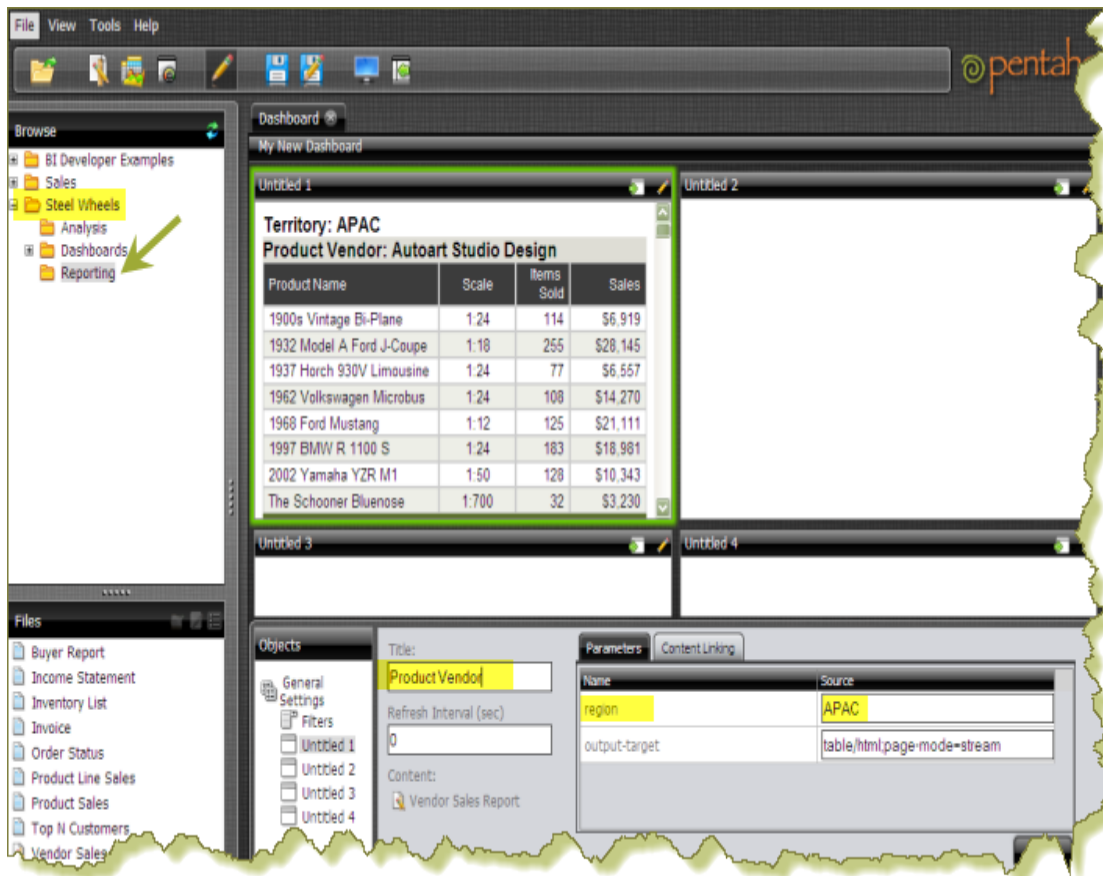
4. Type Product Vendor, under Title, in the lower portion of your dashboard and click Apply. Product Vendor is the title of the dashboard panel.

5. Click Analysis in your samples repository (Steel Wheels) to display the list of available reports.

6. Click-and-drag the Territory Line - Sales Analyzer report into the upper right dashboard panel.

7. Type Territory Line Sales, under Title, in the lower portion of your dashboard and click Apply. Territory Line Sales is the title of the dashboard panel.

8. Click General Settings in the lower portion of the page and select the 2 Column template. The content of your dashboard displays in the new template.

9. Click Filters in the lower portion of the page.

10. Enable Show Filter Toolbar. A Filter area appears at the top of the dashboard.

11. Click ⊕ to add a filter. The Filter dialog box appears.

12. In the Name text box, type Region.

13. Under Data Type, select Metadata List.

14. Under Connections, click Select, then choose the Orders data source and click OK. The Query Editor opens.

15. In the Query Editor, expand the Customer category on the left and select Territory from the list. Click the small arrow to move Territory under Selected Columns.

