One Design
One Server
One User Experience

Using BIRT Data Analyzer

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Contents

About *Using BIRT Data Analyzer* . . . . . **v**

Chapter 1
Analyzing data **1**
About cross tabs 2
About cubes 3
Working with Data Analyzer 4
Starting Data Analyzer 7
Accessing a cube view file using a URL 9
Accessing a data object store file using a URL 10
Starting Data Analyzer from a data object store file in an Encyclopedia volume 11
Accessing BIRT Data Analyzer in a web page 12
Maximizing the cross-tab display area 12

Chapter 2
Formatting a cross tab **15**
About formatting 16
Applying a theme to a cross tab 16
Selecting a cross-tab element 17
Viewing details of cross-tab data 18
Changing font alignment and attributes 18
Displaying, hiding, or modifying cross-tab elements 19
Displaying, hiding, modifying, or moving a header 20
Displaying or hiding empty columns or rows 22
Formatting data based on conditions 23
Specifying a condition 23
Comparing to a literal value 24
Specifying multiple conditional formatting rules 24
Formatting numbers 26
Reverting to default formats 28
Saving a cross tab 28
Setting page breaks in a cross tab 31
Printing a chart or cross tab 32

Chapter 3
Organizing cross-tab data **35**
About organizing cross-tab data 36
Displaying dimensions 36
Displaying measures 40
Displaying attributes 43

Pivoting a cross tab 46
Sorting data 47
Displaying detail and summary data 49

Chapter 4
Performing calculations in a cross tab 55
About calculated data 56
Displaying aggregate data 56
Using calculated data in a cross tab 60
Using a conditional expression in a cross tab 62
Using a mathematical calculation in a cross tab 63
Using a relative time period calculation in a cross tab 67
Supported time periods 67
Using the * to Date and Trailing N * time periods 74
Functions 75
% OF 75
% OF COLUMN 75
% OF DIFFERENCE 76
% OF ROW 76
% OF TOTAL 76
ABS 77
ADD 77
ADVANCED 77
CEILING 78
DIFFERENCE 78
IF 78
MOD 79
PRODUCT 79
RANK 79
RATIO 80
ROUND 80
RUNNINGSUM 81
SQRT 81
Operators 81
Operators supported in computed measure expressions 82
Operators supported in conditional formatting and filter condition expressions 83

Chapter 5
Filtering cross-tab data 85
About data filtering 86
Creating a filter 87
Selecting multiple values for a filter condition 94
Excluding data 94

Filtering empty or null values . . . 95
Specifying a date as a comparison value . . . 95
Displaying data for relative time periods . . . 96
Comparing to a string pattern . . . 97
Displaying top or bottom values . . . 97
Displaying a list of applied filters . . . 98

Chapter 6
Working with charts . . . 101
About charts . . . 102
Choosing a chart type . . . 103
About area charts . . . 104
Overlay area chart . . . 104
Stacked area chart . . . 104
Percent stacked area chart . . . 105
About bar charts . . . 105
Side-by-side bar chart . . . 106
Stacked bar chart . . . 106
Percent stacked bar chart . . . 106
About column charts . . . 107
Side-by-side column chart . . . 107
Stacked column chart . . . 108
Percent stacked column chart . . . 108
About doughnut charts . . . 108
About line charts . . . 109
About pie charts . . . 109
About scatter charts . . . 110
Displaying a chart . . . 110
Selecting data for a chart . . . 112
Selecting data for an area, bar, column, line, or scatter chart . . . 113
Selecting data for a doughnut or pie chart . . . 115
Selecting a data series using a context menu . . . 115
Formatting a chart . . . 117
Editing titles . . . 117
Selecting a theme . . . 118
Changing the size of a chart . . . 118
Changing the chart subtype . . . 119
Using glass style for a bar or column chart . . . 119
Changing the inner radius for a doughnut chart . . . 119
Changing the font . . . 119
Changing the position of the legend . . . 119
Formatting labels to fit on the x-axis . . . 119
Setting x-axis labels angle . . . 120

Staggering x-axis labels 120
Displaying x-axis labels by interval 121
Changing the number and range of values on the y-axis 121

Chapter 7
Exporting content 125
About exporting content 126
Exporting content 126
Exporting content to Adobe PDF 126
Exporting content to Adobe PostScript format 129
Exporting content to Advanced Function Printing format 131
Exporting content to Microsoft Excel format 133
Exporting content to Microsoft PowerPoint format 136
Exporting content to Microsoft Word format 138

Chapter 8
Customizing Data Analyzer 139
About customizing Data Analyzer 140
Customizing page styles for Data Analyzer 140
Limiting the number of levels for drilling up or down 141

Index 143

About *Using BIRT Data Analyzer*

Using BIRT Data Analyzer provides information about using BIRT Data Analyzer to analyze data in an interactive cross tabulation, or cross tab. This manual describes how to manipulate data in a cross tab. This manual also describes how to view, customize, save, and export data from a cross tab.

Working with Actuate BIRT Data Analyzer in a cross tab in a BIRT report document (.rptdocument) file in an Encyclopedia volume requires Actuate BIRT Interactive Viewer option, an Actuate BIRT iServer System option. Working with Actuate BIRT Data Analyzer in a cross-tab gadget in a BIRT dashboard in an Encyclopedia volume requires Actuate BIRT 360 option, another Actuate BIRT iServer System option. Working with Actuate BIRT Data Analyzer in a BIRT data object in an Encyclopedia volume requires Actuate BIRT Data Analyzer option.

Using BIRT Data Analyzer includes the following chapters:

- *About Using BIRT Data Analyzer*. This chapter provides an overview of this guide.
- *Chapter 1. Analyzing data.* This chapter provides an overview of Data Analyzer, its capabilities, and how to start Data Analyzer.
- *Chapter 2. Formatting a cross tab.* This chapter describes Data Analyzer's formatting options and how to use them. This chapter also describes how to save a cross tab and how to print a cross tab.
- *Chapter 3. Organizing cross-tab data.* This chapter describes how to organize and manipulate data in a cross tab.
- *Chapter 4. Performing calculations in a cross tab.* This chapter describes how to perform calculations in a cross tab, such as adding calculated data to a cross tab, aggregating data, and displaying grand totals and subtotals.
- *Chapter 5. Filtering cross-tab data.* This chapter describes how to use filtering options to limit the number of data values that appear in a cross tab.

- *Chapter 6. Working with charts.* This chapter describes how to work with charts using Data Analyzer.
- *Chapter 7. Exporting content.* This chapter describes how to export a cross tab or a chart to several formats, such as Adobe PDF and PostScript, and Microsoft Excel, PowerPoint, and Word.
- *Chapter 8. Customizing Data Analyzer.* This chapter describes how to customize the Data Analyzer user interface, including changing font color, face, and size. This chapter also describes how to limit the number of level items that appear when drilling up or drilling down in a cross tab.

Chapter

1

Analyzing data

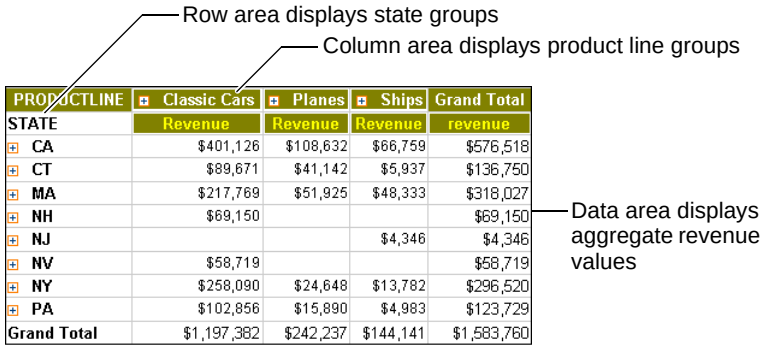
This chapter contains the following topics:

- About cross tabs
- About cubes
- Working with Data Analyzer
- Starting Data Analyzer
- Maximizing the cross-tab display area

About cross tabs

A cross tabulation, or cross tab, displays data in a row-and-column matrix. The cross tab's appearance looks similar to a spreadsheet. Like a spreadsheet, the cross tab summarizes data in a compact and concise format. In its cells, a cross tab displays aggregate values, such as averages, counts, or sums.

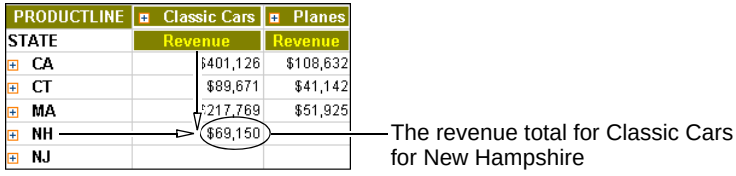
Figure 1-1 shows a cross tab that organizes state groups in the row area and product line groups in the column area. In the data area, aggregate revenue values appear in the cells. In this cross tab, the aggregate values are sums.



PRODUCTLINE	Classic Cars	Planes	Ships	Grand Total
STATE	Revenue	Revenue	Revenue	revenue
CA	$401,126	$108,632	$66,759	$576,518
CT	$89,671	$41,142	$5,937	$136,750
MA	$217,769	$51,925	$48,333	$318,027
NH	$69,150			$69,150
NJ			$4,346	$4,346
NV	$58,719			$58,719
NY	$258,090	$24,648	$13,782	$296,520
PA	$102,856	$15,890	$4,983	$123,729
Grand Total	$1,197,382	$242,237	$144,141	$1,583,760

Figure 1-1 Viewing a cross tab

At the intersection of a column and a row, a cell displays a revenue value by product line and state, as shown in Figure 1-2.



PRODUCTLINE	Classic Cars	Planes
STATE	Revenue	Revenue
CA	$401,126	$108,632
CT	$89,671	$41,142
MA	$217,769	$51,925
NH	$69,150	
NJ		

Figure 1-2 A cell displaying a revenue total

A cross tab uses data from at least three fields. The cross tab in Figure 1-1 uses the following data fields:

- One field provides the values for column headings in the cross tab. The cross tab displays one column for each unique value in the field. In Figure 1-1, the cross tab displays three unique values from the productline field: Classic Cars, Planes, and Ships.
- One field provides the values for row headings in the cross tab. The cross tab displays one row for each unique value in the field. In Figure 1-1, the cross tab displays eight unique values from the state field: CA, CT, MA, NH, NJ, NV, NY, and PA.

- Data Analyzer aggregates one field's values and displays these values in the cross-tab cells. In this example, each cell displays a revenue total by productline and state. Data Analyzer calculates the revenue total using the SUM function on the values in the extendedprice field. Figure 1-2 shows a part of the cross tab with a circled value at the intersection of the Classic Cars column and the New Hampshire row. The circled value is the sum of all revenue from the sale of Classic Cars in New Hampshire.

About cubes

A cube is a multidimensional data structure, optimized for analysis. A cube supports applications performing complex analyses without performing additional queries on the underlying data source. A cube organizes data into the following categories:

- Measure

  A measure is an aggregate, or summary, value, such as sales revenue or units of products.

- Dimension

  A dimension is a group, such as customers, product lines, or time periods, which aggregates measures. For example, a sales revenue cube contains data that enables viewing sales volume and revenues, both of which are measures, by customers, product lines, and time periods, all of which are dimensions.

- Attribute

  An attribute is a value that a cross-tab developer can associate with a dimension. For example, a cross-tab developer can specify that a quantity-in-stock value is an attribute that associates with the product line dimension.

Dimensions can contain multilevel hierarchies. For example, a region dimension can contain a hierarchy of the following dimensions: country, state, and city. A time dimension can contain a hierarchy of the following dimensions: year, quarter, month, and day. Most cubes include time dimensions, because displaying measures by day, week, month, quarter, or year, is important for data analysis. In a cube, the time dimension is a special dimension, which supports storing data in the time periods a cube developer chooses.

A developer uses Actuate BIRT Designer Professional to create a cube that contains data from one or more data sources. Then, the developer creates a cross tab that uses the cube data and specifies the cross-tab appearance. The initial cross tab that appears in Data Analyzer typically displays a portion of the available cube data in a simple, easy-to-understand layout. Figure 1-3 shows a cross tab and all the cube measures and dimensions that are available for analysis.

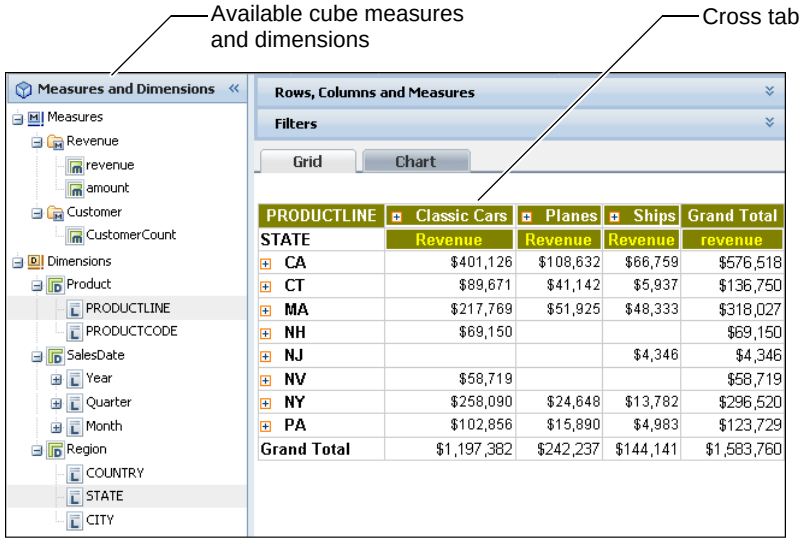


Figure 1-3 Data Analyzer displaying a cross tab and available measures and dimensions

Working with Data Analyzer

Working with Data Analyzer, you manipulate a cross tab to analyze its data. You can add, remove, reorganize, and customize the data and its appearance in the cross tab to examine relationships and trends. Using Data Analyzer, you can answer questions such as:

- What are a product's sales over time?
- Which products sell more or less by region?
- How many units of a product shipped to all locations in April?

To answer these questions, a Data Analyzer user completes the following tasks:

- Drill down to display detail data, or drill up to display summary data.
- Filter, group, and sort data.
- Perform calculations.
- Display cross-tab data in a chart.

Detailed information about performing each of these tasks is available in later sections of this manual.

When you start Data Analyzer, your browser displays the following user interface items, as shown in Figure 1-4:

- A toolbar contains buttons that support tasks, such as displaying cross-tab totals and pivoting the cross tab.
- A data pane lists the attributes, dimensions, and measures in the cube.
- A structure pane lists the attributes, dimensions, and measures that appear in the cross-tab columns, rows, and data area.
- A filters pane displays a list of applied data filters.
- A preview pane displays a cross tab or a chart.

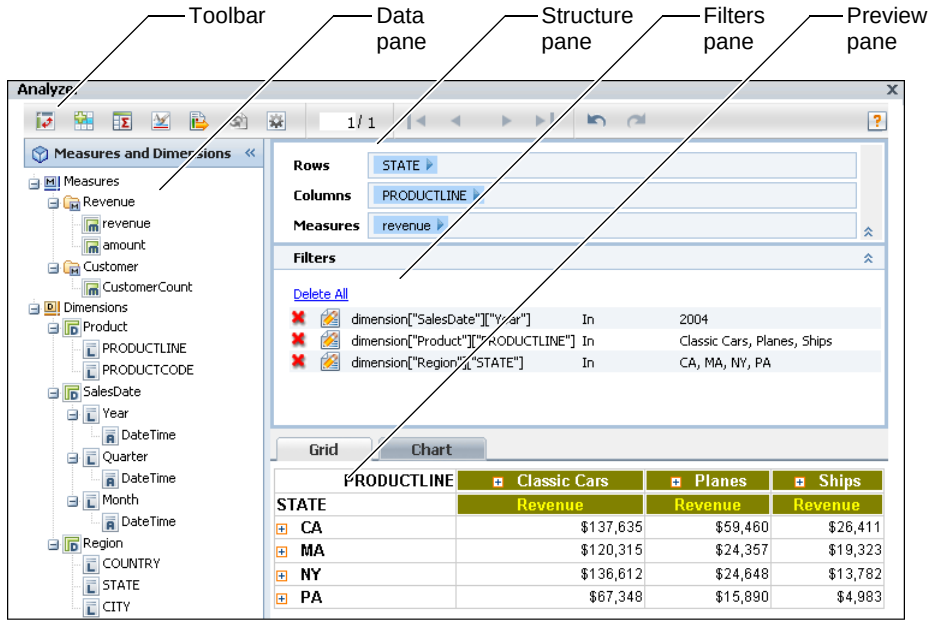


Figure 1-4 Using Actuate BIRT Data Analyzer

Using the toolbar, shown in Figure 1-4, you can complete the following tasks:

- Pivot the cross tab.
- Choose New Computed Measure to add calculated data values to the cross tab.
- Choose Totals to specify a function to display aggregate data.
- Choose Theme to change fonts and cross-tab display colors.
- Choose Export Content to export cross-tab content to a format that is viewable in an application other than Data Analyzer.

- Choose Refresh Data to update the cross-tab data.
- Choose Options to orient the measure header, display empty rows and columns, display a character string in empty cells, and apply a page break.
- Navigate to other cross-tab pages.
- Undo or redo changes to the cross tab.
- Access online help.

To display additional options for a specific cross-tab element, right-click a cross-tab element. A context menu displays commands and options next to the cross-tab element. For example, Figure 1-5 shows the menu that appears when you right-click a cell in the data area.

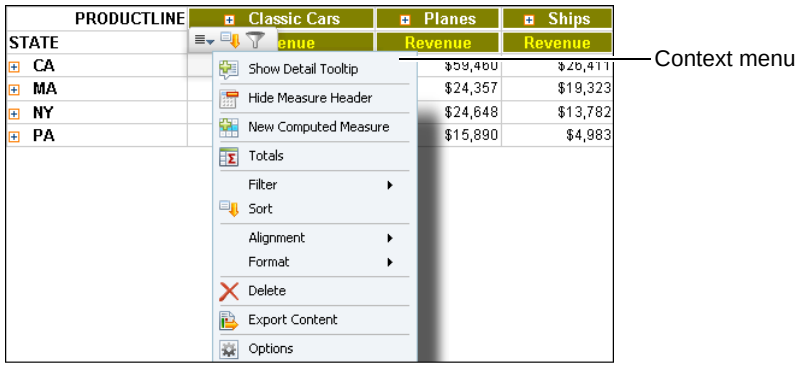


Figure 1-5 Using a context menu for a cell in the data area

Data Analyzer also supports viewing a chart that uses the cross-tab data. Figure 1-6 shows a column chart that displays revenue values for seven product lines for four quarters.

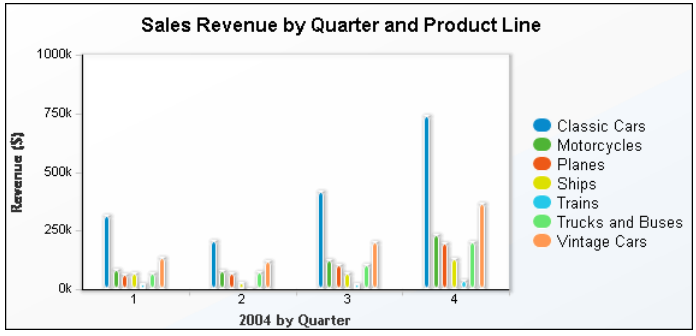


Figure 1-6 Viewing a chart

Starting Data Analyzer

To start Data Analyzer, access a file that contains cube data in one of the following ways:

- Using Information Console, navigate to the file in the repository.
- Using Actuate BIRT Designer Professional, run an Actuate BIRT design file, and view the file in BIRT Viewer and Interactive Viewer. Then, in Interactive Viewer, choose to analyze the file.

You can use Information Console to navigate to and open the following file types that contain cube data. These file types open using Data Analyzer.

- Actuate BIRT cube view (.cubeview) file
- Actuate BIRT data object store (.data) file
- Actuate BIRT gadget design (.gadget) file

You can also use Information Console to navigate to and view an Actuate BIRT report document (.rptdocument) file, using Actuate BIRT Viewer and Interactive Viewer. Then, if the file contains a cross tab, you can start Data Analyzer from Interactive Viewer.

A sample BIRT report document (.rptdocument) file that contains a cross tab installs with Actuate BIRT iServer. The sample, Crosstab Sample Revenue.rptdocument, installs to the following Encyclopedia volume location:

```
/Public/BIRT and BIRT Studio Examples/Crosstab Sample
   Revenue.rptdocument
```

For more information about using Actuate BIRT Viewer and Interactive Viewer, see *Working with Actuate BIRT Viewers.*

How to start Data Analyzer from a document

1. Access Information Console. In a browser address bar, type a URL, such as:

   ```
   http://actuate1:8900/iportal/login.jsp?
   ```

   where

   - actuate1 is the web server that provides the interface to Actuate BIRT iServer, and 8900 is the default port number.
   - iportal is the home directory in which Information Console resides.
   - login.jsp? specifies that the log-in page appear.

   Press Enter.

2. In Information Console, provide the following information:

   - In User Name, type your user name.

- In Password, type your password.

Choose Log In.

3 In the Encyclopedia volume, navigate to the appropriate file, such as Crosstab Sample Revenue.rptdocument, as shown in Figure 1-7.

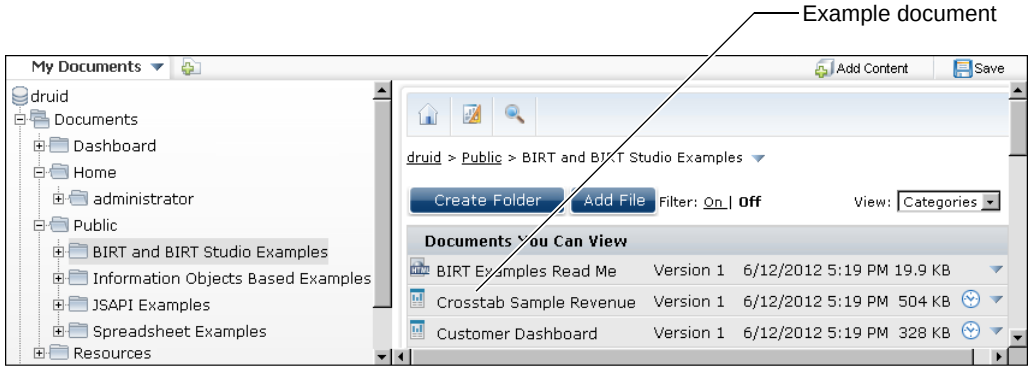


Figure 1-7 Navigating to the Crosstab Sample Revenue example document

4 Double-click the file name. The document opens in Actuate BIRT Viewer and displays a cross tab.

5 To start Interactive Viewer, choose Enable Interactivity from the menu, as shown in Figure 1-8.

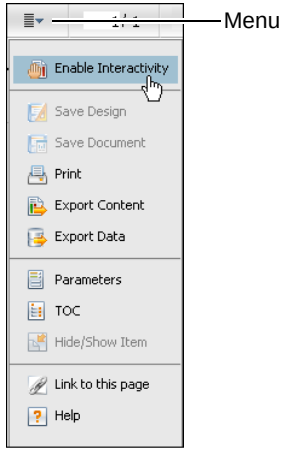


Figure 1-8 Choosing Enable Interactivity from the menu

6 Right-click a cell in the cross tab. From the menu, choose Analyze. Data Analyzer appears, as shown in Figure 1-9.

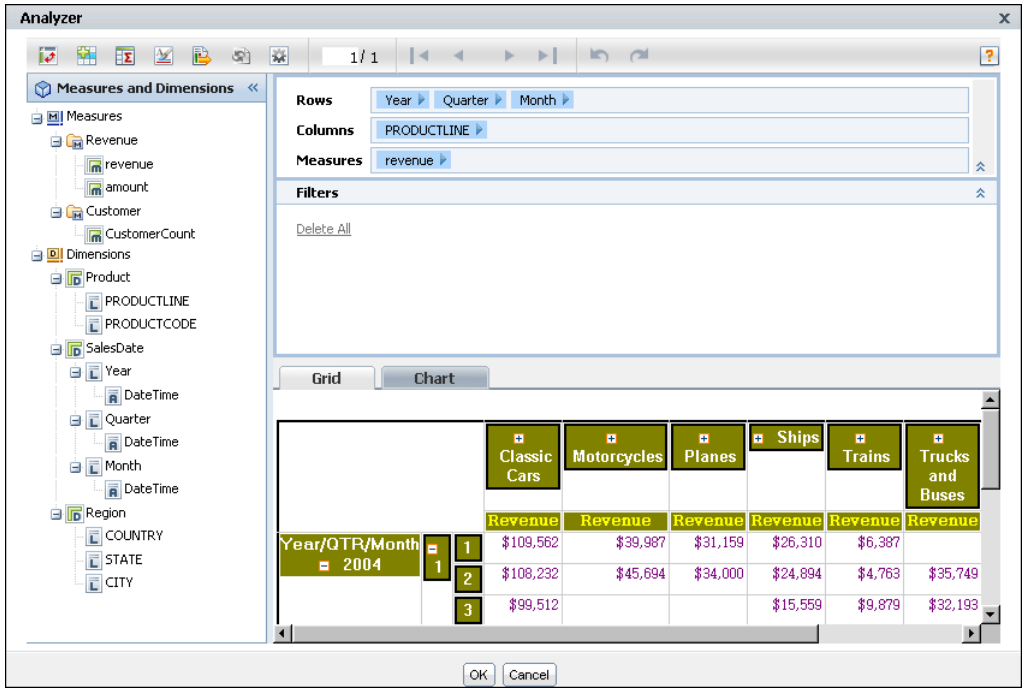


Figure 1-9 Data Analyzer displaying measures and dimensions for the Crosstab Sample Revenue example document

Accessing a cube view file using a URL

You can access a cube view (.cubeview) file using a URL, such as:

```
http://actuate1:8900/iportal/da?__report=<repository path to the
   .cubeview file>
```

where

- actuate1 is the web server that provides the interface to Actuate BIRT iServer, and 8900 is the default port number.
- iportal is the home directory in which Information Console resides.
- da? indicates that Information Console opens the file using Data Analyzer.
- __report=<repository path to the .cubeview file> specifies the repository path and file name of the .cubeview file to open from an Encyclopedia volume.

For more information about cube view files, see “Saving a cross tab,” in Chapter 2, “Formatting a cross tab.”

Accessing a data object store file using a URL

You can access a data object store (.data) file using a URL, such as:

```
http://actuate1:8900/iportal/da?__data=<repository path to the
   .data file>
```

where

- actuate1 is the web server that provides the interface to Actuate BIRT iServer, and 8900 is the default port number.
- iportal is the home directory in which Information Console resides.
- da? indicates that Information Console opens the file using Data Analyzer.
- __data=<repository path to the .data file> specifies the repository path and file name of the .data file to open from an Encyclopedia volume.

When Data Analyzer opens a data object store (.data) file, the file appears, as shown in Figure 1-10. The data pane displays the cube data that is available for creating a cross tab.

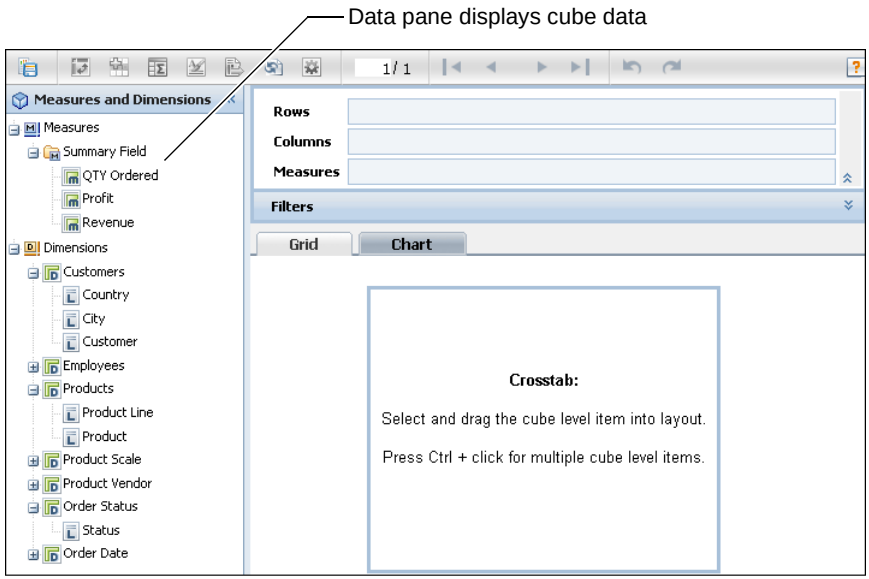


Figure 1-10 Viewing a data object store file in Data Analyzer

For more information about data object store files, see *Using Actuate BIRT Designer Professional*.

Starting Data Analyzer from a data object store file in an Encyclopedia volume

Similarly to starting Data Analyzer from a document in an Encyclopedia volume, you can start Data Analyzer from a data object store (.data) file in an Encyclopedia volume.

How to start Data Analyzer from a data object store (.data) file in an Encyclopedia volume

1 Access Information Console. In a browser address bar, type a URL, such as:

```
http://actuate1:8900/iportal/login.jsp?
```

where

- actuate1 is the web server that provides the interface to Actuate BIRT iServer, and 8900 is the default port number.
- iportal is the home directory in which Information Console resides.
- login.jsp? specifies that the log-in page appear.

Press Enter.

2 In Information Console, provide the following information:

- In User Name, type your user name.
- In Password, type your password.

Choose Log In.

3 In the Encyclopedia volume, navigate to a data object store (.data) file, such as /<Encyclopedia volume name>/Resources/Classic Models.data, as shown in Figure 1-11.

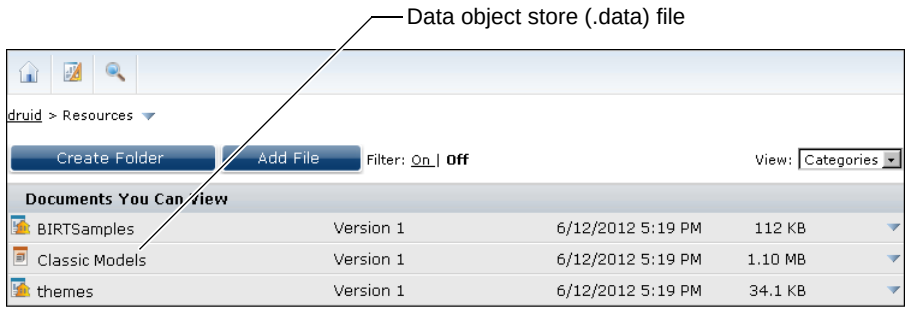


Figure 1-11 Navigating to the Classic Models.data file

4 Double-click the file name.

If the data object store (.data) file contains more than one cube, Select Cube appears, as shown in Figure 1-12.

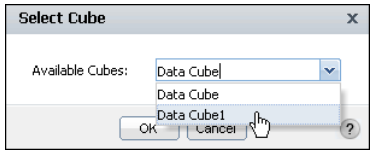


Figure 1-12 Selecting a cube

Select a cube from the list. Choose OK.

The DATA file opens in Data Analyzer, as shown in Figure 1-13. The data pane displays the cube data that is available for creating a cross tab.

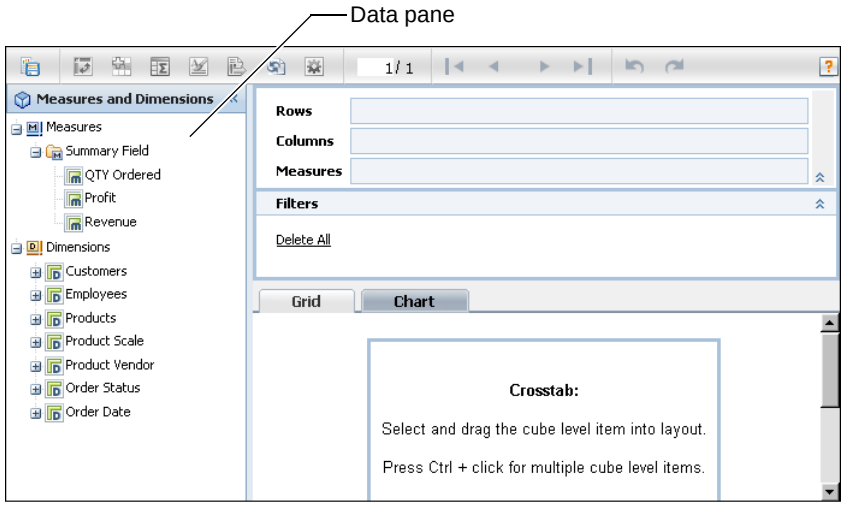


Figure 1-13 Viewing a DATA file in Data Analyzer

Accessing BIRT Data Analyzer in a web page

A developer can embed Data Analyzer in a web page, which enables a user to access and use Actuate JavaScript API to analyze cross-tab data. For more information about Actuate JavaScript API and the XTabAnalyzer Viewer example that installs with Actuate BIRT iServer, see *Using Actuate JavaScript API*.

Maximizing the cross-tab display area

To work with only the cross-tab display, you can hide the data pane, the structure pane, and the filters pane, which maximizes the cross-tab display area in the preview pane.

Figure 1-14 shows Data Analyzer displaying the data, structure, filters, and preview panes.

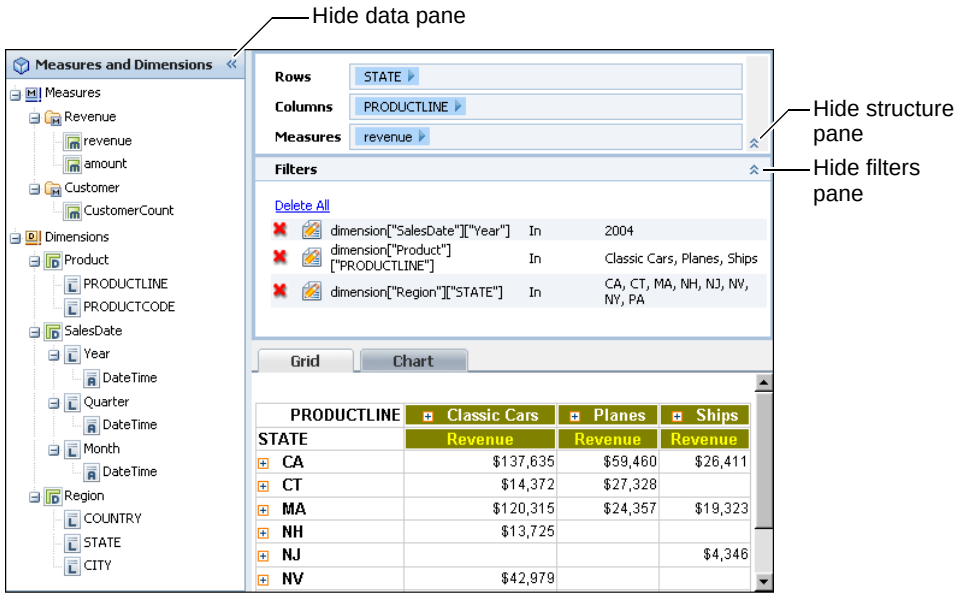


Figure 1-14 Showing all panes in Data Analyzer

Figure 1-15 shows Data Analyzer displaying a maximized cross-tab preview pane.

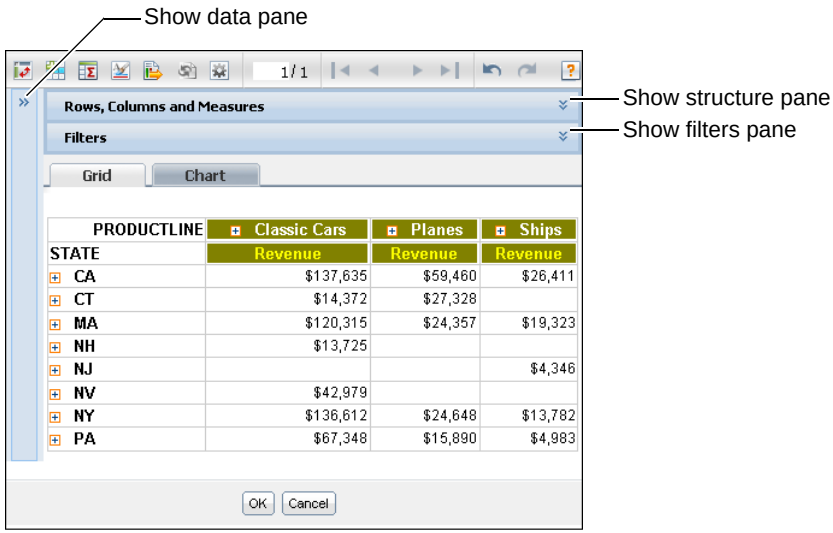


Figure 1-15 Showing only the preview pane in Data Analyzer

Chapter

2

Formatting a cross tab

This chapter contains the following topics:

- About formatting
- Applying a theme to a cross tab
- Selecting a cross-tab element
- Viewing details of cross-tab data
- Changing font alignment and attributes
- Displaying, hiding, or modifying cross-tab elements
- Formatting data based on conditions
- Formatting numbers
- Reverting to default formats
- Saving a cross tab
- Setting page breaks in a cross tab
- Printing a chart or cross tab

About formatting

Data Analyzer provides you the flexibility to modify the presentation properties of a cross tab. By modifying the format of the cross tab, you can more easily analyze the data and then save it as one or more cross tabs that support your conclusions.

You can change the appearance of the cross tab in the following ways:

- Choose from a list of themes to apply to a cross tab.
- Format data and labels.
- Specify font attributes, and change text alignment.
- Highlight data based on defined conditions.
- Format data strings depending on the type of data in a data element.
- Hide or display empty columns or rows, or level and measure headers.
- Specify a character string to display in empty cross-tab cells.
- Apply page breaks after a specific number of rows or columns.

Applying a theme to a cross tab

A theme is similar to a theme in Microsoft Windows. A Windows theme helps you easily personalize your computer display to show a particular background and custom color and fonts settings for various items, such as title bars, buttons, and icons. Similarly, a Data Analyzer theme can determine the set of colors in a cross tab, such as the background color for column or row headings. A theme can also determine the font in specific cross-tab items, the spacing between rows, the styles of borders, and the alignment of text. Figure 2-1 and Figure 2-2 show the appearance of each of two available themes when they are applied to a cross tab.

PRODUCTLINE	Planes	Ships	Trains	Grand Total
Year	Revenue	Revenue	Revenue	Revenue
2003	$74,969	$53,674	$26,844	$155,488
2004	$151,683	$68,847	$16,730	$237,260
2005	$15,584	$21,620	$7,881	$45,086
Grand Total	$242,237	$144,141	$51,456	$437,834

Figure 2-1 Applying the default-crosstab theme to a cross tab

PRODUCTLINE	Planes	Ships	Trains	Grand Total
Year	Revenue	Revenue	Revenue	revenue
2003	$284,773	$201,044	$65,822	$551,640
2004	$438,255	$292,595	$86,897	$817,748
2005	$109,702	$62,989	$22,311	$195,002
Grand Total	$832,730	$556,629	$175,031	$1,564,390

Figure 2-2 Applying the olive-crosstab theme to a cross tab

Themes are optional. A library can include multiple themes if the library developer chooses to provide users with different style options to apply to cross tabs. A developer creates a theme library, a library (.rptlibrary) file, using Actuate BIRT Designer Professional or Actuate BIRT Studio, and publishes it to the Resources folder in an Encyclopedia volume, for example:

```
/Resources/ThemesReportItems.rptlibrary
```

How to apply a theme to a cross tab

1 Choose Theme.

2 In Theme, choose a theme. For example, choose olive-crosstab, as shown in Figure 2-3.

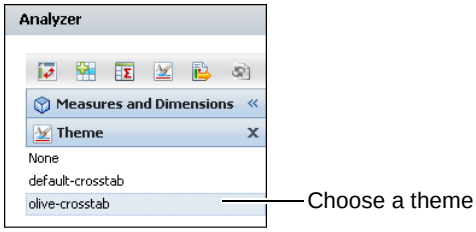


Figure 2-3 Choosing a theme

The theme applies to the cross tab, as shown in Figure 2-4.

PRODUCTLINE	Planes	Ships	Trains	Grand Total
Year	Revenue	Revenue	Revenue	revenue
2003	$284,773	$201,044	$65,822	$551,640
2004	$438,255	$292,595	$86,897	$817,748
2005	$109,702	$62,989	$22,311	$195,002
Grand Total	$832,730	$556,629	$175,031	$1,564,390

Figure 2-4 Viewing the olive-crosstab theme in a cross tab

Selecting a cross-tab element

Depending on which cross-tab element you select, Data Analyzer supports different formatting options. To view available formatting options, right-click a cross-tab element. A context menu appears, displaying formatting options for the selected element. For example:

- To format a label, right-click a label. A context menu, next to the highlighted label, displays formatting options.
- To format the data in a column, right-click a cell in a column. A context menu, next to the highlighted cell, displays formatting options.

Viewing details of cross-tab data

To view details of cross-tab data, right-click a cell in the data area. From the menu, choose Show Detail Tooltip. A tooltip displays the column and row-level details, the measure value, and which aggregate function applies for the selected cell, as shown in Figure 2-5. Displaying this detailed tooltip information is especially useful when analyzing data in a large cross tab in which you cannot simultaneously view the column heading, row heading, and cell in your browser window.

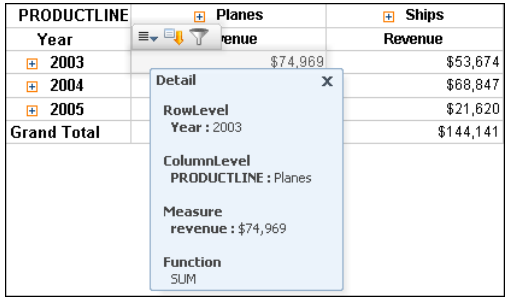


Figure 2-5 Viewing details about cross-tab data

Changing font alignment and attributes

Using Data Analyzer, you can change the font alignment and attributes for values in cross-tab elements, including column and row labels and data. The attributes you can modify include the background color, font, color, and size. A value of Auto indicates that the default value applies. You can also specify whether to display the font in bold, italic, or underlined style.

How to change font attributes

1 Right-click a cross-tab element. From the menu, choose Format➤Font.

Font displays the current font attribute values, as shown in Figure 2-6.

2 In Font, set the attributes:

- Use the drop-down lists to change the following font attributes for the selected element:
  - Font
  - Font size and units
  - Font color
  - Background color

- Select the icons for bold, italic, or underlined style.
- Select an alignment option: Align Left, Align Center, or Align Right.

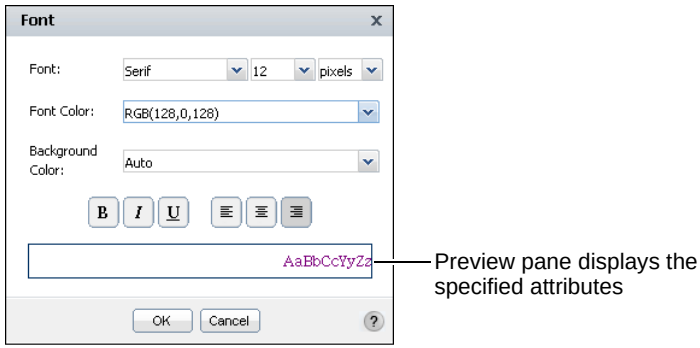


Figure 2-6 Defining font attributes

Choose OK.

How to change text alignment

Right-click a cross-tab element. From the menu, choose Alignment, then choose Left, Center, or Right, as shown in Figure 2-7.

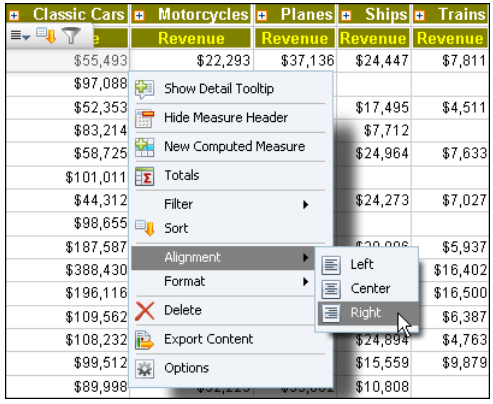


Figure 2-7 Right-aligning text

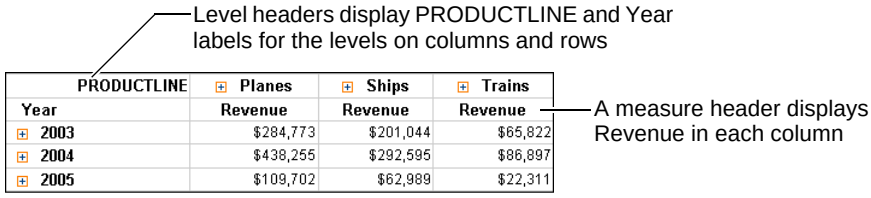
Displaying, hiding, or modifying cross-tab elements

This section describes how to hide, display, or modify cross-tab elements, such as empty columns, empty rows, and headers on columns and rows.

Displaying, hiding, modifying, or moving a header

Headers display measure and level names at the tops of columns, as shown in Figure 2-8. Menu commands support hiding these headers.

The text string that appears in a header is the level or measures name for the cube, which appears in the data pane. Data Analyzer supports changing the text that appears in a header.



PRODUCTLINE	Planes	Ships	Trains
Year	Revenue	Revenue	Revenue
2003	$284,773	$201,044	$65,822
2004	$438,255	$292,595	$86,897
2005	$109,702	$62,989	$22,311

Figure 2-8 Displaying level and measure headers

Figure 2-9 shows the cross tab after hiding the measure header.

PRODUCTLINE	Planes	Ships	Trains
Year			
2003	$284,773	$201,044	$65,822
2004	$438,255	$292,595	$86,897
2005	$109,702	$62,989	$22,311

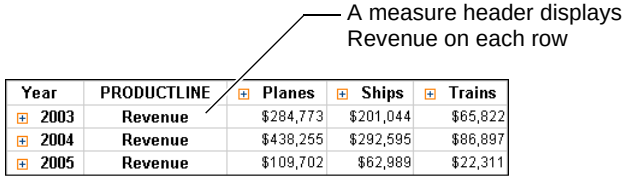
Figure 2-9 Hiding the measure header

Figure 2-10 shows the cross tab after hiding both the level and measure headers.

	Planes	Ships	Trains
2003	$284,773	$201,044	$65,822
2004	$438,255	$292,595	$86,897
2005	$109,702	$62,989	$22,311

Figure 2-10 Hiding level and measure headers

Also, you can move the measure header from columns to rows. Figure 2-11 displays the Revenue header on rows. The measure header, Revenue, appears in each column in Figure 2-8.



Year	PRODUCTLINE	Planes	Ships	Trains
2003	Revenue	$284,773	$201,044	$65,822
2004	Revenue	$438,255	$292,595	$86,897
2005	Revenue	$109,702	$62,989	$22,311

Figure 2-11 Displaying a measure header for each row

How to hide a level or measure header

Right-click a header. From the menu, choose one of the following commands:

- Hide Level Header.

- Hide Measure Header.

Data Analyzer displays the cross tab without the header.

How to display a hidden level or measure header

Complete one of the following tasks:

- Right-click a dimension name on a row or column. From the menu, choose Show Level Header.
- Right-click a cell in the data area. From the menu, choose Show Measure Header.

The header appears in the cross tab.

How to change the text in a header

1. Right-click a header. From the menu, choose Change Text.
2. Type text. Press Enter.

   Data Analyzer applies the change.

How to move a measure header

1. Right-click an element in the cross tab. From the menu, choose Options.
2. In Options, for Measure Header Orientation, select Horizontal or Vertical, as shown in Figure 2-12. Choose OK.

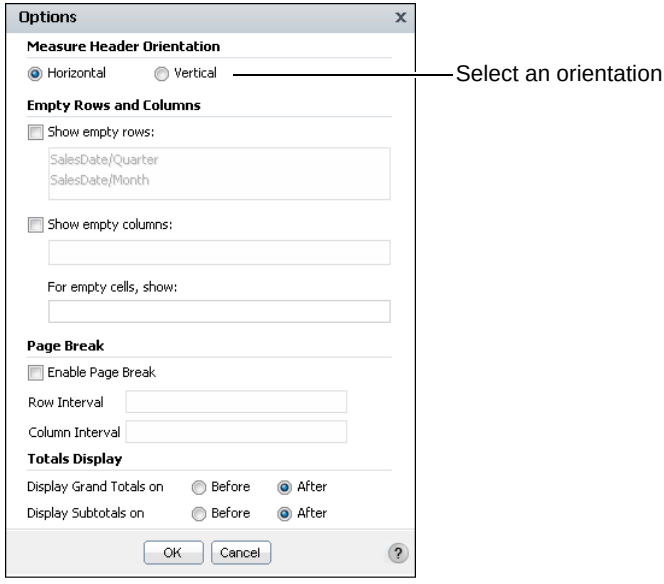


Figure 2-12 Setting the measure header orientation

Displaying or hiding empty columns or rows

You can choose to hide or show empty columns or rows. You can also specify a character string to appear in empty cells in the cross-tab data area.

How to change the appearance of empty cells, columns, or rows

1 Right-click a cross-tab element. From the menu, choose Options.

2 In Options, complete the following tasks, as shown in Figure 2-13:

- Select or deselect the following options:
  - Show empty rows.
  - Show empty columns.
- In For empty cells, show, type a character string to display in empty cells.

Choose OK.

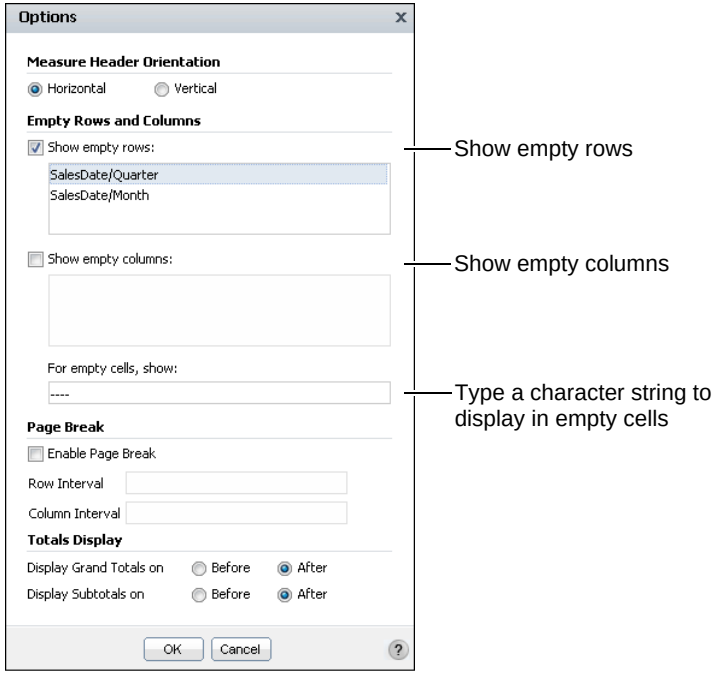


Figure 2-13 Setting options for empty cells, columns, and rows

In this example, hyphens appear in the previously empty cells, as shown in Figure 2-14.

		PRODUCTLINE	Motorcycles	Planes	Ships
Year	Quarter	Month	Revenue	Revenue	Revenue
2003	1	2	$22,293	$37,136	$24,447
		3	$10,770	----	----
	2	4	----	----	$17,495
		5	$41,630	$33,693	$7,712
		6	----	$16,694	$24,964

Figure 2-14 Displaying hyphens in empty cells

Formatting data based on conditions

When you format data in a selected cross-tab element, the format applies to all the values. Often, it is useful to change the data format when a specific condition is true. For example, you can display sales numbers in red if the value is less than a specific number and in black if the value is greater than or equal to a specific number. Conditional formatting is formatting data according to conditions you define.

To apply conditional formatting, you create a rule defining when and how to change the data format. The rule consists of the condition that evaluates to true or false and applies when true. You can define up to three conditions or rules for a cross-tab element.

Specifying a condition

The condition in a conditional formatting rule is an If expression that applies when true. For example:

```
If the order total is less than 1000
If the customer order count is greater than 20
If the monthly revenue is between 40000 and 100000
```

The Conditional Formatting dialog box helps you construct the If expression by breaking it down to its logical parts. In Figure 2-15, the expression has four parts. In Figure 2-17, the expression has three parts.

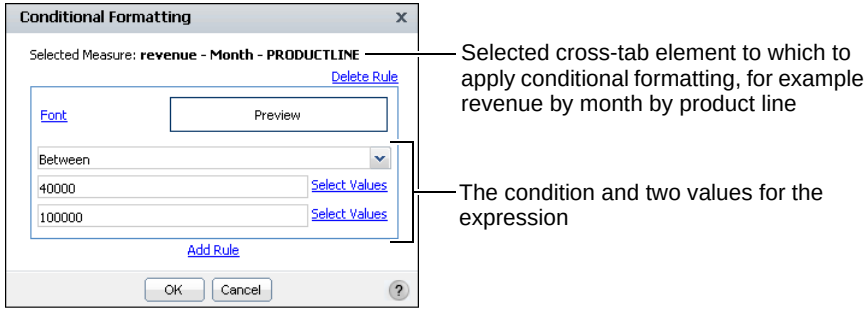


Figure 2-15 Creating a condition to select data fields between two values

You select the comparison test, or operator, to apply to the cross-tab element you selected. If you select Is Null or Is Not Null the If expression does not require additional information. If you select an operator that requires a comparison to one or more values, one or more additional fields appear. For example, if you select Less Than or Equal to, a second field appears. In this field, type the comparison value. If you select Between or Not Between, a second and third field appear. In these fields, type the lower and upper values, respectively, as shown in Figure 2-15.

Comparing to a literal value

The conditional expression shown in Figure 2-15 in the previous section evaluates the monthly revenue cross-tab cell values, determining whether each value matches a value between 40000 and 100000. The 40000 and 100000 values are literal values that you type.

Alternatively, you can select a value from a list of values in the cross tab. For example, selecting from a list of values is useful if the comparison value is a country and you do not know which countries are available. Alternatively, if the comparison value is a date, Data Analyzer provides a calendar tool, which you can use to select a date.