16. Click the small arrow in the center of the Query Editor to add Territory to Conditions.

17. Under Comparison select is not null.

18. Click OK to exit the Query Editor.

19. Click OK to exit the Filter dialog box and return to the dashboard.

20. Select the dashboard panel that contains your Territory Line SalesAnalyzer report.

21. Under the Parameters tab, select Region as the a Source value for your region parameter and click Apply.

22. Select the dashboard panel that contains Product Vendor report and change its parameter APAC to Region.

23. Test the filter to make sure that the content in each dashboard is being filtered on Region.
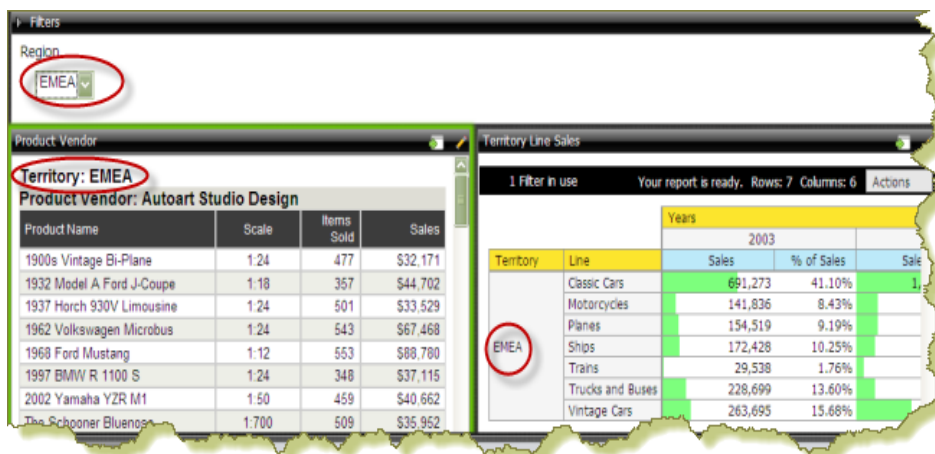
Saving Your Dashboard

Follow the instructions below to save your dashboard:

1. In the toolbar, click (Save) to open the Save dialog box.

2. In the File Name text box, type My First Dashboard.

3. Save your file in the .../steel-wheels/dashboards directory. You can do this by double clicking the Steel Wheels folder and the Dashboards folder.

4. Click Save.To learn more about Dashboard features, see the Pentaho User Console Guide. Click Help -> Documentation in the Pentaho User Console.

Editing Your Dashboard

You just created a dashboard chart that contained an Interactive Report and an Analyzer Report. In this exercise, you will edit your dashboard by adding a chart. Before you can add 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.

1. Browse the repository to locate and open My First Dashboard under Dashboards.

2. Click the ![edit icon] edit button in the Pentaho User Console toolbar.

3. Change your dashboard template to 1 and 2.

4. In the Dashboard, choose the empty dashboard panel and click ![insert icon] (Insert) and select Chart. The Select a Data Source dialog box appears.

5. Select the Orders data source from the list of available choices. The Orders data source contains the content you want to display in your chart. The Query Editor opens. 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.

6. Expand the Products category and click the small arrow to place the Product Line column under Selected Columns.

7. Expand the Orders category and click the small arrow to place the Total column under Selected Columns.

8. Expand the Customers category and click the small arrow to place Territory column under Conditions.

9. Under Comparison, select in.

10. In the Value text box, type {Region}. When you enclose a parameter name with curly braces, you are creating a parameterized query.

11. In the Default text box, type APAC. When the chart renders, it displays data associated with APAC. APAC is the default value of the parameter. That means users can change the query dynamically by replacing the default, "APAC", with a different territory acronym, (for example, EMEA), when the query runs. You can click Preview in the Query Editor to ensure that the query you created is correct.

12. Click OK to exit the Query Editor. The Chart Designer opens.

13. In the Chart Designer, under Type, select Pie Chart.

14. Under Data/Series Column, select Product Line.

15.   Under Values/Column, select Total. The pie chart appears.

16.   Click OK to exit the Chart Designer. The pie chart appears in the dashboard panel.

17.   Under Parameters in the dashboard, change the Source value of the Region parameter from APAC to Region and click Apply.