Specifying multiple conditional formatting rules

You can create up to three conditional formatting rules for a cross-tab element. You can, for example, create three rules to display each revenue value in one of the following formats, depending on its value, as shown in Figure 2-16:

- A value less than or equal to $5,000 appears bold and underlined.
- A value between $5,001 and $24,999 appears as italic text on a white background.
- A value greater than or equal to $25,000 appears as bold, white text on a gray background.

		PRODUCTLINE	Planes	Ships	Trains
Year	Quarter	Month	Revenue	Revenue	Revenue
2004	1	1	$31,159	$26,310	$6,387
		2	$34,000	$24,894	**$4,763**
		3	----	$15,559	$9,879
	2	4	$33,882	$10,808	----
		5	$35,898	**$3,440**	**$4,862**
		6	----	$16,472	----

Figure 2-16 Applying three conditional formatting rules

For each cross-tab data value, Data Analyzer evaluates the rules in the order in which they appear in the list of rules. As it evaluates each rule, Data Analyzer applies the specified format attributes if the condition evaluates to true.

When creating multiple rules for a column, be careful that the conditions do not cover overlapping values. Consider the following rules for a revenue value:

- The first rule sets the value to blue if the value is greater than or equal to 5000.
- The second rule sets the value to green if the value is greater than or equal to 1000.

If the value is 6000, the value appears in green, not blue as you might expect, because the condition in both rules is true (6000 is greater than 5000 and 1000), and the second rule supersedes the first rule. For the rules to make sense, the second rule should set the value to green if the value is between 1000 and 4999.

How to set conditional formats

1. To define the condition, right-click a cross-tab element on which to display conditional formatting. From the menu, choose Format➛Conditional Formatting.
2. In Conditional Formatting, as shown in Figure 2-17, create a rule specifying the following information:
   - The condition that must be true to apply the format, such as revenue greater than or equal to 45000, as shown in Figure 2-17.

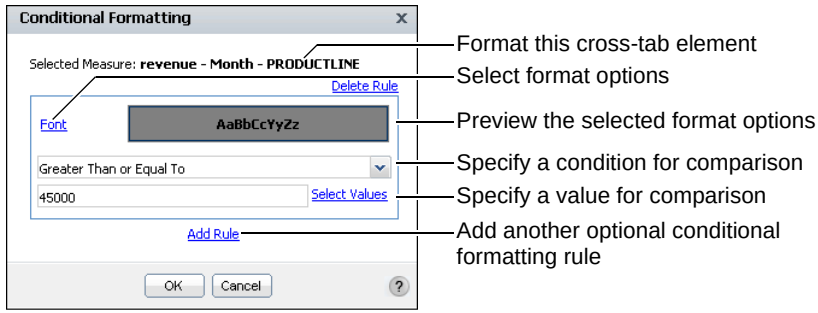


Figure 2-17 Defining conditional formatting

   - Choose Font to select formatting attributes.

     In Font, set formatting attributes:

     - Select font, size, color, and background color.
     - Select styles: bold, italic, or underline.
     - Select an alignment option: Align Left, Align Center, or Align Right.

     Figure 2-18 displays the choices of white text color (RGB(255,255,255)), gray background color (RGB(192,192,192)), and bold style on Font.

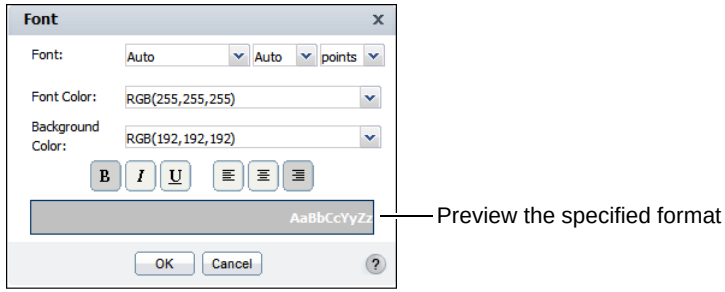


Figure 2-18 Setting font formatting options

Choose OK.

3 In Conditional Formatting, choose OK. In the cross tab in Figure 2-19, revenue values greater than or equal to $45,000 appear as bold, white text on a gray background.

		PRODUCTLINE	Classic Cars	Motorcycles	Planes	Ships	Trains
Year	Quarter	Month	Revenue	Revenue	Revenue	Revenue	Revenue
2004	1	1	$109,562	$39,987	$31,159	$26,310	$6,387
		2	$108,232	$45,694	$34,000	$24,894	$4,763
		3	$99,512			$15,559	$9,879
	2	4	$89,998	$32,229	$33,882	$10,808	
		5	$70,698	$47,873	$35,898	$3,440	$4,862
		6	$46,025			$16,472	

Figure 2-19 Highlighting revenue values greater than or equal to $45,000

4 To add another rule, right-click a cell and choose Format➛Conditional Formatting. Then, on Conditional Formatting, choose Add Rule.

Conditional Formatting displays fields for you to provide a new rule.

How to delete a conditional formatting rule

1 Right-click a cross-tab element. From the menu, choose Format➛Conditional Formatting.

2 In Conditional Formatting, choose Delete Rule for each conditional formatting rule that you want to remove. Choose OK.

Formatting numbers

Data Analyzer provides common formats to change how numbers appear. You can, for example, display numbers with or without decimal values, in scientific notation, as a percentage, or as currency with the appropriate symbol. This section discusses numeric data formats and describes how you can apply these formats to data in a cross tab. Table 2-1 shows the standard number formats that Data Analyzer supports.

Table 2-1 Standard number formats

Format	Example of data display
Currency	$6,067.45 or ¥6067 or 6.067,45€, depending on the symbol, symbol position, decimal place, and thousands-separator values that you set.
Custom	$123 or 123$ or 1,23, depending on the decimal places, separator, symbol, and symbol position that you specify.
Fixed	6067 or 6067.5 or 6,067.45, depending on the decimal place and thousands-separator values that you set.
General Number	6066.45 or 6066.5 or 6066, depending on the original value. This format displays up to two decimal places. Numbers with more than two decimal places round to two decimal-places. Whole numbers and numbers with one or two decimal places appear in their original format.
Percent	45% or 45.8% or %45, depending on the symbol position and decimal-place values that you set. This format multiplies the original value by 100 and adds the percent (%) symbol.
Scientific	2E04 or 2.67E04, depending on the decimal-place value you set. The number after the E represents the exponent of 10. For example, 2.67E04 means 2.67, multiplied by 10, raised to the fourth power.
Unformatted	Restores the formats to those in the original cross tab.

How to apply a number format

1. Right-click a cell. From the menu, choose Format➛Format Data.
2. In Number column format, select from the following options:
   - Select a format from the Format Number as drop-down list. For example, you can format the credit limit as currency in dollars ($), as shown in Figure 2-20.
   - Select the appropriate options from the remaining drop-down lists.

   Choose OK.

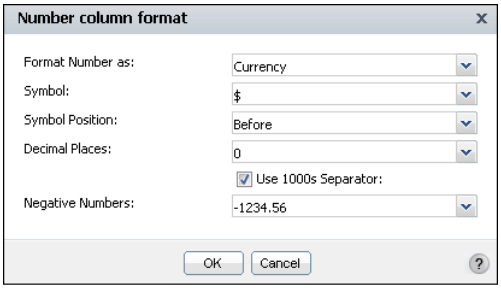


Figure 2-20 Setting number column format

Reverting to default formats

To revert a cross-tab element to its default font formats, right-click the cross-tab element. From the menu, choose Format➛Font. In Font, complete the following tasks:

- Select Auto from each drop-down list.
- To reset text alignment, select the element, and choose the appropriate alignment option.

To revert a cross-tab element to its default number formats, right-click a cell. From the menu choose Format➛Format Data. Then, on Number column format, select Unformatted from the drop-down list.

Saving a cross tab

To save a cross tab for later use, or for others to use and modify, save the cross tab to one of the following files types:

- If you modify a cross tab in a report design (.rptdesign) file or a report document (.rptdocument) file, you can save it to a report design (.rptdesign) file or a report document (.rptdocument) file using Interactive Viewer. To decide to which of these file types to save the cross tab, consider the following differences between them:
  - To enable a user to open the modified cross tab in Actuate BIRT Designer Professional or Actuate BIRT Studio, and to provide the user with the ability to modify the cross tab extensively, save the cross tab to a report design (.rptdesign) file.
  - To enable a user to open the modified cross tab in the viewers, and to limit the extent of the changes a user can make to the report, save the cross tab to

a report document (.rptdocument) file. You cannot open a report document file using Actuate BIRT Designer Professional or Actuate BIRT Studio.

- If you create a cross tab using a data object store (.data) file, or modify a cross tab in a cube view (.cubeview) file, you can save it to a cube view (.cubeview) file, report design (.rptdesign) file, or report document (.rptdocument) file using Data Analyzer. To decide to which of these file types to save the cross tab, consider the following differences among them:
  - If you save a cross tab to a cube view (.cubeview) file, you can only open the file using Data Analyzer.
  - To enable a user to open the modified cross tab in Actuate BIRT Designer Professional or Actuate BIRT Studio, and to provide the user with the ability to modify the cross tab extensively, save the cross tab to a report design (.rptdesign) file.
  - To enable a user to open the modified cross tab in the viewers, and to limit the extent of the changes a user can make to the report, save the cross tab to a report document (.rptdocument) file.

For more information about Actuate BIRT Designer Professional, see *BIRT: A Field Guide* and *Using Actuate BIRT Designer Professional.* For more information about Actuate BIRT Studio, see *Using BIRT Studio - iServer Edition* or *Using BIRT Studio - Java Component Edition.* For more information about the BIRT viewers, see *Working with Actuate BIRT Viewers.*

How to save a cross tab to a report design file or a report document file using Interactive Viewer

If you create or modify a cross tab in a report design (.rptdesign) file or a report document (.rptdocument) file, you can save the file to a report design (.rptdesign) file or a report document (.rptdocument) file using Interactive Viewer.

1. In Data Analyzer, choose OK.

   Data Analyzer closes, and the cross tab appears in Interactive Viewer.

2. From the menu, choose one of the following commands:
   - Save Design.
   - Save Document.
3. In Save, specify the options for the saved file.

   Figure 2-21 shows the options for saving a report document file.

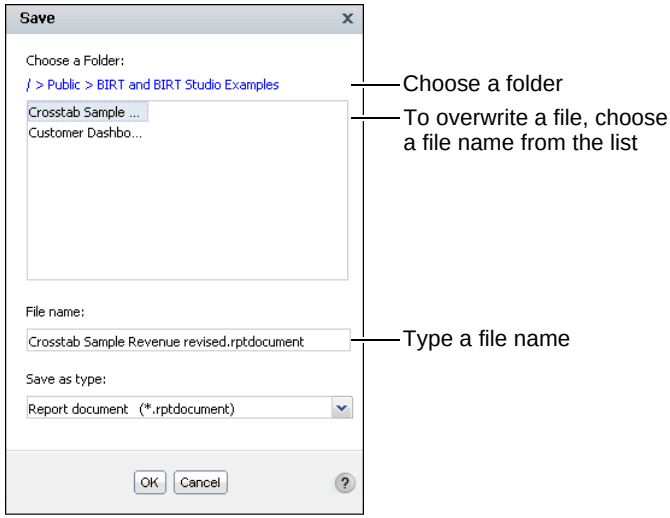


Figure 2-21 Saving a cross tab to a report document file

- In Choose a Folder, choose from the following options:
  - Choose to save the file in the default location, which is your home directory denoted by the folder names that follow the slash (/).
  - To save the file to a different directory, choose the slash (/) to display a list of available directories. Then, choose a directory from the list.
- In File name, complete one of the following tasks:
  - To overwrite an existing file, select the file name from the list.
  - To save the file without overwriting a file, type a new name in File name.
- In Save as type, the file type you chose in step 2 appears. If you chose Save Design, Report design (*.rptdesign) appears. If you chose Save Document, Report document (*.rptdocument) appears.

Choose OK.

How to save a cross tab to a file using Data Analyzer

If you create or modify a cross tab using a data object store (.data) file, or modify a cross tab in a cube view (.cubeview) file, you can save the file to a cube view (.cubeview) file, report design (.rptdesign) file, or report document (.rptdocument) file using Data Analyzer.

1. Choose Save As.
2. In Save As, as shown in Figure 2-22, specify the options for the saved file.

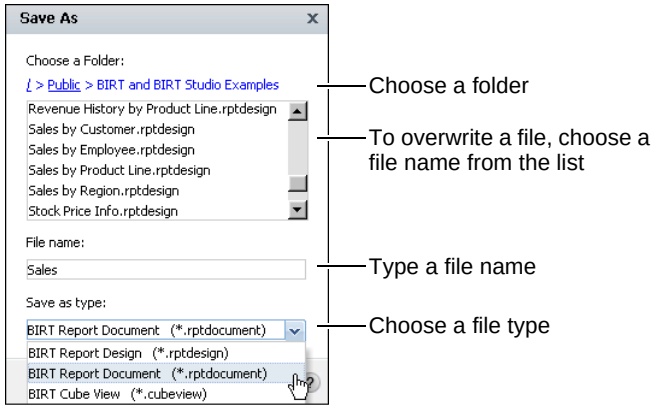


Figure 2-22 Saving a cross tab to a BIRT report document file

- In Choose a Folder, choose from the following options:
  - Choose to save the file in the default location, which is your home directory, denoted by the folder names that follow the slash (/).
  - To save the file to a different directory, choose the slash (/) to display a list of available directories. Then, choose a directory from the list.
- In File name, complete one of the following tasks:
  - To overwrite an existing file, select the file name from the list.
  - To save the file without overwriting a file, type a new name in File name.
- In Save as type, select one of the following file types:
  - BIRT Cube View (*.cubeview)
  - BIRT Report Design (*.rptdesign)
  - BIRT Report Document (*.rptdocument)

Choose OK.

Setting page breaks in a cross tab

Using Data Analyzer, you can set a page break after a specific number of rows or columns. In a large cross tab, setting page breaks is useful to control where the breaks appear in printed formats, such as PDF or Word. Also, a page break reduces the size of the cross tab that appears in a web browser.

How to set a page break

1 Right-click the cross tab. From the menu, choose Options.

2 In Options, to set page break options, select Enable Page Break. Then, provide values for the row interval and column interval after which to apply the page break. For example, Figure 2-23 shows setting page breaks to apply after a 6-row interval and a 10-column interval.

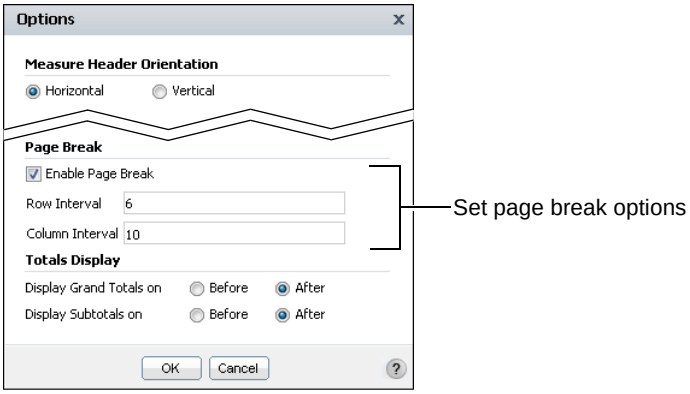


Figure 2-23 Setting page break options

Choose OK.

Printing a chart or cross tab

While viewing a chart or cross tab in Data Analyzer, you can print it using your browser's print capability. Alternatively, if you are viewing a cross tab in a report design (.rptdesign) file or a report document (.rptdocument) file, change your viewing environment to Interactive Viewer, and print the cross tab from Interactive Viewer.

How to print a chart or cross tab

1 In Data Analyzer, choose OK.

The viewing environment changes from Data Analyzer to Interactive Viewer.

2 In Interactive Viewer, from the menu, choose Print.

3 In Print, complete the following tasks:

- In Format, select one of the following formats:
  - HTML

    If you select HTML, the report is formatted for printing as a continuous document in the browser window. Any page headers and footers appear in the body of the document, often multiple times, depending on how many pages the content contains. Multipage content does not retain its pagination properties when you choose to print it in HTML format.

- PDF. If you select PDF, select one of the following page format options from the list, as shown in Figure 2-24:
  - Auto. If you select Auto, the default option, the PDF emitter optimizes the content layout in terms of font and space, causing a single page in the cross tab to appear on multiple pages in the PDF file.
  - Actual size. If you select Actual Size, the content can extend across the entire page of the PDF file.
  - Scale to page size. If you select Scale to page size, the content can shrink.

- In Pages, select one of the following options:
  - All
  - Current page
  - Pages
    Provide a comma-separated list of cross-tab pages or page ranges, such as:

    ```
    1,3,5-12
    ```

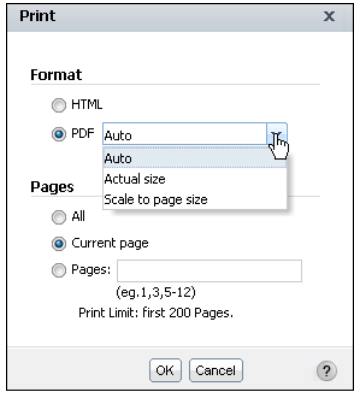


Figure 2-24 Printing a chart or cross tab

Choose OK.

4 If you selected HTML format, Print appears. Specify your printer options on Print.

5 If you selected PDF format, the chart or cross tab appears in your web browser using a PDF viewer plug-in. You can preview the chart or cross tab, then choose Print to specify printer options.

The printer you specify prints the chart or cross tab.

Chapter

3

Organizing cross-tab data

This chapter contains the following topics:

- About organizing cross-tab data
- Displaying dimensions
- Displaying measures
- Displaying attributes
- Pivoting a cross tab
- Sorting data
- Displaying detail and summary data

About organizing cross-tab data

Data Analyzer supports organizing cross-tab data in the following ways:

- Add, remove, or reorder attributes, dimensions, and measures to customize the cross tab.
- Drill down to display detail data or drill up to display summary data.
- Pivot the cross tab, which swaps the columns and rows axes.
- Sort data in a column in ascending or descending order.

Displaying dimensions

To organize a cross tab, you can add, remove, or reorder dimensions. You add dimensions from the available cube data. From the dimensions, appearing in the data pane, add one or more to the cross tab. If the cube data supports a hierarchy, you can create a hierarchy of dimensions in a cross tab. Figure 3-1 shows a data pane that displays a dimensions list that contains two hierarchies, Region and SalesDate.

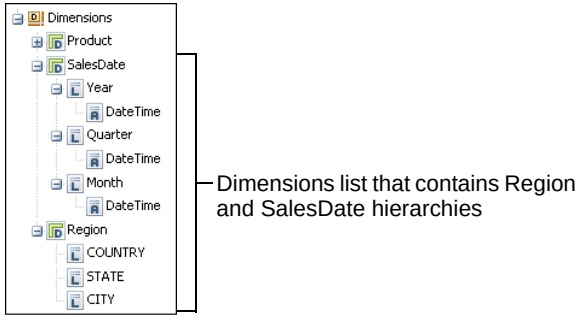


Figure 3-1 Dimensions list that contains two group hierarchies

If you add multiple dimensions to a cross tab, it displays hierarchical dimensions as levels in the cross tab. For example, it displays country, state, and city, as shown in Figure 3-2.

In the structure pane, you can also reorder dimensions by dragging a dimension from one position and dropping it in a different position.

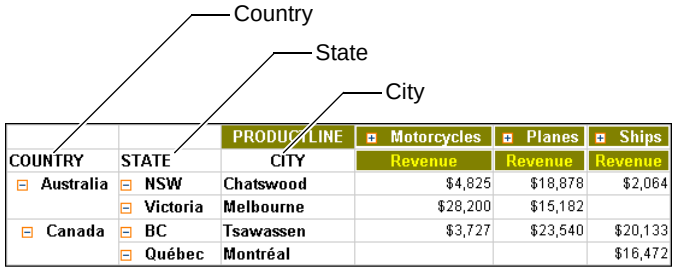


Figure 3-2 Displaying hierarchical dimensions

How to add a dimension to cross-tab columns

Drag a dimension from the data pane, and drop it in Columns in the structure pane. Figure 3-3 shows dragging a Year dimension from the data pane and dropping it in Columns in the structure pane.

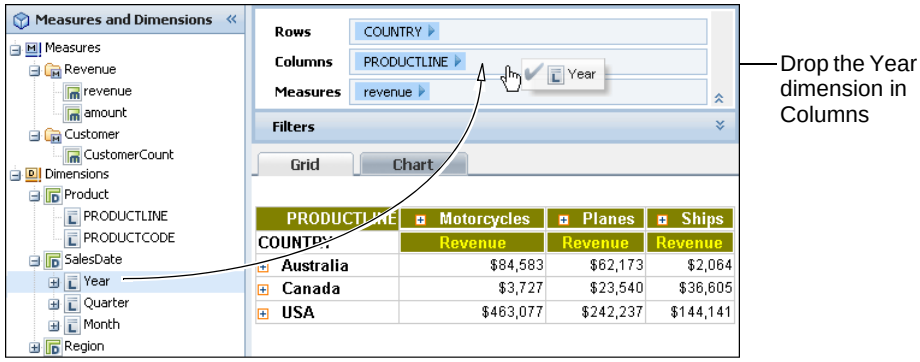


Figure 3-3 Adding a Year dimension to cross-tab columns

Data Analyzer updates the cross tab, adding the Year dimension columns in each PRODUCTLINE column, as shown in Figure 3-4.

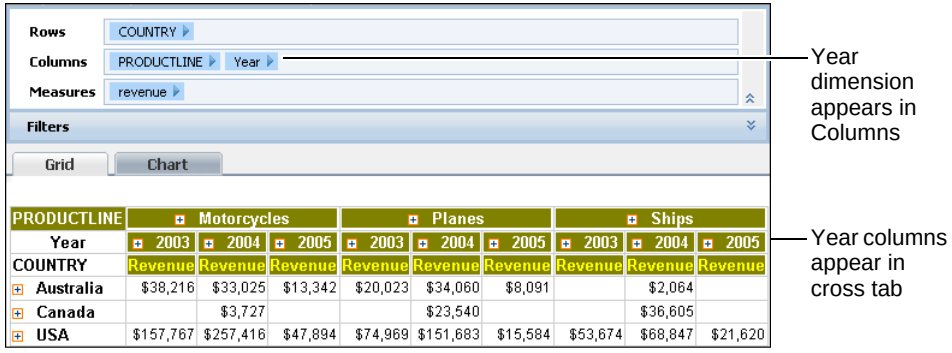


Figure 3-4 Displaying a Year dimension in cross-tab columns

How to remove a dimension from cross-tab columns

In the structure pane, in the Columns list, right-click a dimension, such as the Year dimension. From the menu, choose Delete, as shown in Figure 3-5.

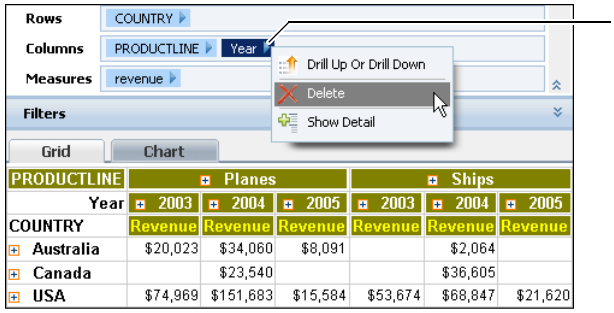


Figure 3-5 Removing a dimension from cross-tab columns

Data Analyzer updates the cross tab, removing the Year dimension columns, as shown in Figure 3-6.

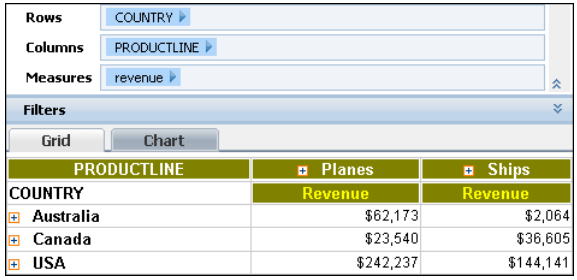


Figure 3-6 Displaying modified cross-tab columns

How to add a dimension to cross-tab rows

Drag a dimension from the data pane, and drop it in Rows in the structure pane. Figure 3-7 shows dragging the City dimension to Rows.

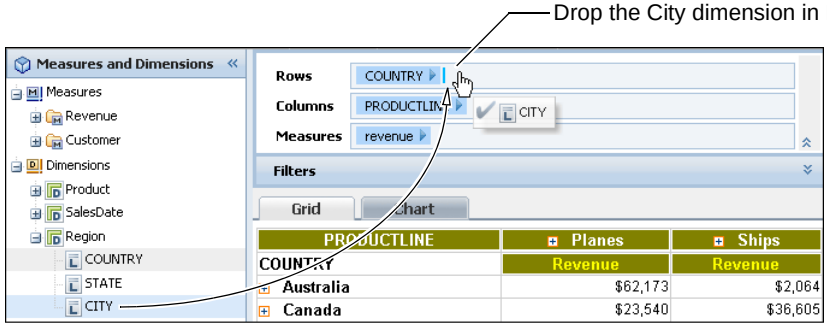
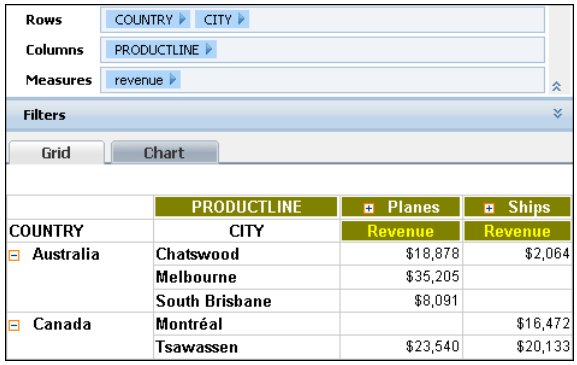


Figure 3-7 Adding a dimension to cross-tab rows

Data Analyzer updates the cross tab, adding the City dimension rows, as shown in Figure 3-8. A row appears for each city in the database.

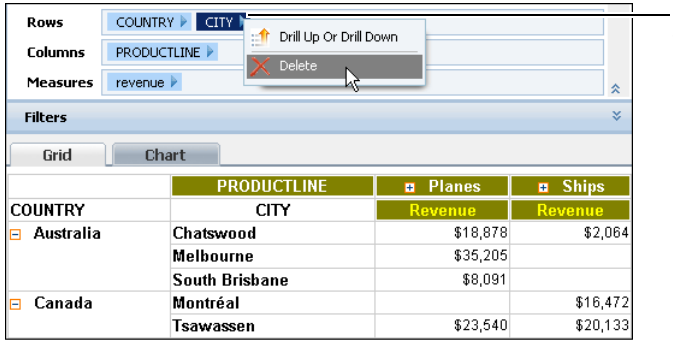


	PRODUCTLINE	Planes	Ships
COUNTRY	CITY	Revenue	Revenue
Australia	Chatswood	$18,878	$2,064
	Melbourne	$35,205	
	South Brisbane	$8,091	
Canada	Montréal		$16,472
	Tsawassen	$23,540	$20,133

Figure 3-8 Displaying a City dimension in cross-tab rows

How to remove a dimension from cross tab rows

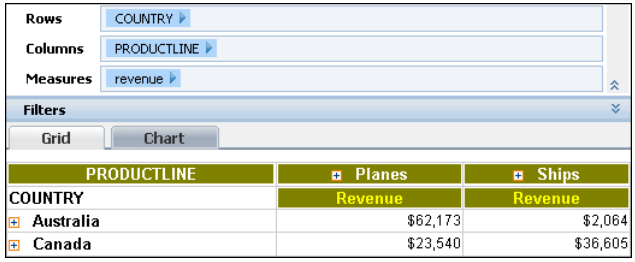
In the structure pane, in the Rows list, right-click a dimension, such as the City dimension, as shown in Figure 3-9. From the menu, choose Delete.