18.   Click ✏ in the Pentaho User Console toolbar to exit edit mode, then save your dashboard.

As you select a different territory, the slices in the pie chart update.

Creating your First Data Source

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 Dashboards 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.

The exercises in this section will walk you through creating a Database Table(s) Reporting and Analysis data source.

Connect to the Database

To create a 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 quick launch page click Create New. The Data Source Wizard opens.

2.   Under Data Source Name type, My First Data Source.

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

4.   In the lower portion of the wizard page, under Create data source for enable Reporting and Analysis (Requires Star Schema).

5.   In the center of the page, under Connection:, click ⊕ (Add) to define a connection to the database that contains the content you want to access. The Database Connection dialog box appears.
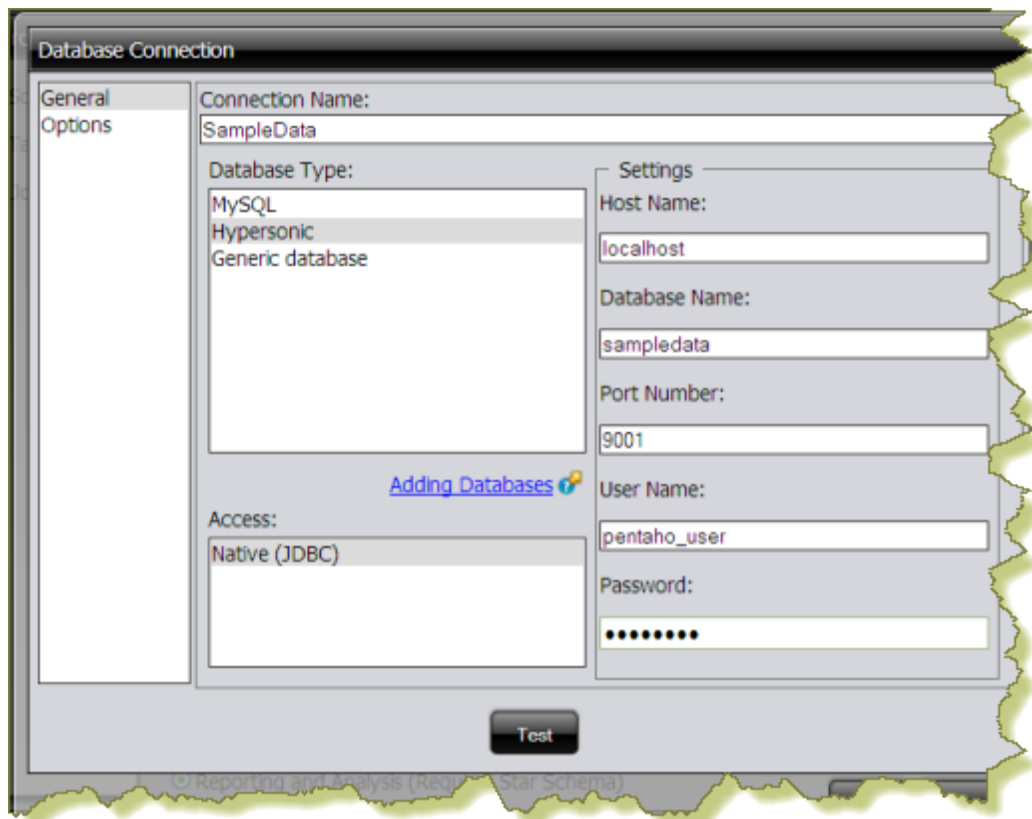
6.   In the Connection Name text box, type SampleData. A Connection Name must be easy to remember and must identify the data you are accessing.

7.   Under Database Type, select Hypersonic.Text fields for required settings associated with your connection type appear under Settings on the right.

8.   Enter the appropriate connection information for your database type:

Option	Value
Host Name	localhost
Database Name	sampledata
Port Number	9001 (automatically available, by default)
User Name	pentaho_user
Password	password

9.   In the Database Connection dialog box, click Test to test your connection and click OK. A success message appears. The connection name appears in the list under Connections in the Data Source Wizard.

Create the Data Source [Database Table(s) (Reporting and Analysis)]

Before proceeding make sure that you have selected the SampleData connection and that Reporting and Analysis (Requires Star Schema) option is enabled.
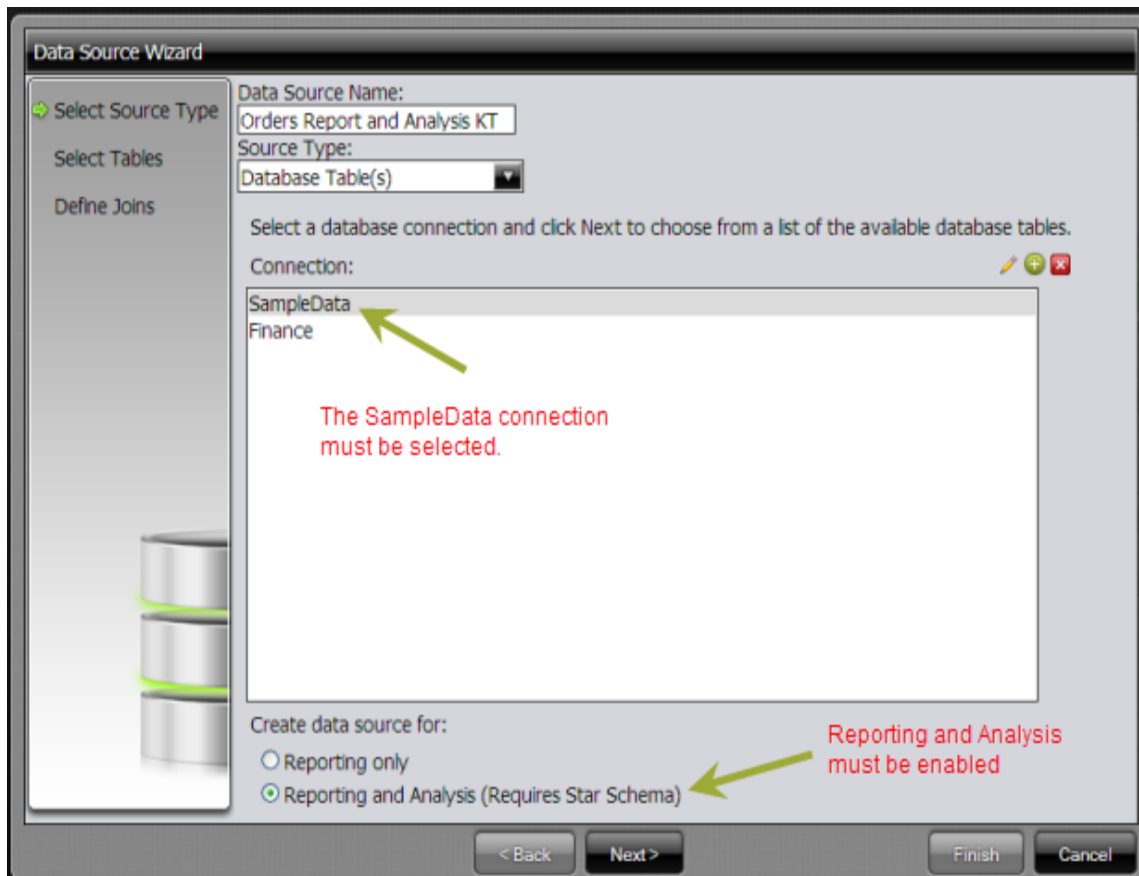
Follow the instructions below to create the data source.

1. In the Data Source Wizard, click Next. A list of available database tables appears.

2. Press <CTRL+CLICK> to select the ORDERFACT, CUSTOMER_W_TER, DIM_TIME, and PRODUCTS tables, then click the small green arrow to move the tables under Selected Tables.

3. Under Fact Table, select ORDERFACT and click Next.

Note: The Fact Table must be selected before you can proceed.