	PRODUCTLINE	Planes	Ships
COUNTRY	CITY	Revenue	Revenue
Australia	Chatswood	$18,878	$2,064
	Melbourne	$35,205	
	South Brisbane	$8,091	
Canada	Montréal		$16,472
	Tsawassen	$23,540	$20,133

Figure 3-9 Removing a dimension from cross-tab rows

Data Analyzer updates the cross tab, removing the City dimension rows, as shown in Figure 3-10.



PRODUCTLINE	Planes	Ships
COUNTRY	Revenue	Revenue
Australia	$62,173	$2,064
Canada	$23,540	$36,605

Figure 3-10 Displaying modified cross-tab rows

How to change the order of dimensions

In the structure pane, in the list of dimensions, drag a dimension to a different position in the list, and drop it. For example, drag the Year dimension from the left to the right of the PRODUCTLINE dimension, as shown in Figure 3-11.

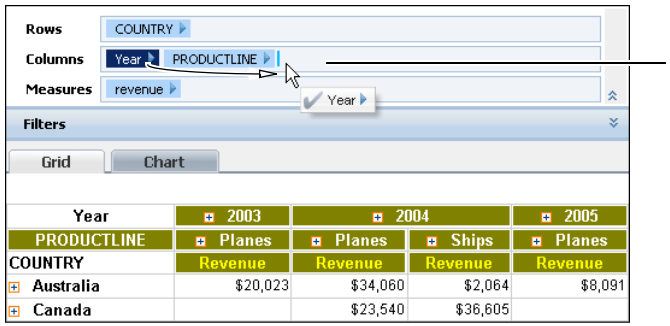


Figure 3-11 Dragging the Year dimension to the right of the PRODUCTLINE dimension

The Year dimension appears to the right of the PRODUCTLINE dimension, as shown in Figure 3-12.

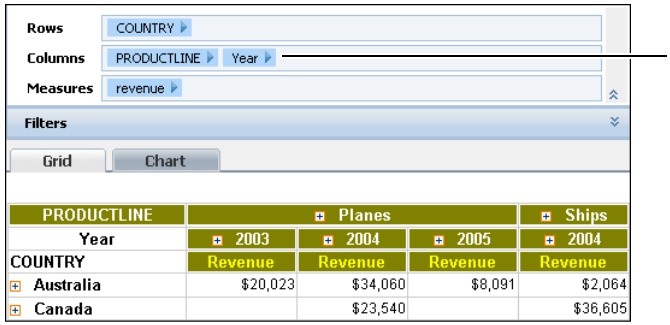


Figure 3-12 Displaying the Year dimension columns in the PRODUCTLINE columns

Displaying measures

To customize a cross tab, you can add, remove, or reorder measures. You can add one or more measures from the available cube data, which appears in the data pane. Figure 3-13 shows a list that contains three measures: revenue, amount, and CustomerCount.

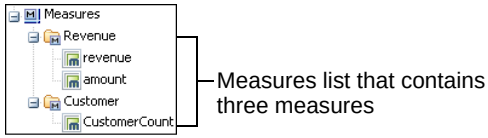


Figure 3-13 Viewing a measures list in the data pane

A cross tab displays multiple measures in adjacent columns or rows. For example, Figure 3-14 displays Revenue and CustomerCount columns in each product line column.

PRODUCTLINE	Planes		Ships	
COUNTRY	Revenue	CustomerCount	Revenue	CustomerCount
Australia	$62,173	23	$2,064	1
Canada	$23,540	10	$36,605	14
USA	$242,237	86	$144,141	54

Figure 3-14 Displaying two measures in each product line column

In the structure pane, you can also reorder the measures by dragging one from one position and dropping it in a different position.

How to add a measure to a cross tab

Drag a measure from the data pane, and drop it in Measures in the structure pane. Figure 3-15 shows dragging a CustomerCount measure from the data pane and dropping it in Measures in the structure pane.

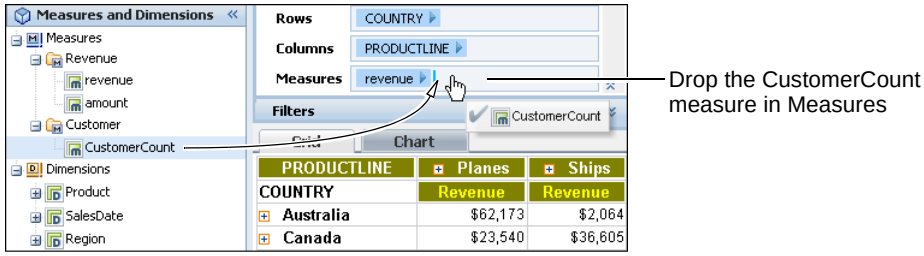


Figure 3-15 Adding a CustomerCount measure to a cross tab

Data Analyzer updates the cross tab, adding the CustomerCount columns, as shown in Figure 3-16.

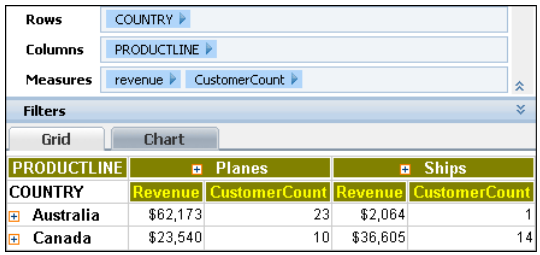


Figure 3-16 Displaying a second measure, CustomerCount, in cross tab

How to remove a measure from a cross tab

In the structure pane, in the Measures list, right-click a measure, such as the CustomerCount measure, as shown in Figure 3-17. From the menu, choose Delete.

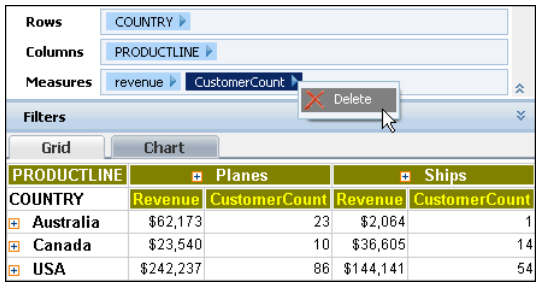


Figure 3-17 Removing a measure from a cross tab

Data Analyzer updates the cross tab, removing the CustomerCount measure, as shown in Figure 3-18.

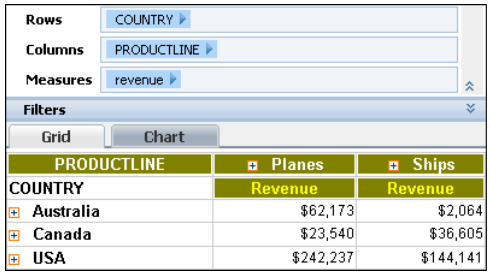


Figure 3-18 Displaying the modified cross tab

How to change the order of measures

In the structure pane, in the Measures list, drag a measure to a different position in the list and drop it. For example, drag the revenue measure to the right of the CustomerCount measure, as shown in Figure 3-19.

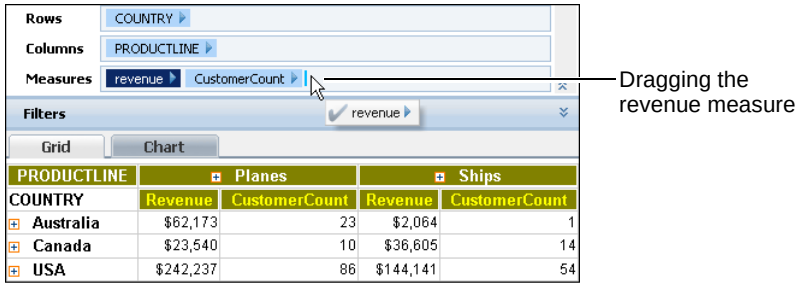
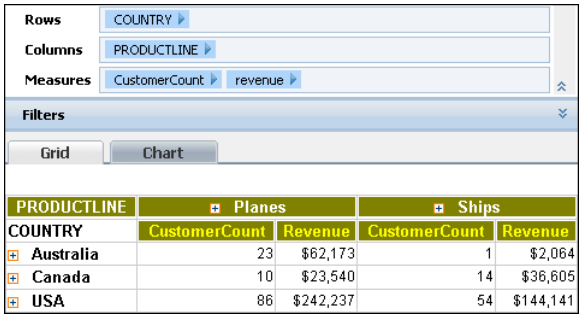


Figure 3-19 Dragging the revenue measure to the right of the CustomerCount measure

The revenue measure appears to the right of the CustomerCount measure, as shown in Figure 3-20.



PRODUCTLINE	Planes		Ships	
COUNTRY	CustomerCount	Revenue	CustomerCount	Revenue
Australia	23	$62,173	1	$2,064
Canada	10	$23,540	14	$36,605
USA	86	$242,237	54	$144,141

Figure 3-20 Displaying the revenue measure to the right of CustomerCount

Displaying attributes

To customize a cross tab, you can add or remove attributes. An attribute displays additional information about a dimension. For example, a product name or product code data field can be an attribute of a product line dimension. A QuantityInStock attribute can display the quantity-in-stock value for each product line. Each dimension can contain several attribute fields. Using Actuate BIRT Designer Professional, a developer specifies which attributes associate with which dimensions in the data cube. The developer classifies data fields into dimensions, attributes, and measures in the data set at the time of developing a data object, information object, or template.

Using Data Analyzer, you can add an attribute to only an associated dimension in a cross tab. Figure 3-21 shows a list containing attributes, which appear below the dimension levels with which a developer associated them.

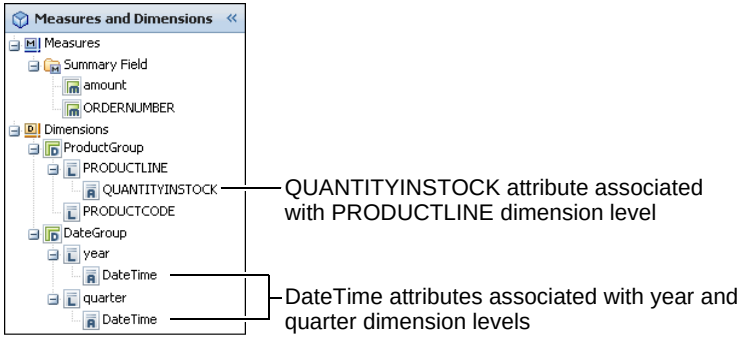


Figure 3-21 Viewing attributes in the data pane

You can add one or more attributes from the available cube data to the cross tab. For example, Figure 3-22 shows a cross tab in which quantity-in-stock attribute values appear in the product line column headings.

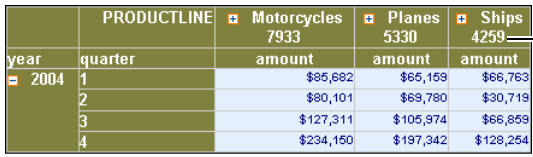


Figure 3-22 Displaying quantity-in-stock attribute values in column headings

How to add an attribute to a cross tab

To add an attribute to a cross tab, complete one of the following tasks:

- Drag an attribute from the data pane, and drop it in the preview pane next to the dimension with which it associates. Figure 3-23 shows dragging the QUANTITYINSTOCK attribute from the data pane and dropping it in the PRODUCTLINE heading in the preview pane.

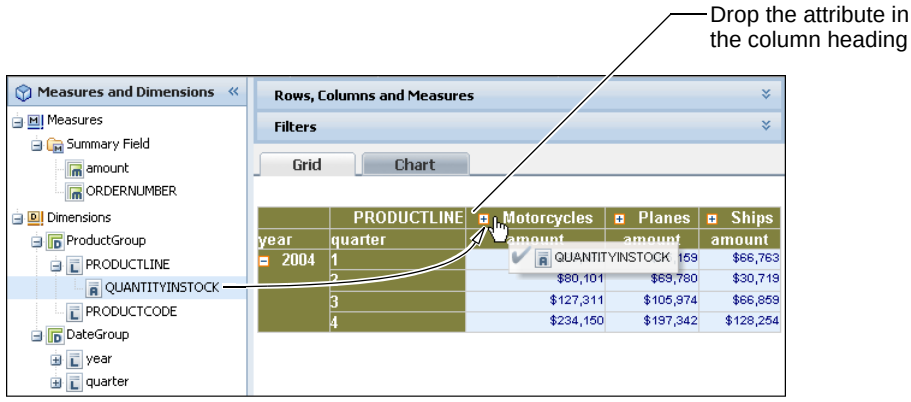


Figure 3-23 Adding an attribute to a column heading

Data Analyzer updates the cross tab, displaying the QUANTITYINSTOCK attribute values in the PRODUCTLINE column headings, as shown in Figure 3-24.

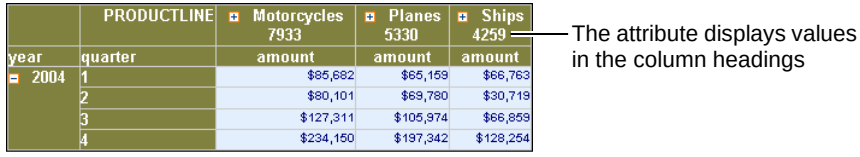


Figure 3-24 Displaying the attribute values in column headings

- Right-click a heading to which you want to add an attribute value. Then, choose Add or Remove Attribute, as shown in Figure 3-25.

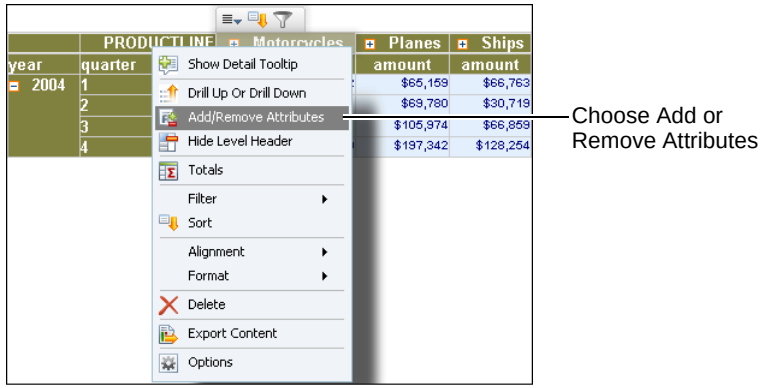


Figure 3-25 Choosing Add or Remove Attributes

In Add or Remove Attributes, select an attribute to add to the heading, as shown in Figure 3-26.

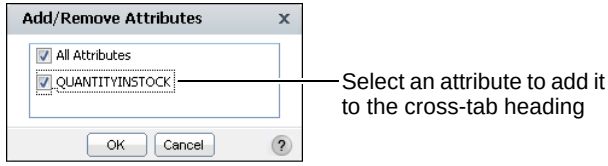


Figure 3-26 Selecting an attribute to add it to the cross tab

Choose OK.

The attribute value appears in the heading, as shown in Figure 3-24.

How to remove an attribute from a cross tab

1 In the cross tab, right-click a heading that displays an attribute value. Choose Add or Remove Attributes, as shown in Figure 3-27.

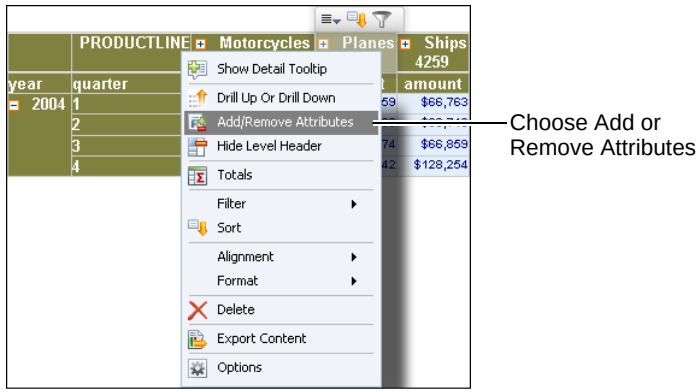


Figure 3-27 Choosing Add or Remove Attributes

2 In Add or Remove Attributes, deselect the attribute to remove it, as shown in Figure 3-28.

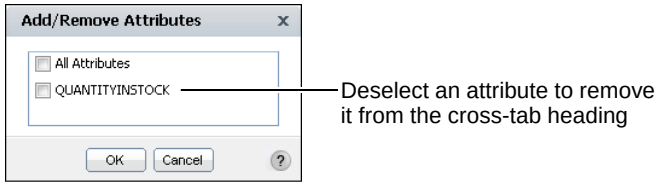


Figure 3-28 Deselecting an attribute to remove it from the cross tab

Choose OK.

Data Analyzer updates the cross tab, removing the attribute, as shown in Figure 3-29.

	PRODUCTLINE	Motorcycles	Planes	Ships
year	quarter	amount	amount	amount
2004	1	$85,682	$65,159	$66,763
	2	$80,101	$69,780	$30,719
	3	$127,311	$105,974	$66,859
	4	$234,150	$197,342	$128,254

Figure 3-29 Displaying the cross tab without the attribute

Pivoting a cross tab

Pivot a cross tab to swap the axes. Figure 3-30 displays a cross tab before pivoting the axes.

	ProductLine	Planes	Ships	Trains	Grand Total
Year	Quarter	Revenue	Revenue	Revenue	Revenue
2004	1	$77,273.50	$77,570.67	$21,028.52	**$175,872.69**
	2	$93,349.78	$51,286.31	$14,250.42	**$158,886.51**
	3	$96,796.97	$66,859.21	$21,728.25	**$185,384.43**
	4	$204,551.21	$141,609.91	$39,278.34	**$385,439.46**
Grand Total		**$471,971.46**	**$337,326.10**	**$96,285.53**	**$905,583.09**

Figure 3-30 Before pivoting axes

Figure 3-31 displays the cross tab after pivoting the axes.

	Year	2004				Grand Total
ProductLine	Quarter	1	2	3	4	
Planes	Revenue	$77,273.50	$93,349.78	$96,796.97	$204,551.21	**$471,971.46**
Ships	Revenue	$77,570.67	$51,286.31	$66,859.21	$141,609.91	**$337,326.10**
Trains	Revenue	$21,028.52	$14,250.42	$21,728.25	$39,278.34	**$96,285.53**
Grand Total	Revenue	**$175,872.69**	**$158,886.51**	**$185,384.43**	**$385,439.46**	**$905,583.09**

Figure 3-31 After pivoting axes

How to pivot a cross tab

Choose Pivot, as shown in Figure 3-32.

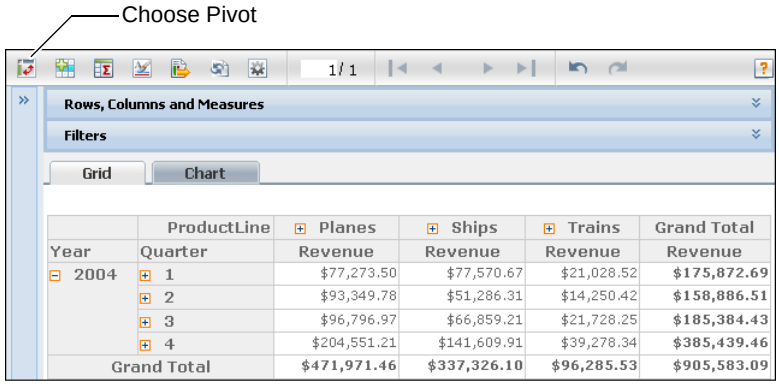


Figure 3-32 Choosing Pivot

Data Analyzer pivots the cross tab, displaying the year and quarter groups as the column headings, as shown in Figure 3-33.

	Year	2004				Grand Total
ProductLine	Quarter	1	2	3	4	
Planes	Revenue	$77,273.50	$93,349.78	$96,796.97	$204,551.21	$471,971.46
Ships	Revenue	$77,570.67	$51,286.31	$66,859.21	$141,609.91	$337,326.10
Trains	Revenue	$21,028.52	$14,250.42	$21,728.25	$39,278.34	$96,285.53
Grand Total	Revenue	$175,872.69	$158,886.51	$185,384.43	$385,439.46	$905,583.09

Figure 3-33 After choosing Pivot

Sorting data

Sorting data is an important task in creating a useful cross tab. Use sorting to display cross-tab content in a meaningful order. A sales cross tab is more useful if it presents sales figures from highest to lowest, or the reverse, if you want to see lowest-to-highest performers.

A cross tab's default sort order displays data sorted by dimension values. The column-and-row heading values, which are dimensions, appear in ascending order.

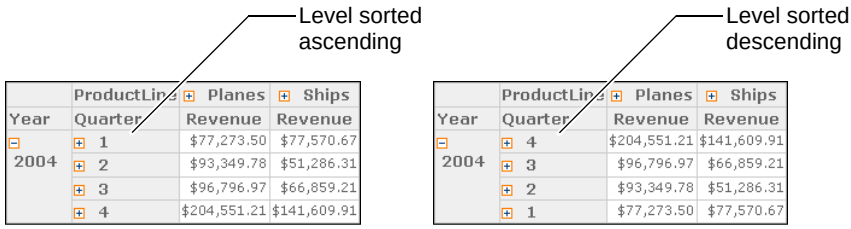
Compare the cross tabs in Figure 3-34. The cross tab on the left displays products' sales revenues by alphabetically sorted country names. The cross tab on the right displays the same sales revenues, sorted from the highest to lowest in the grand total column.

ProductLine	Planes	Ships	Grand Total
Country	Revenue	Revenue	Revenue
Australia	$60,341.30	$31,464.91	**$91,806.21**
France	$105,841.51	$114,308.89	**$220,150.40**
Japan	$41,534.63	$9,060.98	**$50,595.61**
UK	$89,030.46	$54,602.31	**$143,632.77**
USA	$175,223.56	$127,889.01	**$303,112.57**

ProductLine	Planes	Ships	Grand Total
Country	Revenue	Revenue	Revenue
USA	$175,223.56	$127,889.01	**$303,112.57**
France	$105,841.51	$114,308.89	**$220,150.40**
UK	$89,030.46	$54,602.31	**$143,632.77**
Australia	$60,341.30	$31,464.91	**$91,806.21**
Japan	$41,534.63	$9,060.98	**$50,595.61**

Figure 3-34 Comparing cross tabs that contain sorted data

Data Analyzer supports sorting values in a column or row, or for dimensions that appear in hierarchy levels, you can apply sorting to a hierarchy level. For example, for the time period hierarchy of year and quarter, applying the sort to a hierarchy level displays levels in ascending or descending order, as shown in Figure 3-35.



	ProductLine	Planes	Ships
Year	Quarter	Revenue	Revenue
2004	1	$77,273.50	$77,570.67
	2	$93,349.78	$51,286.31
	3	$96,796.97	$66,859.21
	4	$204,551.21	$141,609.91

	ProductLine	Planes	Ships
Year	Quarter	Revenue	Revenue
2004	4	$204,551.21	$141,609.91
	3	$96,796.97	$66,859.21
	2	$93,349.78	$51,286.31
	1	$77,273.50	$77,570.67

Figure 3-35 Sorting data on a level

How to sort data

1 To sort data, right-click a cell. From the menu, choose Sort.

In Sort, Sort By displays the value by which you can sort.

2 In Sort, in Sort On, as shown in Figure 3-36, select Column, Level, or Row. Depending on which cell you right-clicked, one or more choices appear in the list.

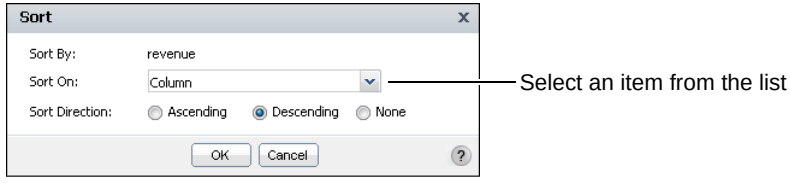


Figure 3-36 Sorting data on a column

3 Select Ascending, Descending, or None. Then choose OK.

How to remove data sorting

1 To remove data sorting on a column, level, or row, right-click a cell. From the menu, choose Sort.

2 In Sort, as shown in Figure 3-37, select None. Then choose OK.

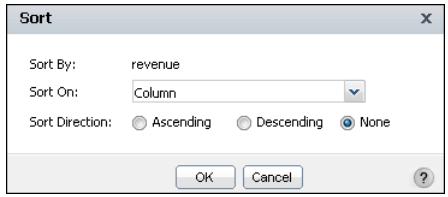


Figure 3-37 Sorting data on a column

Displaying detail and summary data

Typically, a cross tab displays data in a hierarchy. For example, a cross tab might display data by country, state, and city, or by year, quarter, month, and day. Data Analyzer supports drilling up to display higher-level, summary data, or drilling down to display lower-level, detail data. Hiding details, particularly for a cross tab that runs into hundreds of pages, helps you display key information at a glance. The following illustrations show two cross tabs that contain the same data. In Figure 3-38, the cross tab displays the revenue-detail data for cities.

		PRODUCTLINE	Classic Cars	Planes	Ships	Grand Total
COUNTRY	STATE	CITY	Revenue	Revenue	Revenue	Revenue
Australia	NSW		$12,224	$18,878	$2,064	$33,166
	Victoria		$57,425	$15,182		$72,607
Canada	BC	Tsawassen	$3,264	$23,540	$20,133	$46,938
		Vancouver	$12,154			$12,154
	Québec	Montréal	$3,158		$16,472	$19,630
Japan	Osaka	Kita-ku	$15,184	$26,180		$41,363
	Tokyo	Minato-ku	$9,606	$15,355	$9,061	$34,022
USA	CA	Brisbane	$6,356			$6,356
		Burbank	$7,201			$7,201
		Burlingame		$2,434		$2,434
		Los Angeles	$5,039	$4,979	$5,299	$15,317
		San Diego	$30,083	$18,819	$17,760	$66,662
		San Francisco	$4,903			$4,903
		San Jose		$33,229		$33,229

Figure 3-38 A cross tab displaying revenue-detail data for cities

In Figure 3-39, the cross tab hides the details, showing revenue-summary data for each country.

PRODUCTLINE	Classic Cars	Planes	Ships	Grand Total
COUNTRY	Revenue	Revenue	Revenue	Revenue
Australia	$69,649	$34,060	$2,064	$105,773
Canada	$18,576	$23,540	$36,605	$78,722
Japan	$24,790	$41,535	$9,061	$75,386
USA	$532,986	$151,683	$68,847	$753,516
Grand Total	$646,002	$250,818	$116,577	$1,013,396

Figure 3-39 A cross tab displaying revenue-summary data for countries

Data Analyzer limits the cross-tab page size to approximately 33 MB. Displaying a larger cross tab can freeze the browser. The following message appears if you attempt to display an oversize cross-tab page:

```
Oversize page content can freeze your browser. Open the options
   dialog to apply page break or open the drill dialog to apply
   the appropriate filter to reduce its size.
```

You can hide details to reduce the size of a cross tab. Alternatively, a BIRT iServer System administrator can change the value of the MAX_PAGE_SIZE parameter in web.xml to display a larger cross tab. For more information about modifying web.xml, see *Information Console Developer Guide.*

Data Analyzer provides the following ways to hide or show detail values:

- In the structure pane, if more than one hierarchy level appears in Columns or Rows, you can hide the detail values for a level. For example, Figure 3-40 displays country, state, and city levels in Columns. To hide details in the level below state, in the structure pane, right-click State, and choose Hide Detail, as shown in Figure 3-40.