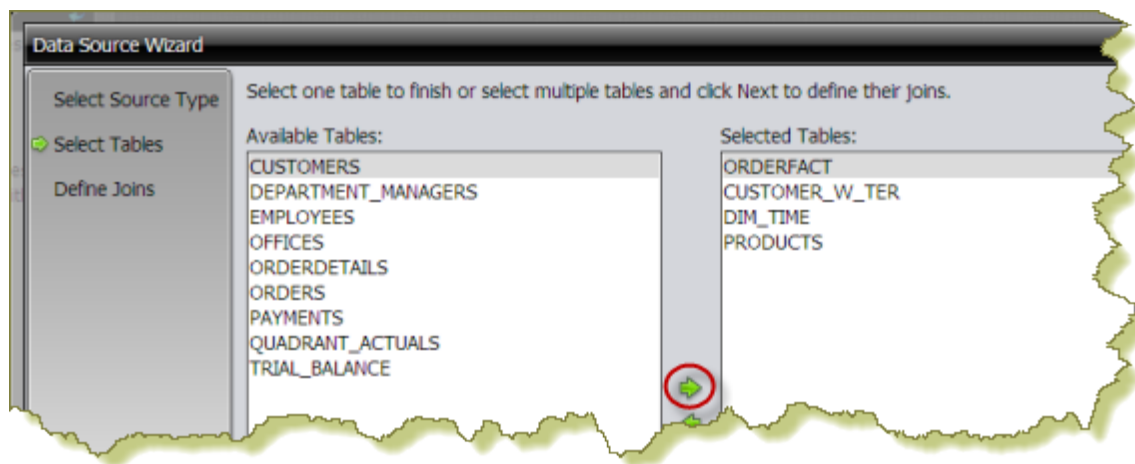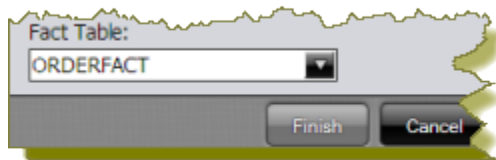4. Define how the tables you selected join to each other. All of your Dimension tables must link to your Fact table. You will create a join relationship with each Dimension table on the right to your Fact table (ORDERFACT) on the left.

5. Select the CUSTOMERNUMBER field under both ORDERFACT and CUSTOMER_W_TER and click Create Join. The join relationship between CUSTOMER_W_TER (Dimension Table) and ORDERFACT (Fact Table) is created. Both tables share the key field, CUSTOMERNUMBER.

6. Select the DIM_TIME table from the list under Right Table, then select the TIME_ID field from the list of key fields on the left. Click Create Join. The join relationship between DIM_TIME (Dimension Table) and ORDERFACT (Fact Table) is created. Both tables share the key field, TIME_ID.

7. Select the PRODUCTS table from the list under Right Table, then select the PRODUCTCODE field from the list of key fields on the left. Click Create Join. The join relationship between the PRODUCTS table and ORDERFACT table is created. Both tables share the key field,

PRODUCTCODE.
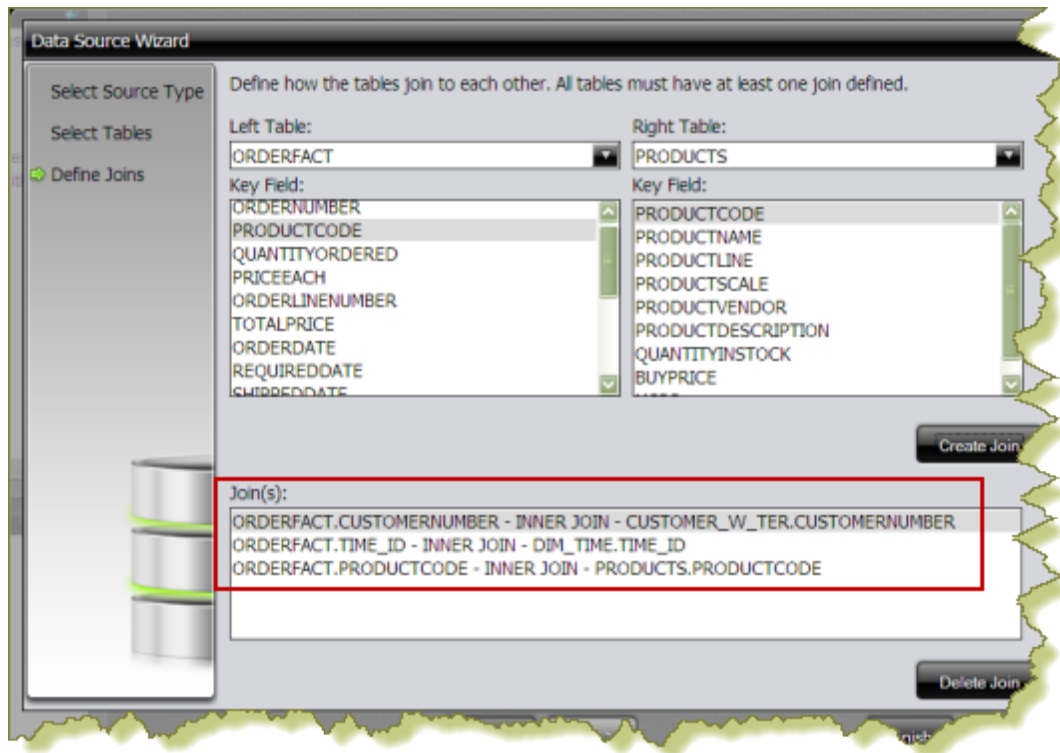
8. Click Finish to create your data source.

9. In the Data Source Created dialog box, enable Customize model now.

Customizing the Data Source

During the data source creation process, a default Pentaho Metadata (Reporting) model and a Mondrian (OLAP) Schema (model) are generated. In most cases, you will want to make changes to the default model so that the data is more useful to report consumers; however, the default model can be used as is.

The Pentaho Modeler displays two perspectives; the Reporting perspective that contains all of tables organized in categories and fields to be used for Interactive Reporting and Dashboards, and the Analysis perspective that contains all hierarchies and levels to be used for Analyzer reports and visualizations.
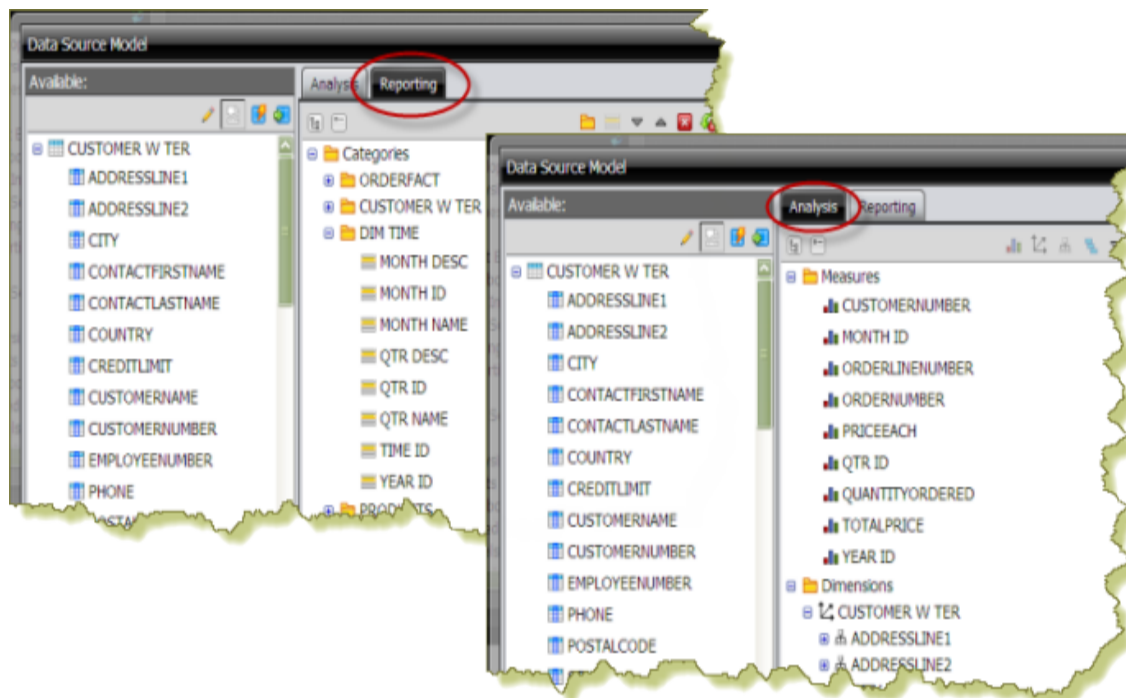
Click OK in the Data Source Model dialog box to keep your default model. The new data source is added to the list of available data sources that users select when creating a new Interactive Report, a dashboard, or Analyzer report.

You can edit (✏) your data source by clicking Manage Existing in the Pentaho User Console launch page. For more information about customizing your data source, see Customizing a Reporting Data Source and Customizing an Analysis Data Source in the Pentaho User Console Guide.