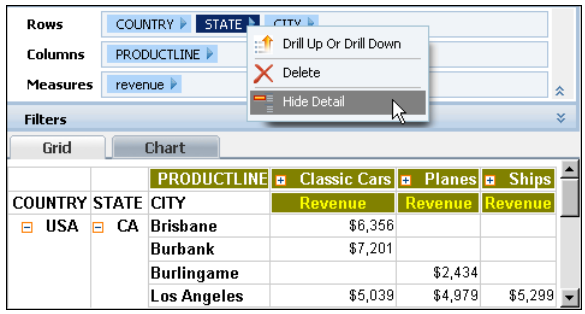


Figure 3-40 Choosing Hide Detail

In Figure 3-41, the structure pane and cross tab show country and state levels and hide the city level.

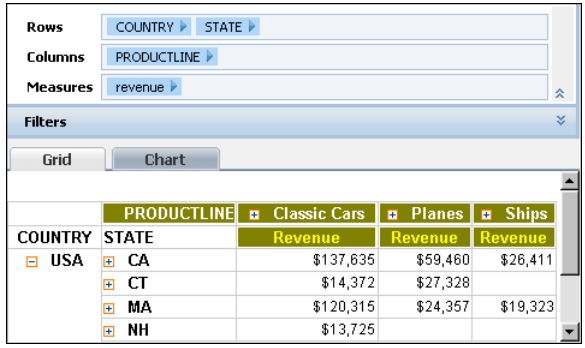


Figure 3-41 Viewing a cross tab with hidden detail

- To show detail for a level, in the structure pane, right-click the level in Rows or Columns. Then, choose Show Detail. For example, right-click Country and choose Show Detail, as shown in Figure 3-42.

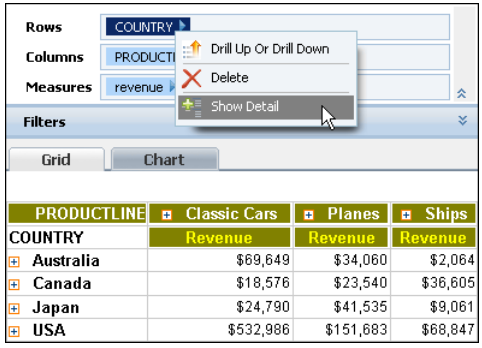


Figure 3-42 Choosing Show Detail

The cross tab and the structure pane display detail levels, as shown in Figure 3-43. The cross tab expands the hierarchy levels under Country. This cross tab does not display the countries details for Canada and USA, which the user did not select to appear using the Drill Up or Drill Down dialog box.

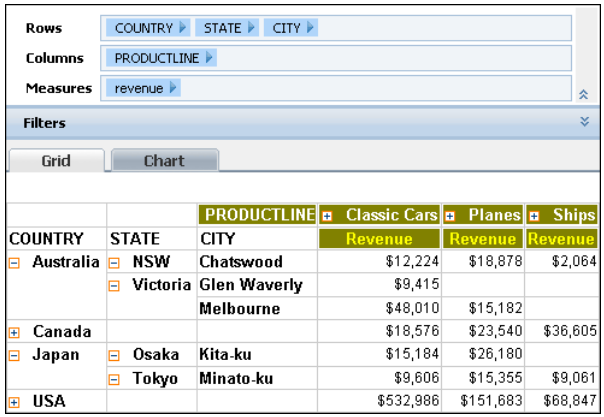


Figure 3-43 Viewing a cross tab showing detail

- To show detail for a dimension, choose a plus sign (+). To hide detail, choose a minus sign (-), as shown in Figure 3-44.

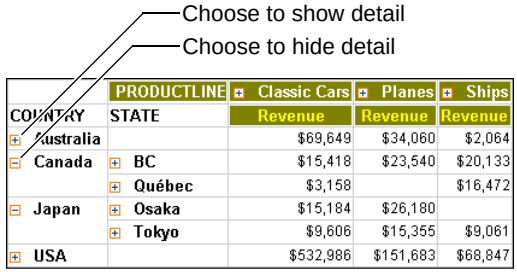


Figure 3-44 Choosing to show or hide detail

- You can select from a list in which levels to show details and in which levels to hide details. The next section describes making multiple selections.

How to display detail and summary data

1 Right-click a column or row dimension that is in a hierarchy. From the menu, choose Drill Up or Drill Down, as shown in Figure 3-45.

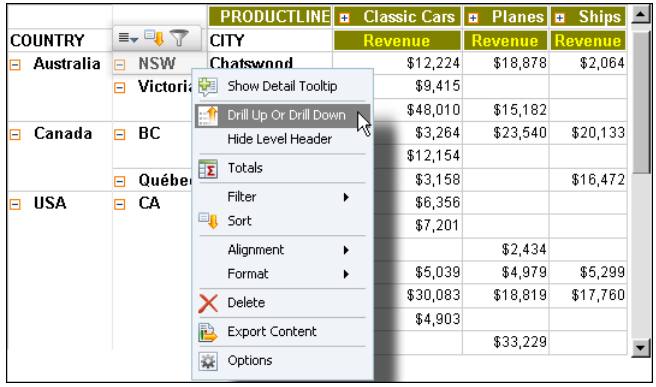


Figure 3-45 Choosing Drill Up or Drill Down for row headings

2 In Drill Up or Drill Down, select items in the list to show detail data. For example, Figure 3-46 shows the levels in Australia selected to show detail data and the levels in Canada and USA deselected to show summary data. Two check marks in a check box specify displaying detail data for the level. One check mark specifies displaying summary data for the level. An empty check box specifies not displaying the level.

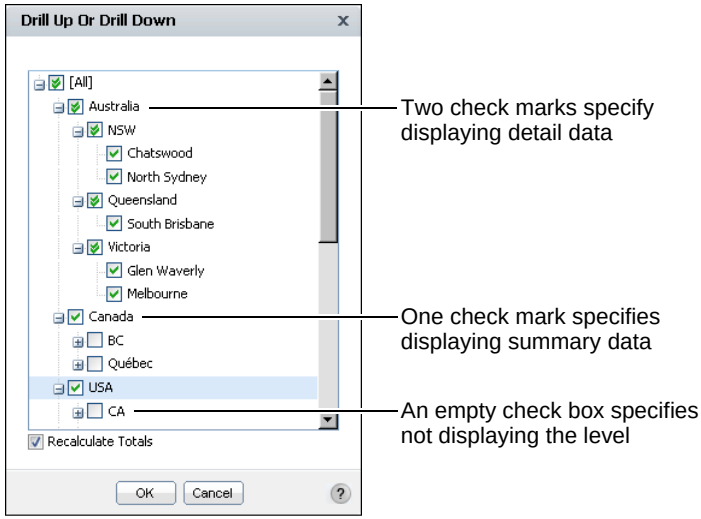


Figure 3-46 Using Drill Up or Drill Down

Choose OK.

Figure 3-47 shows a cross tab that displays detail data for states and cities in Australia and summary data for Canada and USA.

		PRODUCTLINE	Classic Cars	Planes	Ships
COUNTRY	STATE	CITY	Revenue	Revenue	Revenue
Australia	NSW	Chatswood	$12,224	$18,878	$2,064
	Victoria	Glen Waverly	$9,415		
		Melbourne	$48,010	$15,182	
Canada			$18,576	$23,540	$36,605
USA			$532,986	$151,683	$68,847

Figure 3-47 A cross tab displaying detail and summary data

Chapter

4

Performing calculations in a cross tab

This chapter contains the following topics:

- About calculated data
- Displaying aggregate data
- Using calculated data in a cross tab
- Functions
- Operators

About calculated data

Many cross tabs require calculations to track sales, finances, inventory, and other critical business activities. You can use Data Analyzer to create calculations to count items in a warehouse or provide more complex financial data, such as tracking stock portfolio performance over time. Data Analyzer supports displaying calculated data in the following ways:

- Display columns or rows that show aggregate data.
- Create a column to display calculated data.

Displaying aggregate data

A key feature in a cross tab is the ability to display aggregate data. For example, a sales cross tab can show the average sales figures, the highest and lowest sales figures, the number of reported sales, the overall sales total, or sales subtotals by product type, region, sales representatives, or time period.

Data Analyzer supports displaying column and row totals and group subtotals as aggregate data values. For example, Figure 4-1 displays the following aggregate data values in the Planes, Ships, and Trains columns:

- The revenue sum for each numbered month
- The first-quarter and second-quarter revenue subtotals, labeled 1 Total and 2 Total, respectively
- The total revenue sum for each column, labeled Grand Total

You can display the grand totals and subtotals on columns and rows either before or after the detail values.

		PRODUCTLINE	Planes	Ships	Trains
Year	Quarter	Month	Revenue	Revenue	Revenue
2004	1	1	$31,159	$26,310	$6,387
		2	$34,000	$24,894	$4,763
		3		$15,559	$9,879
		1 Total	$65,159	$66,763	$21,029
	2	4	$33,882	$10,808	
		5	$35,898	$3,440	$4,862
		6		$16,472	
		2 Total	$69,780	$30,719	$4,862
		Grand Total	$134,940	$97,482	$25,891

First quarter subtotals

Second quarter subtotals

Column grand totals

Figure 4-1 Displaying subtotals

Figure 4-2 shows average-monthly-revenue aggregate values in the bottom row of the cross tab. These values represent the averages of the monthly revenue values for each of the product lines as they appear in the cross tab.

		PRODUCTLINE	Planes	Ships	Trains
Year	Quarter	Month	Revenue	Revenue	Revenue
2004	1	1	$31,159	$26,310	$6,387
		2	$34,000	$24,894	$4,763
		3		$15,559	$9,879
		1 Total	$65,159	$66,763	$21,029
	2	4	$33,882	$10,808	
		5	$35,898	$3,440	$4,862
		6		$16,472	
		2 Total	$69,780	$30,719	$4,862
	Average Monthly Revenue		$33,735	$16,247	$6,473

Figure 4-2 Displaying subtotals and averages

Data Analyzer supports an option to aggregate values, based on the visible cross-tab values or on the detail rows values in the data source.

Figure 4-3 displays an example of aggregate values based on visible cross-tab values. Each cell in the row labelled 1 Total displays an aggregate value, count, which equals the number of revenue values that are visible in each product line column for the first quarter of 2004. The last cross-tab row labelled First Quarter Average Sales per Month displays an aggregate value, average, which equals the sum of the revenue values in the column divided by the count value in the 1 Total row.

		PRODUCTLINE	Planes	Ships	Trains
Year	Quarter	Month	Revenue	Revenue	Revenue
2004	1	1	$31,159	$26,310	$6,387
		2	$34,000	$24,894	$4,763
		3		$15,559	$9,879
		1 Total	2	3	3
	First Quarter Average Sales per Month		$32,580	$22,254	$7,010

Count of visible revenue values for months in the first quarter

Average of sales per month

Figure 4-3 Displaying visible values counts and averages

Figure 4-4 displays an example of aggregate values based on detail rows values in a data source. In the data source, each revenue value represents sales revenue from one order. Each cell in the row labelled 1 Total displays an aggregate value, count, which equals the number of revenue values in the data source in each column for the first quarter of 2004. The last cross-tab row labelled First Quarter Average Amount displays an aggregate value, average, which equals the sum of the revenue values in the column divided by the count value in the 1 Total row.

		PRODUCTLINE	Planes	Ships	Trains
Year	Quarter	Month	Revenue	Revenue	Revenue
2004	1	1	$31,159	$26,310	$6,387
		2	$34,000	$24,894	$4,763
		3		$15,559	$9,879
		1 Total	24	23	8
	First Quarter Average Sales Amount		$2,715	$2,903	$2,629

Count of data source revenue values for months in the first quarter

Average sales amount per order

Figure 4-4 Displaying data source counts and averages

Table 4-1 lists the supported aggregate functions for totals and subtotals.

Table 4-1 Aggregate functions

Function	Description
Average	Returns the average, also known as the mean, of the values
Count	Returns the number of values, including duplicate values
Count Value	Returns the number of values, excluding duplicate values
First	Returns the first value among the values
Last	Returns the last value among the values
Max	Returns the largest value among the values
Median	Returns the median, or middle, value among the values
Min	Returns the smallest value among the values
Mode	Returns the mode, or the value that occurs most frequently, among the values
Standard Deviation	Returns the standard deviation of a set of values
Sum	Returns the sum of the values
Variance	Returns the variance of a set of values

How to display totals and subtotals

1 Choose Totals.

2 In Totals—Grand Totals:

- From the available measures in Row Area and Column Area, in Aggregate On, select the measures for which to display grand totals.
- For each selected measure, in Function, choose a function from the list to calculate the grand total, as shown in Figure 4-5.
- Specify one of the following ways to calculate cross-tab grand totals:
  - If you deselect On Detail Row, Data Analyzer uses the cross-tab display values to calculate grand totals.
  - If you select On Detail Row, Data Analyzer uses the detail row values in the data source to calculate grand totals.

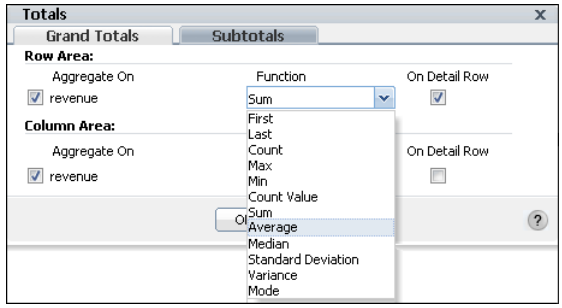


Figure 4-5 Choosing a function to apply to a grand total

Choose Subtotals.

3 In Totals—Subtotals:

- From the measures in Row Area and Column Area, in Aggregate On, select measures for which to display subtotals.
- In Function, for each selected measure, choose a function from the list to calculate the subtotal.
- Specify one of the following ways to calculate cross-tab subtotals:
  - If you deselect On Detail Row, Data Analyzer uses the cross-tab display values to calculate subtotals.
  - If you select On Detail Row, Data Analyzer uses the detail row values in the data source to calculate subtotals.

Choose OK.

Data Analyzer displays the specified grand totals and subtotals. For example, Figure 4-6 displays the average sale amounts, based on detail rows in the data source, in the Average Sale Amount row, and the sum grand totals in the Grand Total column. Also, the figure displays first-quarter and second-quarter subtotals in the Planes, Ships, and Trains columns.

		PRODUCTLINE	Planes	Ships	Trains	Grand Total
Year	Quarter	Month	Revenue	Revenue	Revenue	revenue
2004	1	1	$31,159	$26,310	$6,387	$63,855
		2	$34,000	$24,894	$4,763	$63,657
		3		$15,559	$9,879	$25,438
		1 Total	$65,159	$66,763	$21,029	$152,951
	2	4	$33,882	$10,808		$44,690
		5	$35,898	$3,440	$4,862	$44,200
		6		$16,472		$16,472
		2 Total	$69,780	$30,719	$4,862	$105,362
		Average Sale Amount	$2,811	$2,867	$2,589	$258,313

Sum grand totals

Sum subtotals for first quarter

Sum subtotals for second quarter

Average sale amounts

Figure 4-6 Displaying subtotals, averages, and grand totals

How to specify where grand totals and subtotals appear

1. Right-click the cross tab. From the menu, choose Options.
2. In Options, in Totals Display, select Before or After for each of the following options, as shown in Figure 4-7:
   - Display Grand totals on
     Selecting Before displays the grand totals before the detail columns and rows. Selecting After displays the grand totals after the detail columns and rows.
   - Display Subtotals on
     Selecting Before displays the subtotals before the detail columns and rows. Selecting After displays the subtotals after the detail columns and rows.

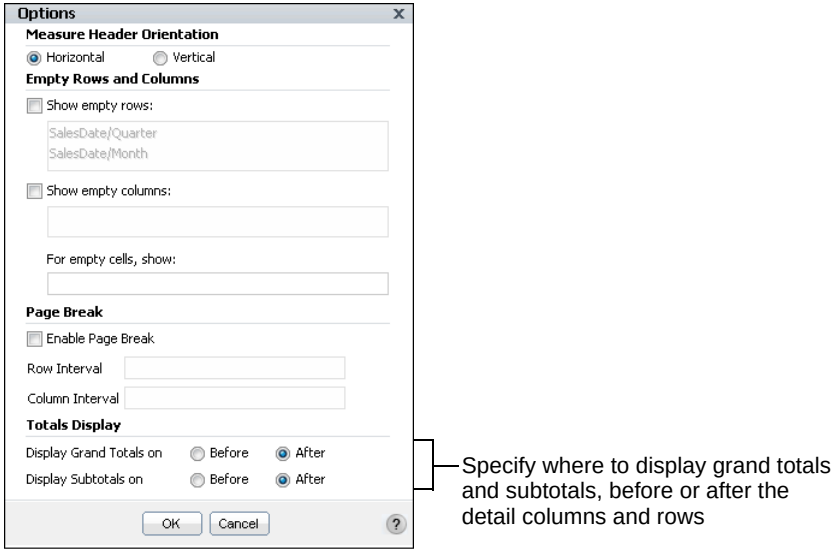


Figure 4-7 Setting totals display options

Using calculated data in a cross tab

To display calculated data in a cross tab, you can create a column that displays calculated data, called a computed measure. When you create a computed measure, you select a function that indicates how to calculate the data. Data Analyzer supports typical mathematical functions, such as percent of total, running sum, difference, product, rank, and ratio. Also, Data Analyzer supports a conditional expression using the IF function.

In Figure 4-8, for example, the Running Sum column appears beside the Revenue column in each product line column. The Running Sum column displays the year-to-date sales revenue sum for each quarter and product line.

	PRODUCTLINE	Planes		Ships		Trains	
Year	Quarter	Revenue	Running Sum	Revenue	Running Sum	Revenue	Running Sum
2004	1	$65,159	$65,159	$66,763	$66,763	$21,029	$21,029
	2	$69,780	$134,940	$30,719	$97,482	$4,862	$25,891
	3	$105,974	$240,913	$66,859	$164,341	$21,728	$47,619
	4	$197,342	$438,256	$128,254	$292,595	$39,278	$86,897

Figure 4-8 Displaying calculated data in the Running Sum column

Because meaningful data analysis requires displaying data in time intervals, Data Analyzer supports calculating data using relative time periods, such as current month, current year, month to date, quarter to date last year, trailing 30 days, and trailing six months.

Use Computed Measure to create a computed measure using functions. In Computed Measure, the available options differ, depending on the function you use. Table 4-2 lists available functions and the categories in which they appear. A description of each function appears in "Functions," later in this chapter.

Table 4-2 Categories and functions for creating a computed measure

Category	Function
Logical	IF
Math	■ % OF ■ % OF COLUMN ■ % OF DIFFERENCE ■ % OF ROW ■ % OF TOTAL ■ ABS ■ ADD ■ CEILING ■ DIFFERENCE ■ MOD ■ PRODUCT ■ RANK ■ RATIO ■ ROUND ■ RUNNINGSUM ■ SQRT

(continues)

Table 4-2 Categories and functions for creating a computed measure (continued)

Category	Function
Relative Time Period	■ Current Month ■ Current Period ■ Current Quarter ■ Current Year ■ Month To Date Last Year ■ Month To Date (MYD) ■ Next N Periods ■ Period To Date ■ Previous N Month ■ Previous N Month to Date ■ Previous N Quarter ■ Previous N Quarter To Date ■ Previous N Year ■ Previous N Year To Date ■ Quarter to Date Last Year ■ Quarter to Date (QTD) ■ Trailing N Months ■ Trailing N Periods ■ Year To Date (YTD)

Using a conditional expression in a cross tab

The IF function returns one value if a specified condition evaluates to true or another value if the condition evaluates to false. Using the IF function requires completing the following tasks, as shown in Figure 4-9:

- In Measure Label, type text to appear in the heading, such as Revenue Rating.
- In Select Category, select Logical.
  In Calculation Type, IF appears.
- In Column Name, select a database column name to compare to a value.
- In Condition, select a comparison operator, such as greater than or equal to.
- In Value, type the value to which to compare the Column Name's value, such as 100000.
- In Value True, select a value or type the value to display if the condition evaluates to true, such as Very good.

- In Value False, select a value or type the value to display if the condition evaluates to false, such as Poor.

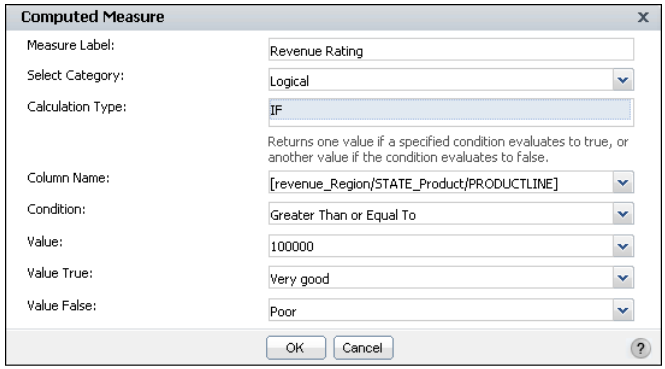


Figure 4-9 Computed Measure displaying sample values for the IF function

Figure 4-10 displays the resulting cross tab, which displays the Revenue Rating column containing values of Very good and Poor.

PRODUCTLINE	Classic Cars	
STATE	Revenue	Revenue Rating
CA	$137,635	Very good
CT	$14,372	Poor
MA	$120,315	Very good
NH	$13,725	Poor
NV	$42,979	Poor
NY	$136,612	Very good
PA	$67,348	Poor

Figure 4-10 Displaying cross-tab results for the applied IF function

Using a mathematical calculation in a cross tab

Figure 4-11 shows a computed measure that displays the Percent of Column Total value for each revenue value. For example, in the Planes column, each Percent of Column Total value displays the percentage of the corresponding Revenue value divided by the revenue total for Planes, $438, 256. The sum of Percent of Column Total values for each product-line column is 100%.

	PRODUCTLINE	Planes		Trains	
Year	Quarter	Revenue	Percent of Column Total	Revenue	Percent of Column Total
2004	1	$65,159	14.87%	$21,029	24.20%
	2	$69,780	15.92%	$4,862	5.60%
	3	$105,974	24.18%	$21,728	25.00%
	4	$197,342	45.03%	$39,278	45.20%
	Grand Total	$438,256		$86,897	

Figure 4-11 Displaying calculated data in the Percent of Column Total column

How to create a computed measure using the % OF function

The % OF function supports displaying percent-of calculations in the cross tab, such as comparing a revenue value in each cell to the grand total sum of all revenue cells in the cross tab.

1 Choose New Computed Measure.

2 In Computed Measure, complete the following tasks, as shown in Figure 4-12.

- In Measure Label, type text for the label. For example, type:

  ```
  Percent of Revenue
  ```

- In Select Category, select Math.
- In Calculation Type, select % OF.
- In Measure, select revenue
- In % Base, select an item from the list. For example, Figure 4-12 shows the selection of Grand Total.

Choose OK.

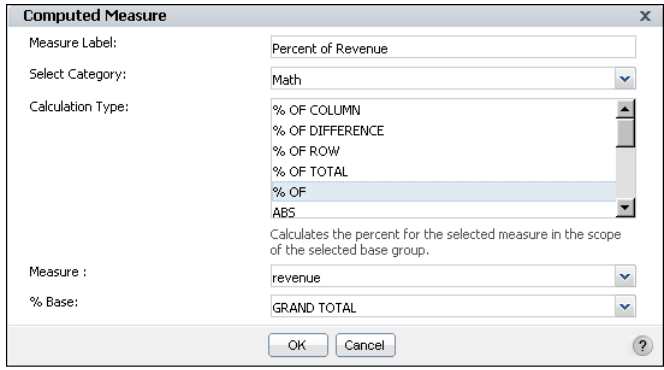


Figure 4-12 Selecting Grand Total to apply the % OF function

Figure 4-13 shows the cross tab, displaying the Percent of Revenue column in which each percent value is a product line revenue value compared to the grand total revenue value for the cross tab, $525,153. The sum of all values in all Percent of Revenue columns is 100%.

	PRODUCTLINE	Planes		Trains		Grand Total
Year	Quarter	Revenue	Percent of Revenue	Revenue	Percent of Revenue	revenue
2004	1	$65,159	12.41%	$21,029	4.00%	$86,188
	2	$69,780	13.29%	$4,862	0.93%	$74,643
	3	$105,974	20.18%	$21,728	4.14%	$127,702
	4	$197,342	37.58%	$39,278	7.48%	$236,621
	Grand Total	$438,256		$86,897		$525,153

Figure 4-13 Displaying Percent of Revenue values for each product line revenue value compared to the cross-tab Grand Total

How to create a computed measure using a mathematical calculation

1 Choose New Computed Measure.

2 In Computed Measure, complete the following tasks, as shown in Figure 4-14. These tasks differ depending on the category and calculation type you select.

- In Measure Label, type a name for the new measure. The name you specify appears in the heading.
- In Select Category, select a category. For example, select Math.
- In Calculation Type, select a function from the list. For example, select RANK.
- In Measure, select a measure on which to apply the function. For example, select revenue.
- In On level, select a level on which to apply the function. For example, select Product/PRODUCTLINE, which specifies that the function ranks the sales revenues and displays the rank values for each product line.
- In Ascending, to specify that the rank values appear in sequence from highest to lowest, select false.

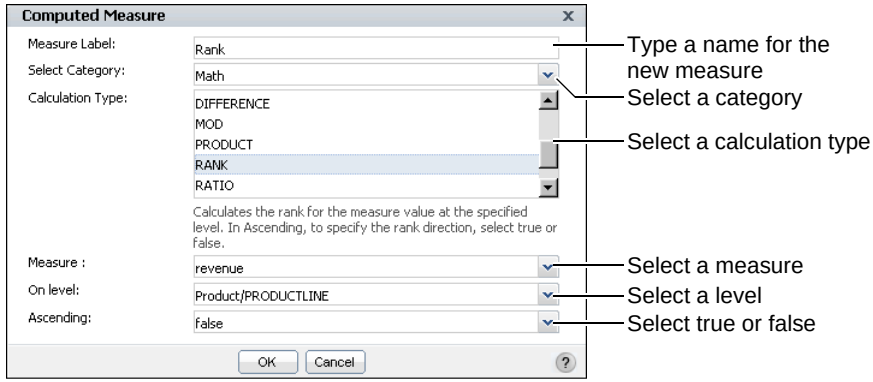


Figure 4-14 Choosing values in Computed Measure

Choose OK. The Rank column displays the rank for each quarter, from highest to lowest revenue value in the cross tab, as shown in Figure 4-15.