Adding a JDBC Driver to Pentaho Applications

Before you can connect to a data source in any Pentaho server or client tool, you must first install the appropriate database driver. Your database administrator should be able to provide you with the proper driver JAR. If not, you can download a JDBC driver JAR file from your database vendor or driver developer's Web site. Once you have the JAR, follow the instructions below to copy it to the driver directories for all of the BI Suite components that need to connect to this data source. SQL Server users frequently use an alternative, non-vendor-supported driver called JTDS. If you are adding an MSSQL data source, ensure that you are installing the correct driver.

Backing up old drivers

You must also ensure that there are no other versions of the same vendor's JDBC driver installed in these directories. If there are, you may have to back them up and remove them to avoid confusion and potential class loading problems. This is of particular concern when you are installing a driver JAR for a data source that is the same database type as your Pentaho solution repository. If you have any doubts as to how to proceed, contact your Pentaho support representative for guidance.

Installing JDBC drivers

Copy the driver JAR file to the following directories, depending on which servers and client tools you are using (Dashboard Designer, Interactive Reporting, and Analyzer are all part of the BI Server).

For the DI Server: before copying a new JDBC driver, ensure that there is not a different version of the same JAR in the destination directory. If there is, you must remove the old JAR to avoid version conflicts.

Application	Location
BI Server	/pentaho/server/biserver-ee/tomcat/lib/
Enterprise Console	/pentaho/server/enterprise-console/jdbc/
Data Integration	/pentaho/server/data-integration-server/tomcat/webapps/pentaho-di/WEB-INF/lib/
Data Integration	/pentaho/design-tools/data-integration/libext/JDBC/
Report Designer	/pentaho/design-tools/report-designer/lib/jdbc/
Schema Workbench	/pentaho/design-tools/schema-workbench/drivers/
Aggregation Designer	/pentaho/design-tools/agg-designer/drivers/
Metadata Editor	/pentaho/design-tools/metadata-editor/libext/JDBC/

To establish a data source in the Pentaho Enterprise Console, you must install the driver in both the Enterprise Console and the BI Server or Data Integration Server. If you are just adding a data source through the Pentaho User Console, you do not need to install the driver to Enterprise Console.

Once the driver JAR is in place, you must restart the server or client tool that you added it to.

Connecting to a Microsoft SQL Server using Integrated or Windows Authentication

The JDBC driver supports Type 2 integrated authentication on Windows operating systems through the integratedSecurity connection string property. To use integrated authentication, copy the sqljdbc_auth.dll file to all the directories to which you copied the JDBC files. The sqljdbc_auth.dll files are installed in the following location: <installation directory>\sqljdbc_<version>\<language>\auth\

Use the sqljdbc_auth.dll file, in the x86 folder, if you are running a 32-bit Java Virtual Machine (JVM) even if the operating system is version x64. Use the sqljdbc_auth.dll file in the x64 folder, if you are running a 64-bit JVM on a x64 processor. Use the sqljdbc_auth.dll file in the IA64 folder, you are running a 64-bit JVM on an Itanium processor.

Troubleshooting

The following tips may help you troubleshoot installation and other related issues.

Verify the Enterprise Console server have started

After you have successfully installed the Pentaho BI Suite, this section steps you through verifying your installation.

Note: As you start and stop the consoles and other Pentaho components, you may see black command prompt windows open or close. These windows display the scripts that run the BI Suite components. You can minimize the command prompt windows so they do not clutter your desktop.
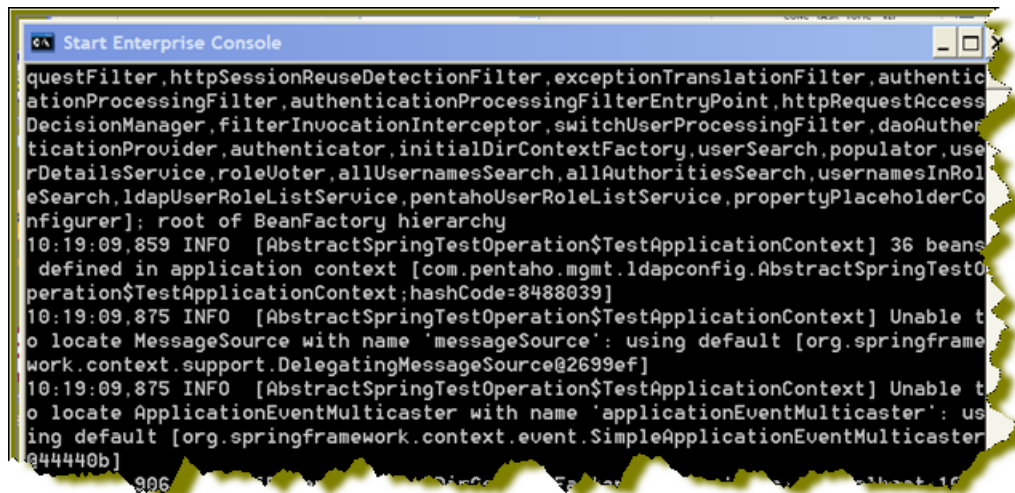
Verify the BI Server and MySQL have started