	PRODUCTLINE	Planes		Ships		Trains	
Year	Quarter	Revenue	Rank	Revenue	Rank	Revenue	Rank
2004	1	$65,159	4	$66,763	3	$21,029	3
	2	$69,780	3	$30,719	4	$4,862	4
	3	$105,974	2	$66,859	2	$21,728	2
	4	$197,342	1	$128,254	1	$39,278	1

Figure 4-15 Displaying calculated data in a Rank column

How to edit a computed measure

Right-click a measure. From the menu, choose Edit Computed Measure. Computed Measure appears. To modify the expression, continue as described in "Using a mathematical calculation in a cross tab," earlier in this chapter.

How to create a custom computed measure

Data Analyzer supports creating a custom computed measure to display in the cells of a cross-tab column.

1. Choose New Computed Measure.
2. In Computed Measure, in Measure Label, type text for the label, which appears in the heading for the cross-tab column.
3. In Select Category, select Advanced.
4. In Enter Expression, type an expression.

   Figure 4-16 shows an expression, which calculates a 25% profit from the sales revenue value.

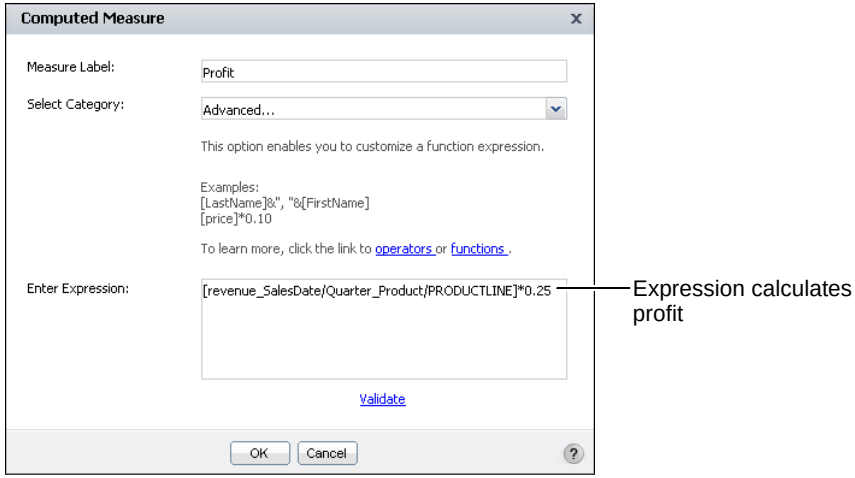


Figure 4-16 Creating a custom computed measure

5. To test the expression, choose Validate.

   If the expression is valid, a message appears stating the expression is valid.

   To close the message, choose OK.

6. In Computed Measure, choose OK.

   Figure 4-17 displays the Profit column in the cross tab, using a currency format for the profit values.

	PRODUCTLINE	Planes		Ships		Trains	
Year	Quarter	Revenue	Profit	Revenue	Profit	Revenue	Profit
2004	1	$65,159	$16,290	$66,763	$16,691	$21,029	$5,257
	2	$69,780	$17,445	$30,719	$7,680	$4,862	$1,216
	3	$105,974	$26,493	$66,859	$16,715	$21,728	$5,432
	4	$197,342	$49,336	$128,254	$32,063	$39,278	$9,820

Figure 4-17 Displaying the custom computed measure, Profit

Using a relative time period calculation in a cross tab

Cross tabs often aggregate and display data by time periods because time is an essential part of data analysis. Any analysis of stock performance, revenue, or productivity is meaningful only if it can be measured by day, week, month, quarter, or year. For example, a cross tab can display revenue data for a particular month, quarter, or year. Figure 4-18 displays sales revenue by region by quarter for two years.

	Year	2010				2011			
Region	Quarter	1	2	3	4	1	2	3	4
Europe	Sales	6000	6000	8000	10000	12000	14000	16000	18000
North America	Sales	4000	5000	7000	9000	11000	13000	15000	17000

Figure 4-18 Displaying sales revenue by region by quarter for two years

Also, a cross tab supports relative time periods, such as current month, current quarter, current year, previous month, previous quarter, and previous year. Displaying data by relative time periods supports, for example, the comparison of current data with past data of the same period. Figure 4-19 shows quantity ordered year-to-date 2005 values, using the date 06/30/2005, and the comparable year-to-date values for the previous year for Spain and USA.

year	2005	
COUNTRY	Quantity ordered to date in 2005	Quantity ordered previous year to date
Spain	15314	7865
USA	5217	1362

Figure 4-19 Displaying quantity ordered year-to-date in 2005 and previous year-to-date

Supported time periods

Table 4-3 describes the time periods available for the Time Period property. All the time periods are relative to a reference date, which can be the current date defined as the date the report runs, a date you specify, or the latest date in the time dimension.

Table 4-3 Supported time periods

Time period	Description
Current Month	The entire month relative to the month and year portions of the reference date. For example, if the reference date is 2011-01-10, the period is 2011-01-01 to 2011-01-31.
Current Period	The entire period from a specified period relative to the reference date. For example, use to aggregate data for the same quarter five years ago. This time period requires two additional properties: ■ The First Period, which specifies year, quarter, or month as the type of period for which to aggregate data ■ Number of Periods Ago, which specifies the number of prior periods (type of period specified next), from which to begin the calculation ■ The Second Period, which specifies year, quarter, month, or day as the type of period For example, if the reference date is 2012-02-08, to aggregate data for the same quarter five years ago, specify the following: ■ The First Period: Quarter ■ Number of Periods Ago: 5 ■ The Second Period: Year Data is aggregated for the entire quarter, 2007-01-31 to 2007-03-31.
Current Quarter	The entire quarter relative to the month and year portions of the reference date. For example, if the reference date is 2011-12-15, the period is 2011-10-01 to 2011-12-31.
Current Year	The entire year relative to the year portion of the reference date. For example, if the reference date is 2011-06-30, the period is 2011-01-01 to 2011-12-31.
Month To Date (MTD)	The period starting at the beginning of the reference date's month and ending at the reference date. For example, if the reference date is 2011-12-25, the period is 2011-12-01 to 2011-12-25.

Table 4-3 Supported time periods (continued)

Time period	Description
Month To Date Last Year	Same as Month To Date, but for the previous *n*th year. This time period requires another property, Number of Years Ago, which specifies which prior year. For example, if the reference date is 2011-12-25 and Number of Years Ago is 1, the period is 2010-12-01 to 2010-12-25.
Next N Periods	The next *n* periods from the reference date. This time period requires two additional properties: ■ Number of Periods Ago, which specifies the number of periods ■ The First Period, which specifies year, quarter, month, week, or day as the period in which to begin the calculation For example if the reference date is 2012-01-01, Number of Periods Ago is 1, and The First Period is Month, then the period is 2012-01-01 to 2012-01-31.
Period To Date	The period from a specified period relative to the reference date. For example, use to aggregate data for the same quarter to date, five years ago. This time period requires three additional properties: ■ The First Period, which specifies either year, quarter, or month as the type of period for which to aggregate data ■ Number of Periods Ago, which specifies the number of prior periods (type of period specified next), from which to begin the calculation ■ The Second Period, which specifies either year, quarter, month, or day For example, if the reference date is 2012-02-08, to aggregate data for the same quarter up to 02-08, five years ago, specify the following: ■ The First Period: Quarter ■ Number of Periods Ago: 5 ■ The Second Period: Year Data is aggregated for 2007-01-01 to 2007-02-08.

(continues)

Table 4-3 Supported time periods (continued)

Time period	Description
Previous N Month	The previous *n*th month relative to the month and year portion of the reference date. The day portion is ignored. This time period requires another property, Number of Months Ago, which specifies which prior month. For example, to specify three months back from the reference month, type 3. If the reference date is 2012-01-15 and N Months Ago is 3, then the period is 2011-10-01 to 2011-10-31.
Previous N Month To Date	The previous *n*th month relative to the reference date. This time period requires another property, Number of Months Ago, which specifies which prior month. For example, to specify three months back from the reference date, type 3. If the reference date is 2012-01-15 and Number of Months Ago is 3, then the period is 2011-10-01 to 2011-10-15.
Previous N Quarter	The previous *n*th quarter relative to the month and year portion of the reference date. The day portion is ignored. This time period requires another property, Number of Quarters Ago, which specifies which prior quarter. For example, to specify one quarter back from the reference date, type 1. If the reference date is 2012-03-15 and Number of Quarters Ago is 1, then the period is 2011-10-01 to 2011-12-31.
Previous N Quarter to Date	The previous *n*th quarter relative to the reference date. This time period requires another property, Number of Quarters Ago, which specifies which prior quarter. For example, to specify one quarter back from the reference date, type 1. If the reference date is 2012-03-15 and Number of Quarters Ago is 1, then the period is 2011-10-01 to 2011-12-15.
Previous N Year	The previous *n*th year relative to the year portion of the reference date. This time period requires another property, Number of Years Ago, which specifies which prior year. For example, to specify two years back from the reference date, type 2. If the reference date is 2011-09-30 and Number of Years Ago is 2, then the period is 2009-01-01 to 2009-12-31.

Table 4-3 Supported time periods (continued)

Time period	Description
Previous N Year to Date	The previous *n*th year relative to the reference date. This time period requires another property, Number of Years Ago, which specifies which prior year. For example, to specify two years back from the reference date, type 2. If the reference date is 2011-09-30 and Number of Years Ago is 2, then the period is 2009-01-01 to 2009-09-30.
Quarter To Date (QTD)	The period starting at the beginning of the reference date's quarter and ending at the reference date. For example, if the reference date is 2011-12-25, the period is 2011-10-01 to 2011-12-25.
Quarter To Date Last Year	Same as Quarter To Date, but for the previous *n*th year. This time period requires another property, Number of Years Ago, which specifies which prior year. For example, if the reference date is 2011-12-25 and Number of Years Ago is 1, then the period is 2010-10-01 to 2010-12-25.
Trailing N Days	The last *n* days from the reference date. This time period requires another property, Number of Day(s) Ago, which specifies the number of trailing days. For example, if the reference date is 2011-12-25, and Number of Day(s) Ago is 15, then the period is 2011-12-10 to 2011-12-24.
Trailing N Months	The last *n* months from the reference date. This time period requires another property, Number of Months Ago, which specifies the number of trailing months. For example, if the reference date is 2011-12-25, and Number of Months Ago is 3, then the period is 2011-09-25 to 2011-12-25.
Trailing N Periods	The last *n* periods from a specified period relative to the reference date. For example, use to aggregate data for the two months prior to the reference date five years ago. This time period requires four additional properties. The first and second properties define the period for which to aggregate data: ■ Number of Periods Ago, which specifies the number of periods

(continues)

Table 4-3 Supported time periods (continued)

Time period	Description
Trailing N Periods *(continued)*	■ The First Period, which specifies year, quarter, month, or day as the type of period The third and fourth properties define the period relative to the reference date from which to begin the calculation. ■ Number of Periods Ago, which specifies the number of prior periods ■ The Second Period, which specifies either year, quarter, month, or day as the type of period For example, if the reference date is 2012-01-01, to aggregate data for the two months prior to January 1 five years ago, specify the following: ■ Number of Periods Ago: 2 ■ The First Period: Month ■ Number of Periods Ago: 5 ■ The Second Period: Year Data is aggregated for the period 2007-11-01 to 2007-12-31.
Year To Date (YTD)	The period starting at the beginning of the reference date's year and ending at the reference date. For example, if the reference date is 2011-06-30, the period is 2011-01-01 to 2011-06-30.

How to create a computed measure using a relative time period calculation

1 Choose New Computed Measure.

2 In Computed Measure, complete the following tasks, as shown in Figure 4-20. These tasks differ depending on the category and time period you select.

- In Measure Label, type a name for the new measure. The name you specify appears in the heading.
- In Select Category, select Relative Time Period.
- In Time Period, select a time period from the list. For example, select Year to Date.
- In Measure, select a measure to which to apply the function. For example, select revenue.

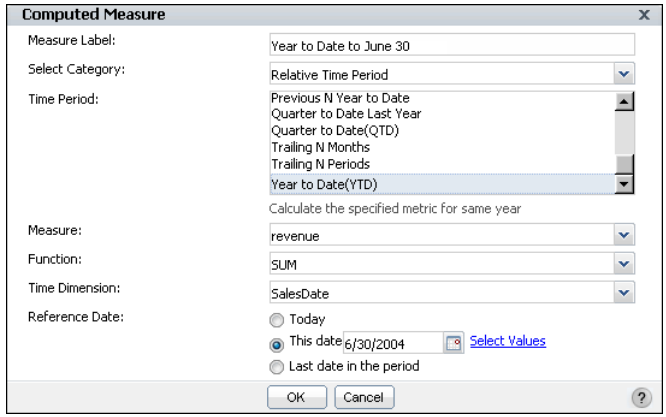


Figure 4-20 Creating a year-to-date computed measure

- In Function, select one of the following functions to apply to the measure:
  - AVERAGE
  - COUNT
  - MAX
  - MIN
  - SUM

  For example, select SUM to display the sum values for each year.
- In Time Dimension, select a dimension to which to apply the function.
- In Reference Date, select one of the following options:
  - To use today's date as the reference date, select Today.
  - To specify a date, select This date. Then, type a date or choose Select Values to display the calendar tool from which you select a date. For example, select This date and type 06/30/2004.
  - To specify the last date in the available time period, select Last date in the period.

Choose OK.

The cross tab displays the computed measure values, as shown in Figure 4-21.

Year	2003		2004	
COUNTRY	Year to Date to June 30	Entire Year Revenue	Year to Date to June 30	Entire Year Revenue
Canada		$53,437	$52,282	$123,404
Spain	$114,325	$369,489	$158,893	$392,816
USA	$227,645	$1,172,201	$392,171	$1,485,054

Figure 4-21 Displaying a Year-to-Date to June 30 computed measure

Using the * to Date and Trailing N * time periods

Data Analyzer calculates time periods, such as Month to Date, Month to Date Last Year, Quarter to Date, Quarter to Date Last Year, Previous Month to Date, Previous N Year to Date, Next N Periods, and Trailing N Periods, using the year, month, and day parts of a reference date. For example, Month to Date covers the period starting at the beginning of the reference date's month and ending at the reference date. If the reference date is 2012-01-08, the period is 2012-01-01 to 2012-01-08. Contrast this with Current Month, which is calculated using only the year and month parts of a reference date. For a reference date of 2012-01-08, Current Month covers the entire month, 2012-01-01 to 2012-01-31.

Because the * to Date and Trailing N * time periods use the day part of a reference date, the time dimension defined in the cube must include the Day Of Year level. Figure 4-22 shows a cross-tab data pane displaying time period levels, including the Day Of Year level.

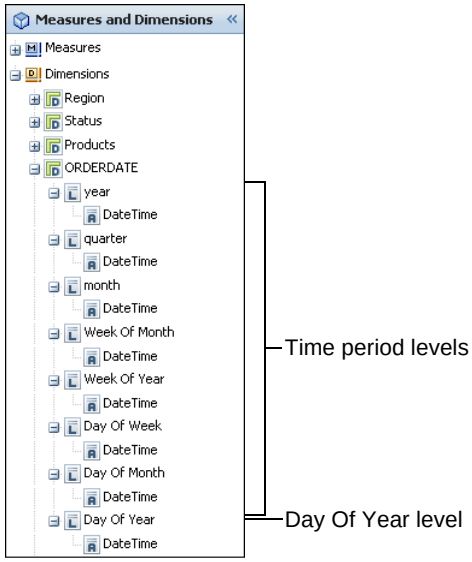


Figure 4-22 Displaying time period levels in the data pane

If the time dimension in the cube does not include the Day Of Year level, and you use a * to Date or a Next N * or Trailing N * time period in a relative time period calculation, the measures display the wrong results. Month to Date returns the same results as Current Month, Quarter to Date returns the same results as Current Quarter, and so on. In other words, the day part of the reference date has no effect.

Functions

The following section lists calculation types, or functions, available for creating a computed measure in Computed Measure. Each function entry includes a general description of the function, the category in which the function appears, the values you provide for the calculation, and what the function returns. Some entries provide an example that shows typical usage. Use this reference to find function information to use when you insert a computed measure to display calculated data in a cross tab.

% OF

Calculates the percentage value of a selected measure compared to a selected base group value.

Category Math

Measure Select a measure name from the list.

% Base Select a base group from the list.

Returns For the selected measure, Data Analyzer calculates the percentage of the base group total and displays the percentage value.

Example For example, compare a cross-tab revenue value to the grand total of all revenue values, using the following calculation:

```
(<cross-tab revenue value>/<cross-tab revenue grand total>) * 100%
```

For a detailed example using the % OF function, see "How to create a computed measure using the % OF function," earlier in this chapter.

% OF COLUMN

Calculates the percentage of the column total for each measure value in each column.

Category Math

Measure Select a measure name from the list.

Returns For each measure in each column, Data Analyzer calculates the percentage of the column total and displays the percentage value. The sum of percent-of-column values in each column is 100%.

Example In Measure, select the sales revenue measure. Data Analyzer displays a percentage value in the cell next to each sales revenue value. The percentage

value equals the sales revenue value divided by the column sum, and multiplied by 100%, as follows:

```
(<sales revenue value>/<column sum>) * 100%
```

An illustration of a cross tab displaying percent-of-column total values appears in Figure 4-11, earlier in this chapter.

% OF DIFFERENCE

Calculates the percentage of the difference between measure values.

Category Math

Measure Select the first measure name from the list.

Measure Select the second measure name from the list.

Returns Data Analyzer calculates the percentage of the difference between the second measure and the first measure, as follows:

```
((measureB - measureA)/measureA) * 100%
```

Data Analyzer displays the percentage of the difference in the cross-tab cells.

% OF ROW

Calculates the percentage of the row total for each measure in each row.

Category Math

Measure Select a measure name from the list.

Returns For each measure in each row, Data Analyzer calculates the percentage of the row total and displays the percentage value, as follows:

```
(<measure value>/<row sum>) * 100%
```

The sum of percent-of-row values in each row is 100%.

Example In Measure, select the sales revenue measure. Data Analyzer displays a percentage value in the cell next to each sales revenue value. The percentage value equals the sales revenue value divided by the row total, and multiplied by 100%.

% OF TOTAL

Calculates the percentage of the cross-tab grand total for each measure in each column and row.

Category Math

Measure Select a measure name from the list.

Returns For each measure in each column and row, Data Analyzer calculates the percentage of the cross-tab grand total and displays the percent value, as follows

```
(<measure value>/<cross-tab grand total>) * 100%
```

The sum of all percent-of-total values in the cross tab is 100%.

Example In Measure, select the sales revenue measure. Data Analyzer displays a percentage value in the cell next to each sales revenue value. The percentage value equals the sales revenue value, divided by the row total, and multiplied by 100%.

ABS

Returns the absolute value of a number without regard to its sign. For example, 6 is the absolute value of 6 and -6.

Category Math

Measure Select a measure name from the list.

Returns Data Analyzer calculates the absolute values and displays them in the cross tab.

ADD

Returns the sum of two measures, MeasureA + MeasureB.

Category Math

Measure In the first field, select a measure name from the list.

Measure In the second field, select a measure name from the list.

Returns Data Analyzer calculates the sum of the measure values and displays the them in the cross tab.

ADVANCED

This option enables you to customize a function expression. For more information about customizing a function expression, see "How to create a custom computed measure," earlier in this chapter.

CEILING

Rounds a number up to the nearest specified multiple.

Category Math

Measure Select a measure name from the list.

Significance Type a value for the multiple.

Example CEILING is commonly used to round up prices. For example, to avoid dealing with pennies, if the Price value is 20.52, and you provide the value 0.05, CEILING returns 20.55. To round a number to a multiple of ten cents, type the value 0.1.

DIFFERENCE

Calculates the difference between values in two measures, MeasureB – MeasureA.

Category Math

Measure In the first field, select a measure name from the list, or type a value to subtract from the second field.

Measure In the second field, select a measure name from the list.

Returns Data Analyzer subtracts the first value from the second value and displays the difference in the cross tab.

Example You can use Difference to display the difference between the sales revenue value for each product in one state and a specific value you type, such as 20000.

IF

Returns one value if a specified condition evaluates to true or another value if the condition evaluates to false.

Category Logical

Column Name Select a column name from the list.

Condition Select a comparison operator, such as greater than, less than, or less than or equal to.

Value Select a measure name from the list, or type a value to which to compare the value in Column Name.

Value True Select a value from the list, or type a value to appear in the cross tab if the Condition evaluates to true.

Value False Select a value from the list, or type a value to appear in the cross tab if the Condition evaluates to false.

Returns Data Analyzer evaluates the condition, compares the values, and displays the appropriate value for true or false.

Example For an example using IF, review the content introducing Figure 4-9 and Figure 4-10, earlier in this chapter.

MOD

Returns the remainder after dividing a measure value by a divisor.

Category Math

Measure Select a measure name from the list.

Divisor Type a value for the divisor.

Returns Data Analyzer calculates MOD for the measure you selected and displays the remainder value in the cross tab.

Example Calculate the remainder of a revenue measure, divided by 12, returning an integer. If the revenue value is 4763, MOD returns 11.

PRODUCT

Returns the product of multiplication, MeasureA * MeasureB.

Category Math

Measure Select the first measure name from the list.

Measure Select the second measure name from the list.

Returns Data Analyzer multiplies the first measure value by the second measure value and displays the product.

RANK

Returns the rank for a measure value at the specified level.

Category Math

Measure Select a measure name from the list.

On level Select a level name from the list.

Ascending Select true to display ascending rank values. Select false to display descending rank values.

Returns Data Analyzer calculates the rank for the measure you selected and displays the integer rank values. You can choose to display the rank in ascending or descending order.

Example For an example using the rank function, see "Using a mathematical calculation in a cross tab," earlier in this chapter.

RATIO

Returns the ratio, MeasureA/MeasureB.

Category Math

Measure Select the first measure name from the list.

Measure Select the second measure name from the list.

Returns Data Analyzer divides the first measure value by the second measure value and displays the ratio value.

Example In a product-line column, display a revenue column and a customer count column. Use the computed measure, Ratio, to divide revenue by the number of customers. Display the ratio in a Ratio of Revenue to CustomerCount column, as shown in Figure 4-23. Where the results of division by zero or an empty value occurs, NaN indicates the ratio value is not a number.

PRODUCTLINE	Classic Cars		
STATE	Ratio of Revenue to CustomerCount	Revenue	CustomerCount
CA	$4,171	$137,635	33
CT	$4,791	$14,372	3
MA	$3,646	$120,315	33
NH	$6,862	$13,725	2
NV	$3,070	$42,979	14
NY	$3,692	$136,612	37
PA	$3,545	$67,348	19

Figure 4-23 Displaying ratio values

ROUND

Rounds a number to a specified number of digits.

Category Math

Measure Select a measure name from the list.

Decimal Type a value for the number of digits to which to round the number. If you omit this value, ROUND uses 0. Specify a positive integer to indicate the number of places to the right of the decimal point to which to round. Specify a negative integer to indicate the number of places to the left of the decimal point to which to round.

Returns Data Analyzer calculates ROUND for the measure you selected and displays the values, rounded to a specified number of digits in the cross tab.

Example Apply ROUND to the sales revenue measure and specify -2 for the value. A sales revenue value of $12,148 appears as $12,100.

Apply ROUND to the sales revenue measure and specify 1 for the value. A sales revenue value of $878.87 appears as $878.9.

RUNNINGSUM

Returns the running total for the selected measure at the specified level.

Category Math

Measure Select a measure name from the list.

On level Select a level name from the list.

Returns Data Analyzer calculates RUNNINGSUM for the measure you selected and displays the value in the cross tab.

Example An example using running sum values in a cross-tab column appears in Figure 4-8, earlier in this chapter.

SQRT

Calculates the square root of a positive number.

Category Math

Measure Select a measure name from the list.

Returns Data Analyzer calculates SQRT for the measure and displays the values in the cross tab.

Operators

This section is a complete reference to all the operators you can use when you create expressions. This reference organizes the operators into the following categories:

- Operators supported in computed measure expressions
- Operators supported in conditional formatting and filter condition expressions

Operators supported in computed measure expressions

Table 4-4 lists the operators you can use when you write an expression for a computed measure.

Table 4-4 Operators in computed measure expressions

Operator	Use to	Example
+	Add two or more numeric values.	[OrderAmount] + [SalesTax]
-	Subtract one numeric value from another.	[OrderAmount] - [Discount]
*	Multiply numeric values.	[Price] * [Quantity]
/	Divide numeric values.	[Profit] / 12
^	Raise a numeric value to a power.	[Length]^2
%	Specify a percentage.	[Price] * 80%
=	Test if two values are equal.	IF([ProductName] = "1919 Ford Falcon", "Discontinued Item", [ProductName])
>	Test if one value is greater than another value.	IF([Total] > 5000, [Total]*15%, [Total]*10%)
<	Test if one value is less than another value.	IF([SalePrice] < [MSRP] , "Below MSRP" , "Above MSRP")
>=	Test if one value is greater than or equal to another value.	IF([Total] >= 5000, [Total]*15% , [Total]*10%)
<=	Test if one value is less than or equal to another value.	IF([SalePrice] <= [MSRP] , "Below or equal to MSRP" , "Above MSRP")
<>	Test if two values are not equal.	IF([Country] <> "USA", "Imported product", "Domestic product")
&	Concatenate string values.	[FirstName] & " " & [LastName]
AND	Test if two or more conditions are true.	IF(([Gender] = "Male" AND [Salary] >= 150000 AND [Age] < 50), "Match found", "No match")

Table 4-4 Operators in computed measure expressions

Operator	Use to	Example
OR	Test if any one of multiple conditions is true.	IF(([City] = "Boston") OR ([City] = "San Francisco"), "U.S." , "Europe and Asia")

Operators supported in conditional formatting and filter condition expressions

Table 4-5 lists the operators you can use when you create expressions for conditional formatting and filter conditions.

Table 4-5 Operators supported in conditional formatting and filter condition expressions

Operator	Use to	Example
Any Of	Test if a column value is equal to any one of the specified values.	Country Any Of USA, Canada, Mexico
Between	Test if a column value is between two specified values.	Profit Between 1000 and 2000
Bottom N	Test if a column value is among the lowest *n* values.	SalesAmount Bottom N 10
Bottom Percent	Test if a column value is in the bottom *n* percent of all values.	SalesAmount Bottom Percent 5
Equal to	Test if a column value is equal to a specified value.	Country Equal to France
Greater Than	Test if a column value is greater than a specified value.	Total Greater Than 5000
Greater Than or Equal to	Test if a column value is greater than or equal to a specified value.	Total Greater Than or Equal to 5000
Is False	Test if a column value is False.	LoanApproved Is False
Is Not Null	Test if a column value is not a null value. A null value means no value is supplied.	CreditLimit Is Not Null
Is Null	Tests if a column value is a null value.	CreditLimit Is Null
Is True	Test if a column value is True.	LoanApproved Is True
Less Than	Test if a column value is less than a specified value.	Total Less Than 5000

(continues)

Table 4-5 Operators supported in conditional formatting and filter condition expressions (continued)

Operator	Use to	Example
Less Than or Equal to	Test if a column value is less than or equal to a specified value.	Total Less Than or Equal to 5000
Like	Test if a column value matches a string pattern.	ProductName Like %Ford%
Month to Date	Test if a column value matches a date value.	Month to Date 3/15/2011
Month to Date Last Year	Test if a column value matches a date value and displays last year's values.	Month to Date Last Year 3/15/2011
Not Between	Test if a column value is not between two specified values.	Profit Not Between 1000 and 2000
Not Equal to	Test if a column value is not equal to a specified value.	Country Not Equal to France
Not In	Test if a column value is not equal to any one of the specified values.	Country Not In USA, Canada, Mexico
Not Like	Test if a column value does not match a string pattern.	ProductName Not Like %Ford%
Quarter to Date	Test if a column value matches a date value.	Quarter to Date 3/15/2011
Quarter to Date Last Year	Test if a column value matches a date value and displays last year's values.	Quarter to Date Last Year 3/15/2011
Top N	Test if a column value is among the top *n* values.	SalesAmount Top N 10
Top Percent	Test if a column value is in the top *n* percent of all values.	SalesAmount Top Percent 5
Year to Date	Test if a column value matches a date value.	Year to Date 3/15/2011
Year to Date Last Year	Test if a column value matches a date value and displays last year's values.	Year to Date Last Year 3/15/2011

Chapter

5

Filtering cross-tab data

This chapter contains the following topics:

- About data filtering
- Creating a filter
- Displaying a list of applied filters

About data filtering

A cross tab often displays more data than you need. Using Data Analyzer, as you add or manipulate dimensions and measures, the number of cross-tab rows and columns can increase to a size too large to view on the screen or print on one page. You can improve the usability of the data if you limit the amount of data. A primary advantage of presenting data in a cross tab is the ability to analyze and compare data values, ideally on one page or screen.

Using a filter, you can display values in a cross-tab, based on specific criteria. For example, instead of listing all customer sales, you can create a filter to list only the sales data for a particular week or a specific region. Filtering data helps you work effectively with large amounts of data. It enables you to present the information that answers specific business questions, such as:

- Which sales representatives generated the top ten sales accounts?
- Which products generated the highest profit in the last quarter?
- Which customers did not make a purchase in the past 90 days?

Using Data Analyzer, you can filter data at the cross-tab level to narrow the data scope in a cross tab and also to remove unwanted data fields that show too much information. You can also filter data in specific dimensions and measures.

Applying a filter can limit the ability to drill up to summary data or drill down to detailed data. When you apply a filter, consider which values you want to view and the trends or relationships that you want to analyze. If you save a cube view (.cubeview) file or a report document (.rptdocument) file, and provide it for another user to analyze, consider how any filters you applied limit that user's ability to drill up or drill down in the data hierarchy.

When you apply a filter, you can select the option, Recalculate Totals, which makes Data Analyzer recalculate totals based on the filter you apply. The recalculated totals are a subset of the totals before applying the filter. For example, if a cross tab displays totals for columns and rows and you apply a filter and select Recalculate Totals, Data Analyzer recalculates the column and row totals to show the aggregate values for the filtered data. The Recalculate Totals option is selected by default.

If a cross tab displays totals for columns and rows, and you want those same totals to appear for you to compare to the filtered cross-tab data, deselect Recalculate Totals. The cross-tab displays columns and rows based on the filter you apply, but the totals do not change.

Creating a filter

To create a filter, define a condition, specifying which data to display in your cross tab. A filter condition is an If expression that must evaluate to true for data to be included in the cross tab. Examples of filter conditions are:

- If the order date is between 4/1/2010 and 6/30/2010
- If the sales office is San Francisco
- If the sales revenue is greater than $30,000
- If the sales value in the Spain row is less than or equal to the sales value in the France row

When you create a filter, the available options differ, depending on the following choices:

- To which dimension or measure, or row or column, do you want to apply the filter?
- Which comparison operator do you want to use to create a filter expression?

  For example, if you select Greater Than, you provide one value to which to compare a data value. If you select Between, you provide two values for the comparison. If you select Any Of, you provide one or more values for the comparison.

  For more information about comparison operators, see "Operators supported in conditional formatting and filter condition expressions" in Chapter 4, "Performing calculations in a cross tab."

Figure 5-1 shows an example of a filter condition to apply to a revenue value, a measure. When defining this filter condition, you can break it down into the following parts, as shown in Figure 5-1:

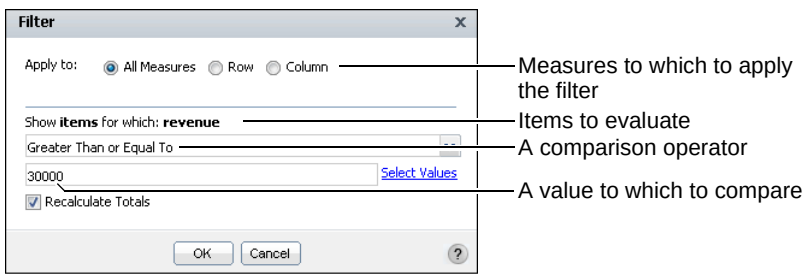


Figure 5-1 Creating a filter to compare values

- The measures to which to apply the filter
- The items to evaluate, such as revenue

- A comparison operator, specifying the type of comparison test, such as Greater Than or Equal To
- A value to which to compare, such as 30000
- The option to recalculate totals

The cross tab displays revenue values greater than $30,000, as shown in Figure 5-2.

PRODUCTLINE	Classic Cars	Planes	Ships
COUNTRY	Revenue	Revenue	Revenue
Australia	$165,349	$62,173	
Austria	$95,124		
Canada	$59,660		$36,605
Denmark	$119,087		
Finland	$143,593	$31,962	
France	$377,961	$88,434	$58,769

Figure 5-2 Displaying filtered values

Figure 5-3 shows an example of a filter condition to compare revenue values in the Spain row to revenue values in the UK row. When defining a filter condition, you break it down into the following parts, as shown in Figure 5-3:

- Measures to which to apply the filter, such as the measures in a row
- The value to evaluate, such as revenue
- A comparison operator, specifying the type of comparison test, such as Greater Than or Equal To
- Selected Value from Level option, which indicates the comparison to a value in another row level

  Alternatively, selecting Absolute Value supports providing a comparison value in the following field.
- A row level to which to compare, such as revenue - COUNTRY:UK

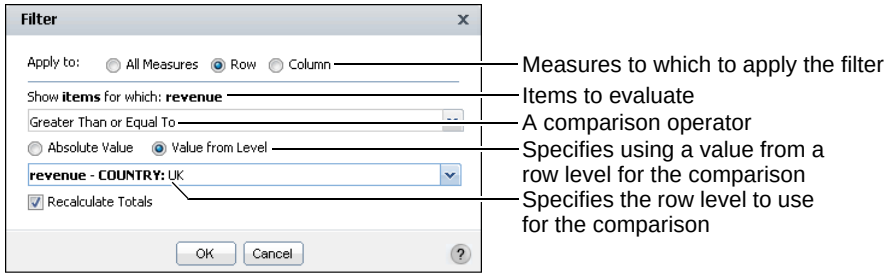


Figure 5-3 Creating a filter to compare values in specific rows

The cross tab displays the revenue value in the Japan row that is greater than or equal to revenues in the UK row. Also, the filters pane displays the applied filters, as shown in Figure 5-4.

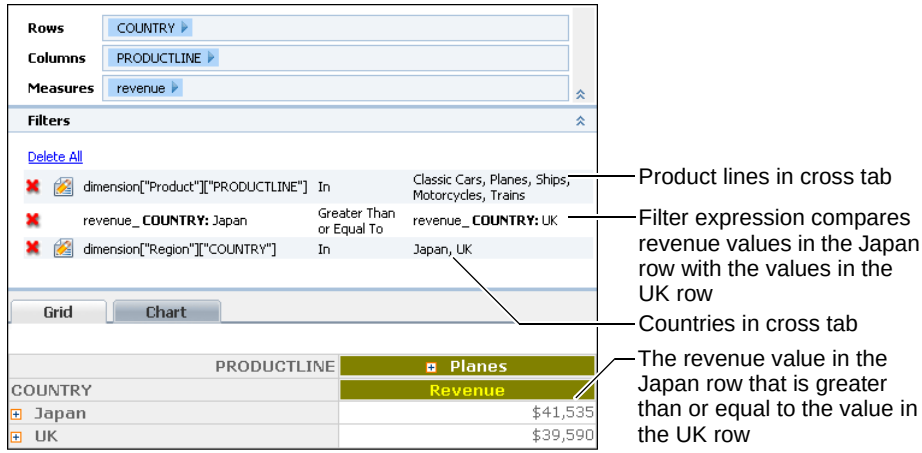


Figure 5-4 Displaying filtered values

Also, you can create a filter that applies to an attribute or dimension, which does not appear in the cross-tab preview pane. For example, apply a filter to an attribute or dimension that appears in the cube data, and which narrows the scope of the data that appears in the cross tab. Figure 5-5 shows a cross tab in which the following filter applies to the cube data:

```
dimension["SalesDate"]["Year"] Equal to 2004
```

The cross tab filters revenue values and displays those values for only the year 2004. The date dimension does not appear in the cross-tab preview pane.

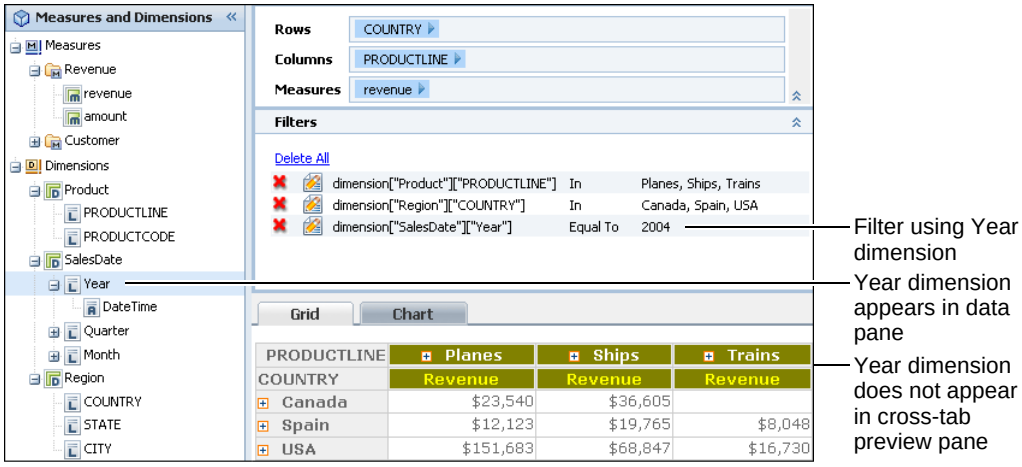


Figure 5-5 Applying a filter on a dimension that does not appear in the preview pane

To create each filter, you define a filter condition. You can create multiple filters to display relevant data. Each filter you add further narrows the scope of data

displayed. For example, you can create a filter that returns data where the customer's credit rank is either A or B and another filter that returns open orders between $250,000 and $500,000. Each additional filter introduces complexity to the cross tab. Make sure you design and test multiple filters carefully. If you have too many filters that narrow the scope of the cross tab, no data appears in the cross tab.

For more information about comparison operators to use when you create filter condition expressions, see "Operators supported in conditional formatting and filter condition expressions" in Chapter 4, "Performing calculations in a cross tab."

How to create a filter that uses a cross-tab value

You can use this procedure to create a filter that uses an attribute, dimension, or measure value that appears in the cross-tab preview pane.

1. Right-click a cross-tab cell that contains a value to evaluate. From the menu, choose Filter.
2. In Filter, select one of the following to which to apply the filter. Depending on which cross-tab cell you right-clicked in step 1, Row or Column might not appear on Filter.
   - All Measures
   - Row
   - Column
3. In Filter, from the list shown in Figure 5-6, select the comparison test, or operator, to apply to the attribute, dimension, or measure. Depending on the comparison operator you select, Filter displays either one or two additional fields or a completed filter condition.

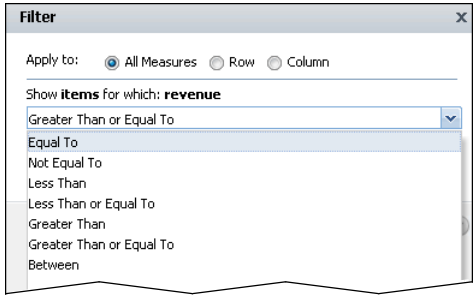


Figure 5-6 Selecting a comparison operator

4. If you select an operator that requires a comparison value, specify a value in one of the following ways:
   - Type a value, as shown in Figure 5-7.

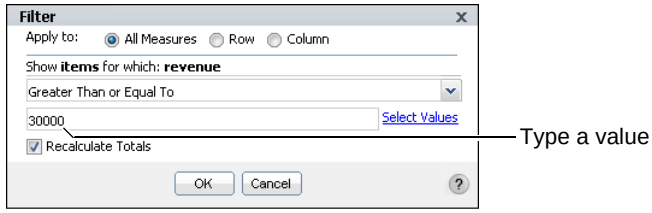


Figure 5-7 Typing a value for the filter condition

- Choose Select Values to select from a list of existing data values. Figure 5-8 shows how you can select product line values from a list. When they are available, use the previous and next buttons to display more values.

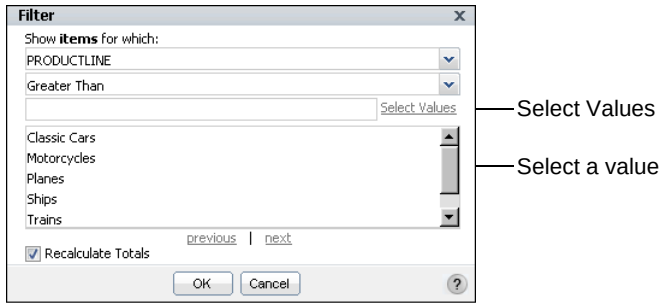


Figure 5-8 Selecting a value for the filter condition

- Choose List Values to select from a list of existing data values. Figure 5-9 shows how you can select country values from a list for the In operator. When they are available, use the previous and next buttons to display more values.

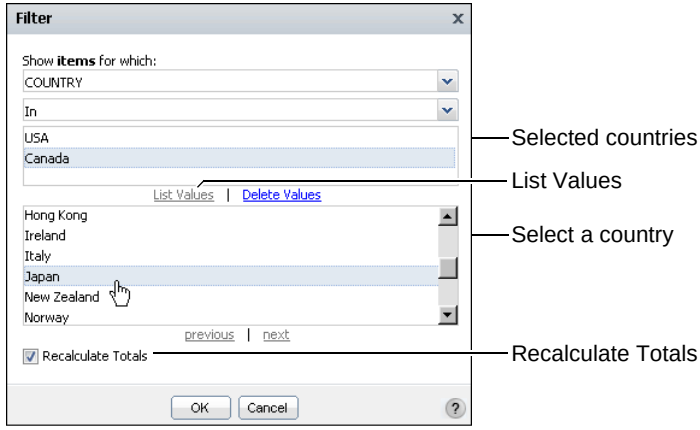


Figure 5-9 Selecting a value for the filter condition

5 To recalculate the cross-tab totals, select Recalculate Totals.

Choose OK to apply the filter. If the cross tab contains no data that matches the filter condition, the cross tab does not display any data.

How to create a filter that does not use a cross-tab value

You can use this procedure to create a filter that uses an attribute or dimension value that does not appear in the cross-tab preview pane.

1 From the data pane, drag an attribute or dimension, and drop it in the Filters area of the structure pane. For example, Figure 5-10 shows dragging the Year dimension to the Filters area.

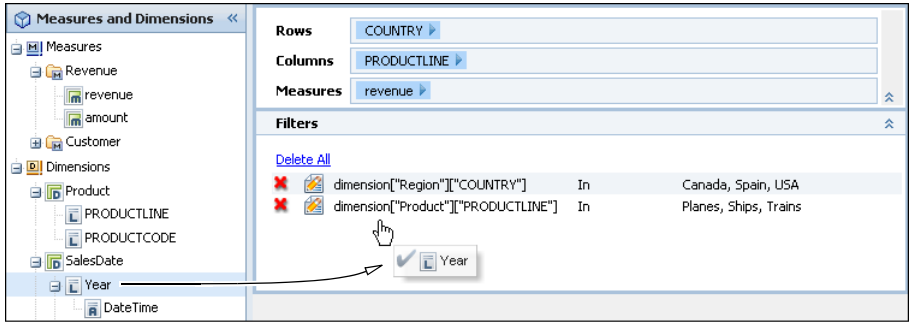


Figure 5-10 Dragging a dimension from the data pane to the Filters area

2 In Filter, from the list, select the comparison test, or operator, to apply to the attribute or dimension, such as Equal To, as shown in Figure 5-11.

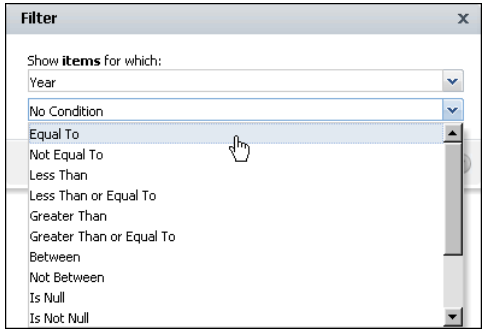


Figure 5-11 Selecting a comparison operator

Depending on the comparison operator you select, Filter displays either one or two additional fields or a completed filter condition.

3 If you select an operator that requires a comparison value, specify one or more values in one of the following ways:

- Type a value, as shown in Figure 5-12.

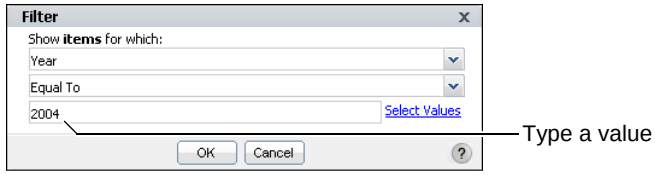


Figure 5-12 Typing a value for the filter condition

- Choose Select Values to select one value from a list of existing data values. Figure 5-13 shows how you can select a Year value from a list. If they are available, you can use the previous and next buttons to display more values.

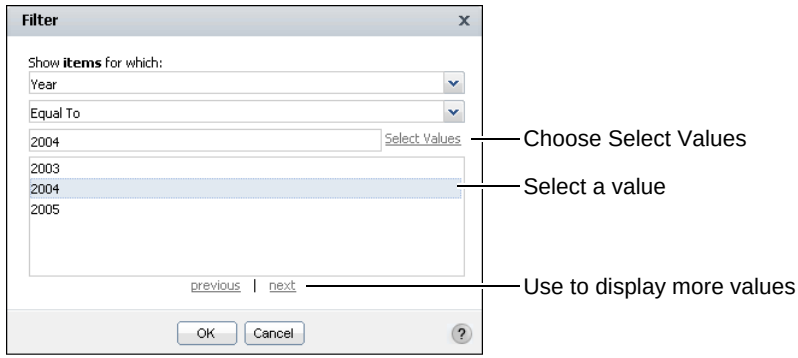


Figure 5-13 Selecting a value for the filter condition

- Choose List Values to select one or more values from a list. For example, the In operator supports selecting multiple values. Figure 5-14 shows selecting two Year values for the In operator. If they are available, use the previous and next buttons to display more values.

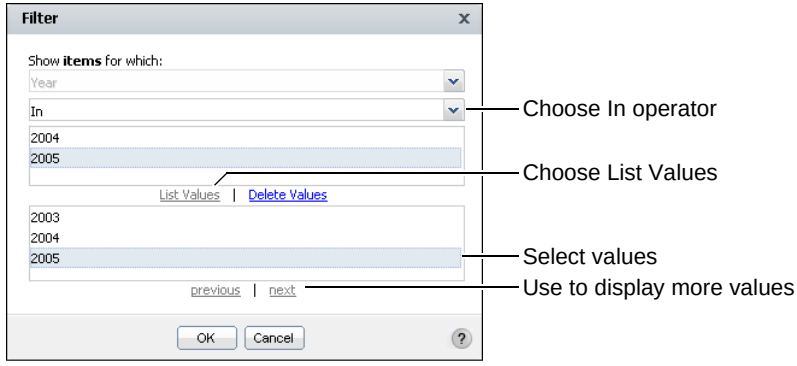


Figure 5-14 Selecting a value for the filter condition

Choose OK to apply the filter. If the cross tab contains no data that matches the filter condition, the cross tab does not display any data.

Selecting multiple values for a filter condition

Sometimes you need to view a wider range of data, such as sales details for several sales offices, not only for a single office. To select more than one comparison value, select the In operator, choose List Values, then select the values. When they are available, use the previous and next buttons to display more values. Figure 5-15 shows the selection of Boston and Cambridge from a list of CITY values.

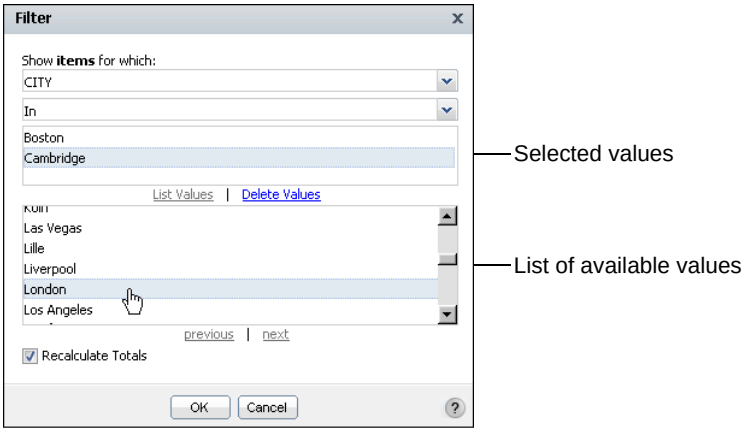


Figure 5-15 Selecting multiple values for a filter condition

Excluding data

When formulating a filter condition, you can use comparison operators, such as Equal to, Greater Than, or Less Than, to determine which data to view. Sometimes it is more efficient to specify a condition that excludes a small set of data. For example, you need sales data for all countries except the USA. Instead of selecting all the available countries except the USA and listing them in the filter condition, it is simpler to use the Not Like operator to exclude data that matches a string pattern. Similarly, use the Not Between operator to exclude numeric data in a specific range.

For example, the following filter condition excludes orders with amounts that are between 1000 and 5000, inclusively. The filter condition excludes 1000 and 5000.

```
OrderAmount Not Between 1000 And 5000
```

The filter condition in the following example excludes products with codes that start with MS:

```
ProductCode Not Like MS%
```

Filtering empty or null values

Sometimes cross tabs have missing data. Consider a customer database that contains an e-mail field. For customers who did not supply an e-mail address, the e-mail field is empty or blank. An empty value, also called a null value, means that no value is available. Null values apply to all data types.

You can create a filter to exclude data when a specific field has null values. When filtering to exclude rows containing null values, use the Is Not Null operator. If you want to view only rows with null values in a particular field, use the Is Null operator. For example, the following filter condition excludes customer data where the ProductLine field contains null values:

```
ProductLine Is Not Null
```

The following filter condition displays only rows where the ProductLine field contains null values:

```
ProductLine Is Null
```

Specifying a date as a comparison value

When you create a filter condition that compares the date-and-time values in a cross-tab to a specific date or dates, the date value must be in one of the following formats, regardless of your locale:

```
3/26/2008
3/26/2008 2:30:00 PM
```

Figure 5-16 shows how to select a date.

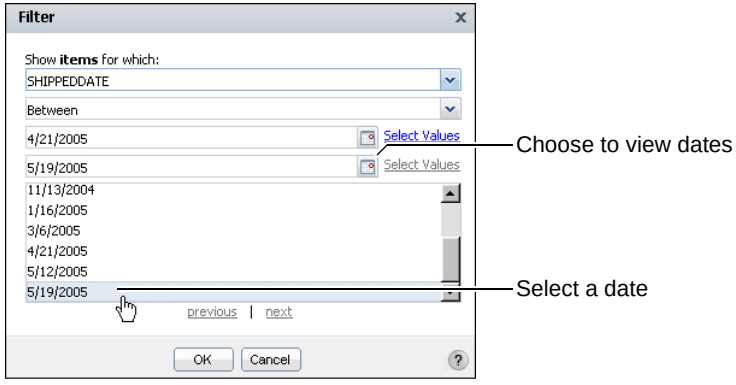


Figure 5-16 Selecting a date value

Displaying data for relative time periods

You can select a relative time period to use as a data filter. If you specify a reference date, Data Analyzer can perform calculations based on the following relative time periods:

- Month to date
- Month to date last year
- Quarter to date
- Quarter to date last year
- Year to date
- Year to date last year

For example, if the reference date is March 4, 2011, the relative time period, year-to-date last year, is January 1, 2010 to March 4, 2010.

Figure 5-17 shows the relative time period options for a date item.

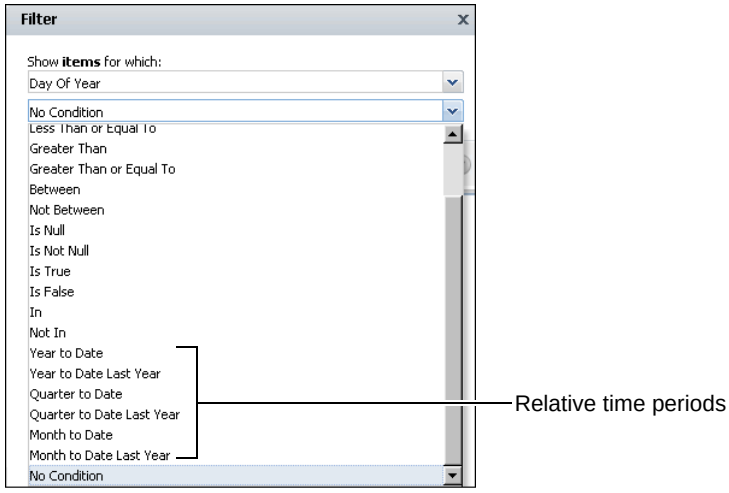


Figure 5-17 Viewing relative time period options

Data Analyzer provides a calendar you can use to select a date. Figure 5-18 shows how to access the calendar and select a date.

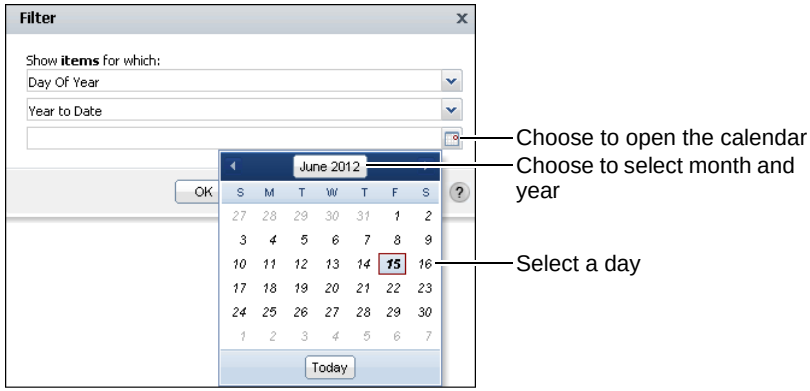


Figure 5-18 Using the calendar to select a date

Comparing to a string pattern

For a cell that contains string data, you can create a filter condition that compares each value to a string pattern instead of to a specific value. For example, to display only customers whose names start with M, use the Like operator, and specify the string pattern M%, as shown in the following filter condition:

```
Customer Like 'M%'
```

You can use the following special characters in a string pattern:

- % matches zero or more characters. For example, %ace% matches any value that contains the string ace, such as Ace Corporation, facebook, and Kennedy Space Center.
- _ matches exactly one character. For example, t_n matches tan, ten, tin, and ton. It does not match teen or tn.