If you selected to launch the User Console or Enterprise Console, the installer automatically starts the BI Server, Solution Repository, and Enterprise Console. You can check to see if the Pentaho BI Server and the MySQL database that contains the Pentaho Solution Repository have started by launching â€œServices" from the Control Panel.

Go to Start -> Control Panel -> Administrative Tools -> Services. Alternatively, you can type services.msc in the Run command on the Start menu. Under local Services scroll down to Pentaho BI Server. In the image below, the Pentaho BI Server is started on Tomcat. The Pentaho Solution Repository (MySQL) is also started.
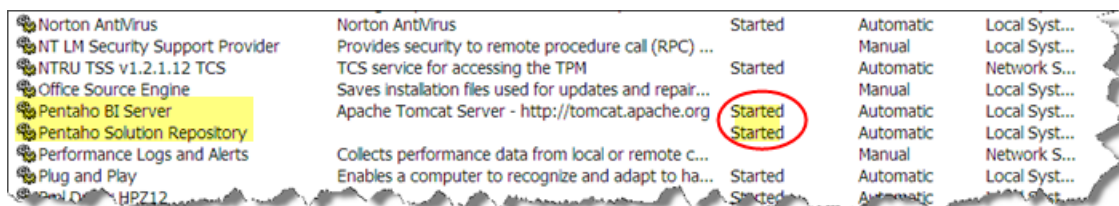
Note: Right-click on the BI Server or Solution Repository in the Services window to start or stop them. Alternatively, you can start the BI Server by navigating to Start -> Programs -> Pentaho Enterprise Edition -> Server Management -> Start BI Server. The MySQL database starts automatically when you log on to your device.

Referencing Your Installation Summary

The installation summary automatically appears when you have completed an installation. It looks similar to the example below. The installation summary provides you with information about what is installed on your computer. In this example, all Pentaho BI Suite components have been installed. The information in the summary helps the support team know what has been installed.

Follow the instructions below before you call support to resolve an issue. The support staff must know what components have been installed.

1. Navigate to the folder that contains Pentaho installation; for example, C:\Program Files\pentaho.

2. Locate and open the following file: installation-summary.txt.

3. Copy the contents of the file and send it, via email, to the support technician as instructed.

Resolving Unable to Connect Error

If you followed the default installation instructions, the BI Server starts automatically at startup and remains available until you shut your computer down, or, you manually stop the server. If the BI Server is not started, an Unable to Connect error will occur when you try to log onto the Pentaho User Console. This error may also occur if the URL to the Pentaho User Console has been changed. The default URL is, http://localhost:8080/.

To correct the issue start the server. Go to Start -> Programs -> Pentaho Enterprise Edition -> Server Management -> Start BI Server. If the problem persists, check the URL to make sure it has not changed.

Resolving License Not Found Error

Your Pentaho installation provides you with licenses to access all BI Suite components for 45 days. If, however, you attempt to use the software after 45 days or you uninstall and try to reinstall the BI Suite, a "License Not Found" error will occur.

Contact your Pentaho Sales Representative or send an email to Support to reinstate licensing.

Resolving Port-Related Conflicts

As stated previously, you must be able to assign ports, if necessary, during installation. It is recommended that you contact your system or database administrator for help when you encounter port-related conflicts.

Below is the default port information:

MySQL Server	Startup Port: 3306
Tomcat BI Server	Startup Port: 8080
Tomcat Data Integration Server	Startup Port: 9080
Enterprise Console	Startup Port: 8088