To match the percent sign (%) or the underscore character (_) in a string, precede the characters with two backslash characters (\\). For example, to match S_10, use the following string pattern:

```
S\\_10
```

To match 50%, use the following string pattern:

```
50\\%
```

Displaying top or bottom values

For a cross tab that presents a large amount of numeric data, it is useful to view a snapshot of the highest or lowest values, such as the top 100 order totals or the counties whose median home prices are in the bottom 10 percent. To display top or bottom values, use the Bottom N, Bottom Percent, Top N, or Top Percent operators.

For example, to display the top 100 values for OrderAmount, select Top N, and specify 100.

To display the bottom 10 percent of Productline revenues, select Bottom Percent, and specify 10. If there are 1000 rows of data, the cross tab displays 100 rows.

How to display top or bottom values

1. Right-click a cross-tab cell that contains data values to evaluate. From the menu, choose Filter➤Top/Bottom N.
2. In Top/Bottom N, complete the following tasks:
   - Select one of the following items to which to apply the filter. Depending on which cross-tab cell you right-clicked in step 1, Row or Column might not appear on Filter.
     - All Measures
     - Row
     - Column
   - In Top/Bottom N, from the list, select the comparison test, or operator, to apply to the measure you right-clicked.
   - Type a value for the comparison.

   Figure 5-19 shows Top Percent selected. The specified comparison value is 25.

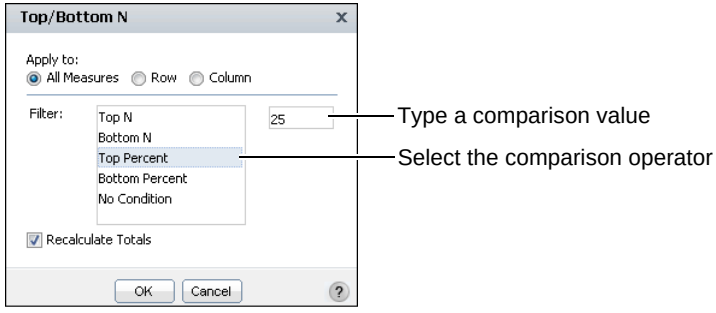


Figure 5-19 Selecting a comparison operator and providing a value

Choose OK.

Displaying a list of applied filters

To display a list of applied filters in the filters pane, choose the double arrows, as shown in Figure 5-20.

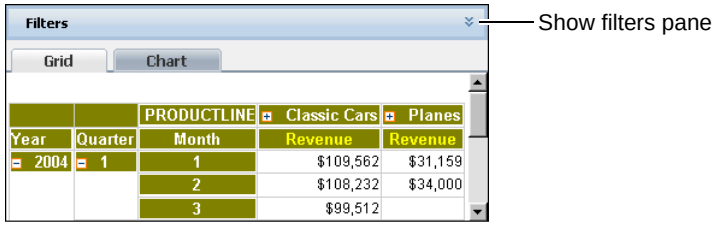


Figure 5-20 Choosing to show the filters pane

The filter list appears, as shown in Figure 5-21. To ensure that the filters you apply to a cross tab produce the desired results, review each to determine a logical result.

In Figure 5-21, the following filters appear in the list:

- A filter applies to the product line dimension, displaying values using the In operator to include Classic Cars and Planes.
- A filter applies to the year dimension, displaying a value using the In operator to 2004.
- A filter applies to the revenue measures for each month and product line, displaying values greater than or equal to $30,000.

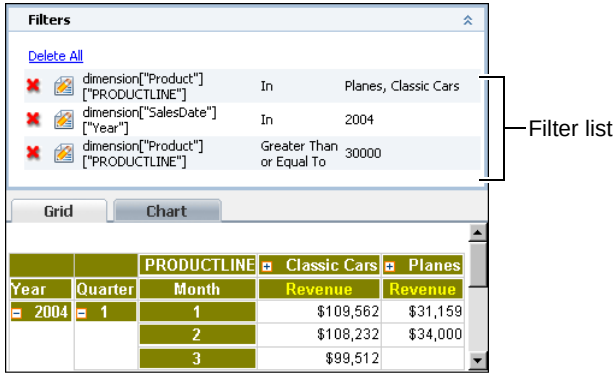


Figure 5-21 Displaying the list of applied filters

How to edit a filter

1 To display a list of applied filters in the structure pane, choose the double arrows.

2 To edit a filter, choose Edit, as shown in Figure 5-22.

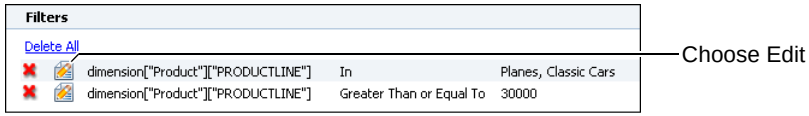


Figure 5-22 Choosing Edit

3 In Filters, as shown in Figure 5-23, modify the filter conditions.

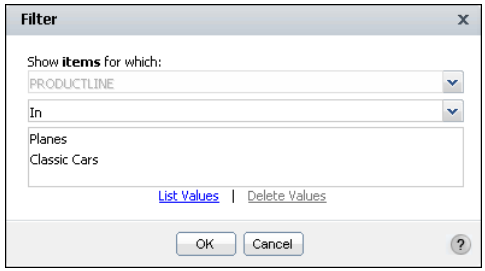


Figure 5-23 Modifying filter conditions

Choose OK.

How to delete a filter

1 To display a list of applied filters in the structure pane, choose the double arrows.

2 To delete all filters, choose Delete All, or choose an X to delete an individual filter, as shown in Figure 5-24.

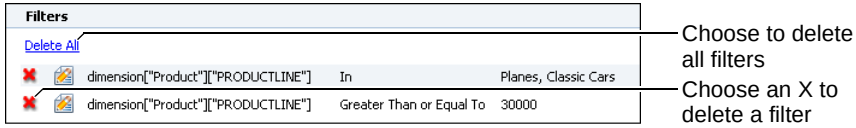


Figure 5-24 Deleting a filter

Chapter

6

Working with charts

This chapter contains the following topics:

- About charts
- Choosing a chart type
- Selecting data for a chart
- Formatting a chart

About charts

A chart is a graphical representation of data. Charts are particularly useful for summarizing numeric data and showing the relationship between sets of values called series. For example, a chart can show sales by region or profits by product line.

Because a chart presents a picture, it reveals trends that are not as apparent if a cross tab presents the same data. Figure 6-1 shows an example of a cross tab and a column chart displaying sales revenue data. The chart shows instantly the sales trend for the year without your having to look at the numbers.

	PRODUCTLINE	Classic Cars	Motorcycles	Planes	Ships	Trains
Year	Quarter	Revenue	Revenue	Revenue	Revenue	Revenue
2004	1	$317,307	$85,682	$65,159	$66,763	$21,029
	2	$206,722	$80,101	$69,780	$30,719	$4,862
	3	$419,675	$127,311	$105,974	$66,859	$21,728
	4	$739,277	$234,150	$197,342	$128,254	$39,278

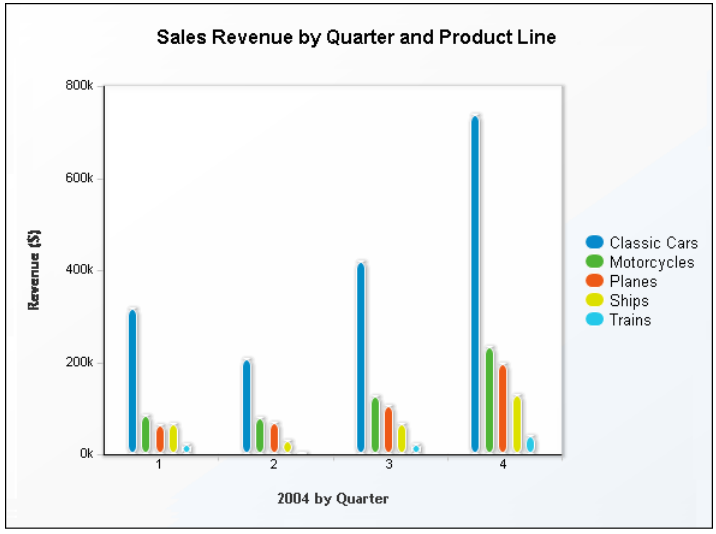


Figure 6-1 Viewing sales revenue data in a cross tab and a chart

In a cross tab that contains hierarchical data, use Data Analyzer to drill down to view the most detailed data. Then, display the cross-tab data as a chart. Data Analyzer supports editing the chart to display any hierarchy level you want to analyze. For example, after expanding the cross tab in Figure 6-1 to display the year, quarter, and month levels, you can display the data in a chart and edit the chart to display the summary values for 2004, quarterly values, or the detail values for the twelve months of 2004.

Choosing a chart type

When you choose to display cross-tab data in a chart, Data Analyzer initially displays a column chart, the default chart type, as shown in Figure 6-2.

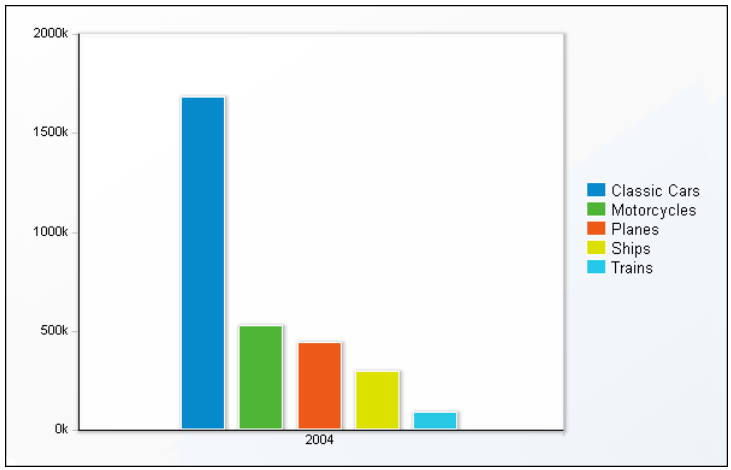


Figure 6-2 Displaying a column chart, the default chart type

Data Analyzer provides several chart types you can use to display cross-tab data. The first step is to choose the chart type most suitable for the data. You can use any chart type to display most data, but the data is easier to read when you choose a chart type that has the best visual characteristics for a particular set of data.

For example, to show what percentage each product line contributes to a company's total sales, use a pie chart, which is ideal for showing how parts relate to a whole. For example, to compare the sales of each product line in the current year and the previous year, use a column chart, which supports side-by-side comparisons. A line chart is appropriate for displaying linear data, such as how each product line sold over the course of five years.

Another item to consider when choosing a chart type is the number of data values to display. Some charts, such as scatter charts, reveal trends more clearly when there are more data values. Other charts, such as pie charts, are more effective when there are fewer data values. For example, the pie chart in Figure 6-3 is difficult to read because it displays too many data values.

The following sections describe the chart types Data Analyzer supports. Several of the chart types include subtypes.

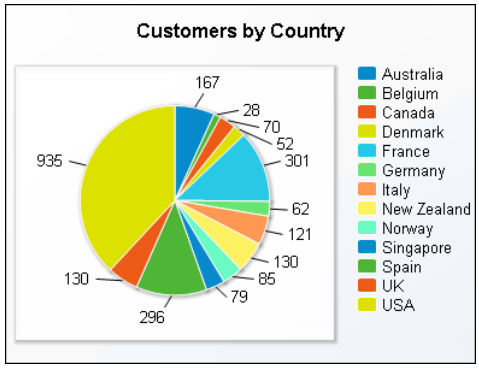


Figure 6-3 Displaying too many data values in a pie chart

About area charts

An area chart displays data values as a set of points connected by a line, with the area below the line filled. You typically use an area chart to present data that occurs over a continuous period of time. There are three types of area charts, described in the following sections.

Overlay area chart

In an overlay area chart, multiple series overlay each other, as shown in Figure 6-4. Each shaded area represents the sales amount for a specific country. Where the Germany area overlaps the Canada area in the fourth quarter, the Canada area value is visible behind the Germany area. As the example shows, this chart subtype is not ideal for showing multiple series if the data values overlap. Consider using an overlay area chart if you want to show only one series, for example, only sales for Australia.

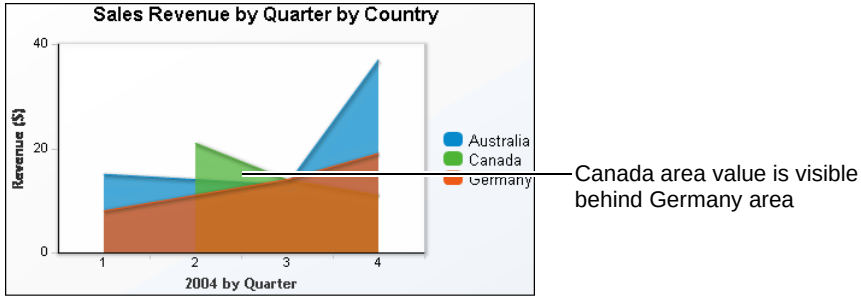


Figure 6-4 Displaying an overlay area chart

Stacked area chart

In a stacked area chart, multiple series are stacked vertically, as shown in Figure 6-5. The example shows that the stacked area chart is suitable for the data

because the chart displays totals for all series as well as the proportion that each series contributes to the total. The height of the top line shows the total value for each quarter. Each shaded area represents the sales amount for a specific territory.

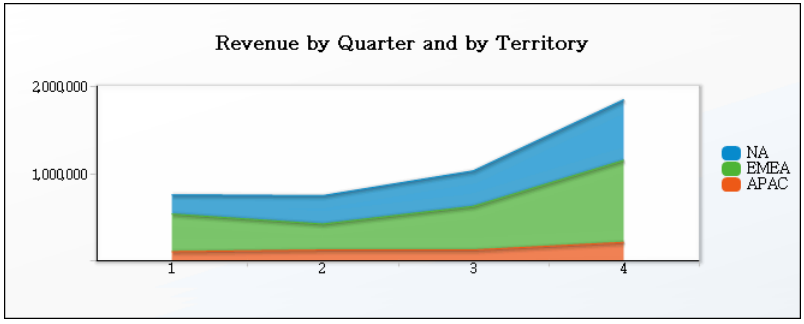


Figure 6-5 Displaying a stacked area chart

Percent stacked area chart

In a percent stacked area chart, multiple series are stacked vertically and the values are shown as a percentage of the whole. As you can see in Figure 6-6, the sales values are shown in percentages, instead of the actual numbers as shown in the previous area chart.

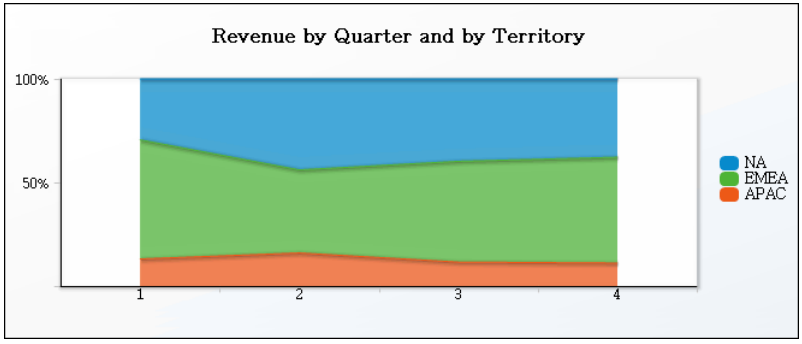


Figure 6-6 Displaying three series in a percent stacked area chart

About bar charts

A bar chart displays data as horizontal bars. A bar chart is useful for showing data that contains many categories. For example, if you want to show sales numbers for five regions for twelve months, data appears in sixty bars, which is crowded for a side-by-side column chart that displays data as vertical bars.

Side-by-side bar chart

In a side-by-side bar chart, multiple series appear as side-by-side horizontal bars. Each of these bars have the same thickness. The thickness depends on the number of series being plotted. Figure 6-7 shows a side-by-side bar chart that graphically presents a company's sales figures by country.

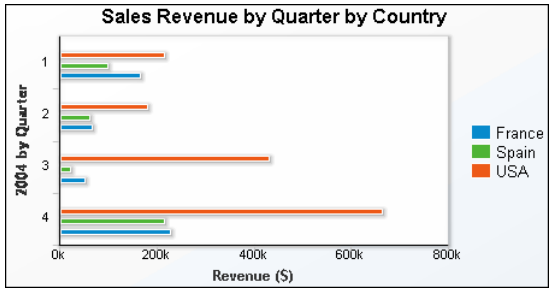


Figure 6-7 Displaying a side-by-side bar chart

Stacked bar chart

In a stacked bar chart, multiple series are stacked horizontally, as shown in Figure 6-8. The stacked bar chart shows totals for each category, each quarter, and the proportion that each series contributes to the total.

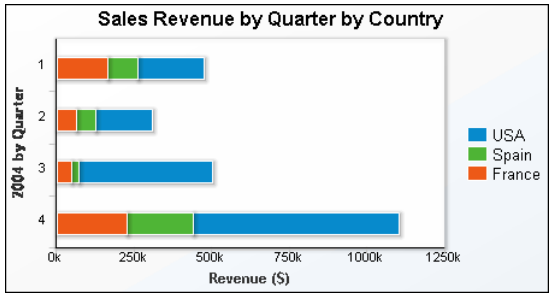


Figure 6-8 Displaying a stacked bar chart

Percent stacked bar chart

In a percent stacked bar chart, multiple series are stacked horizontally, and the values appear as a percent of the whole. As you can see in Figure 6-9, the sales values appear as percentages of the whole, instead of the actual sales totals appearing in the previous bar charts' illustrations.

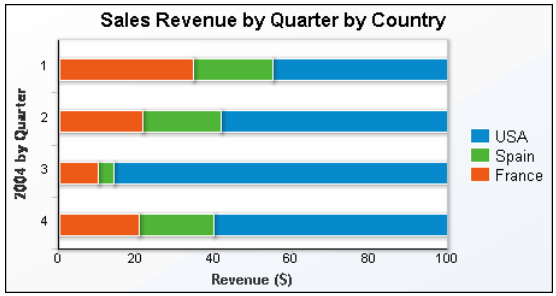


Figure 6-9 Displaying three series in a percent stacked bar chart

About column charts

A column chart, by default, displays data values as a set of vertical bars. A column chart is useful for displaying data side by side for easy comparison. Data Analyzer supports the following three subtypes of column charts:

- Side-by-side column chart
- Stacked column chart
- Percent stacked column chart

Two of the subtypes, stacked column chart and percent stacked column chart, are functionally similar to the stacked area chart and percent stacked area chart subtypes.

Side-by-side column chart

In a side-by-side column chart, multiple series appear as side-by-side columns. Each of these columns have the same width. The width depends on the number of series being plotted. Figure 6-10 shows a side-by-side column chart that graphically presents a company's sales figures by country.

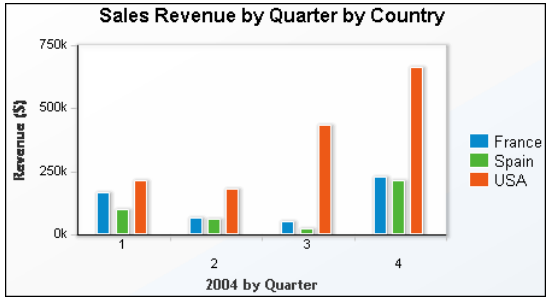


Figure 6-10 Displaying a side-by-side column chart

Stacked column chart

In a stacked column chart, multiple series are stacked vertically, as shown in Figure 6-11. The stacked column chart shows totals for each category, each quarter, and the proportion that each series contributes to the total.

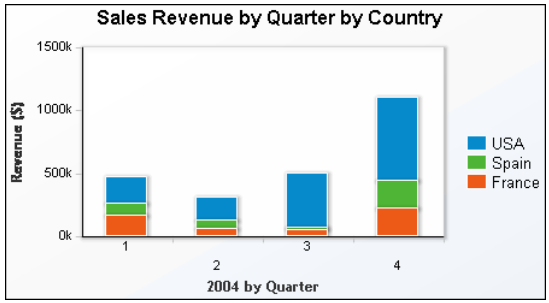


Figure 6-11 Displaying a stacked column chart

Percent stacked column chart

In a percent stacked column chart, multiple series are stacked vertically, and the values appear as a percent of the whole. As you can see in Figure 6-12, the sales values appear as percentages of the whole, instead of the actual sales totals appearing in the previous column charts' illustrations.

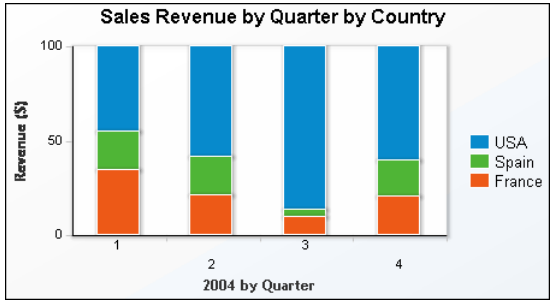


Figure 6-12 Displaying three series in a percent stacked column chart

About doughnut charts

Similar to a pie chart, a doughnut chart is a circular chart divided into sectors or slices. Each sector represents a value that is proportional to the sum of the values. Use a doughnut chart when you want to show the relationship of parts to the whole, for example, the amount each quarter's revenue contributes to a company's total annual revenue, as shown in Figure 6-13.

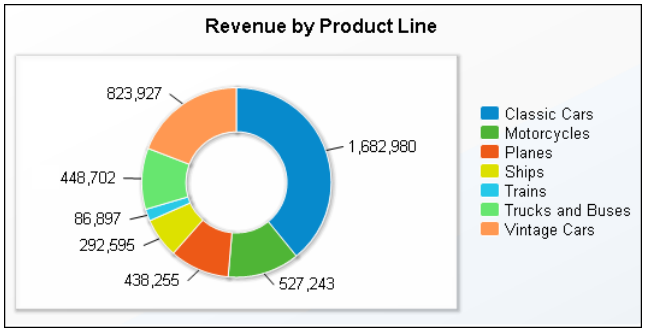


Figure 6-13 Displaying a doughnut chart

About line charts

A line chart displays data values as a set of points connected by a line. You typically use a line chart to present large amounts of data that occur over a continuous period of time. A line chart is the most basic type of chart used in finance.

In a line chart, multiple series appear as overlapping lines, as shown in Figure 6-14. A square marker indicates each data value.

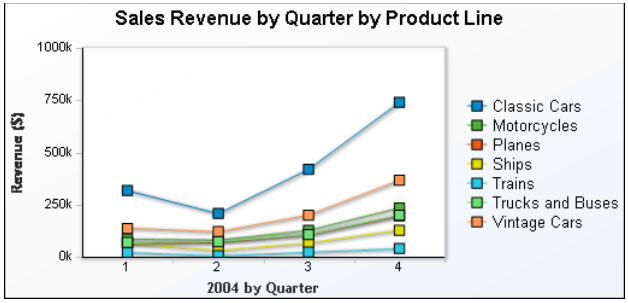


Figure 6-14 Displaying an overlay line chart

About pie charts

A pie chart is a circular chart divided into sectors or slices. Each sector represents a value that is proportional to the sum of the values. Use a pie chart when you want to show the relationship of parts to the whole, for example, the amount each product line contributes to a company's total revenue, as shown in Figure 6-15.

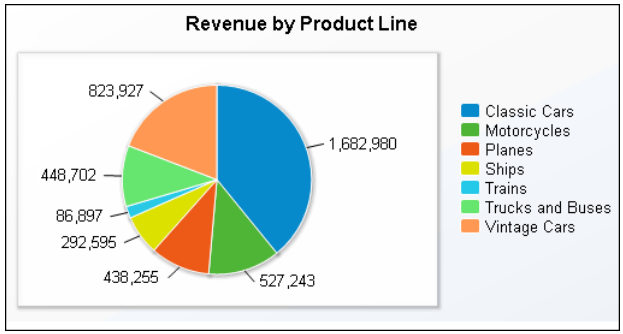


Figure 6-15 Displaying a pie chart

About scatter charts

A scatter chart presents data as *x-y* coordinates by combining two sets of numeric values into single data points. A scatter chart is typically used to display scientific and statistical data because it shows if there is a relationship between two sets of measurements. Use a scatter chart to compare, for example, salaries and years of experience, weight and body fat, rainfall amounts and pollen levels, or test scores and hours of study. The more data values you include in a scatter chart, the clearer the trends revealed by the data.

The scatter chart in Figure 6-16 shows the total revenue for seven product lines for four quarters in 2004.

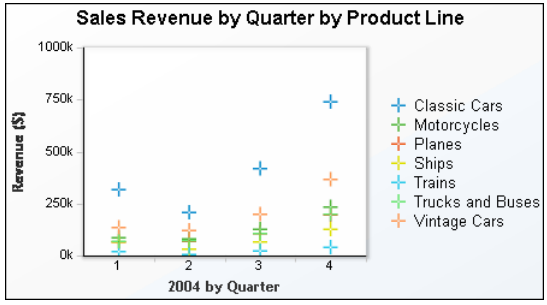


Figure 6-16 Displaying a scatter chart

Displaying a chart

In Data Analyzer, choose Chart as shown in Figure 6-17.

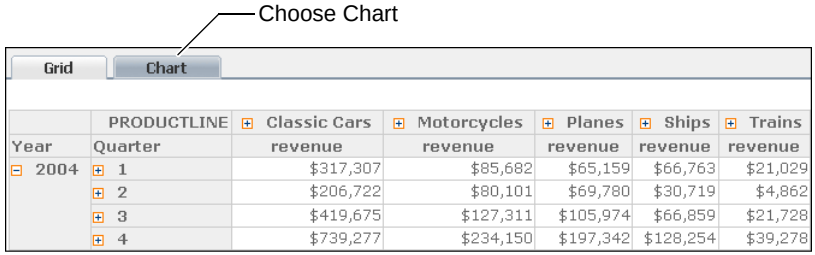


Figure 6-17 Choosing Chart

The chart appears, displaying the cross-tab data, as shown in Figure 6-18. This column chart, the default chart type, displays the sales revenue for each product line for 2004.

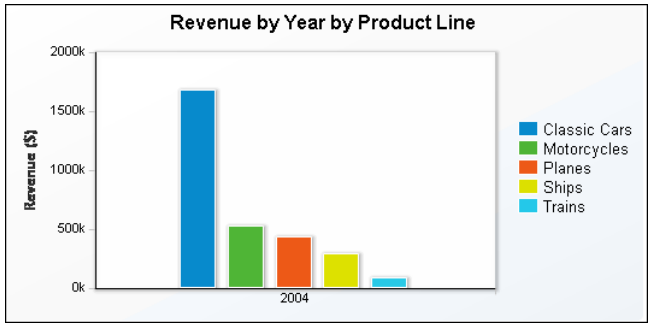


Figure 6-18 Displaying cross-tab data in a column chart

How to choose a chart type

1 While viewing a chart in Data Analyzer, right-click the chart area and choose Edit, as shown in Figure 6-19.

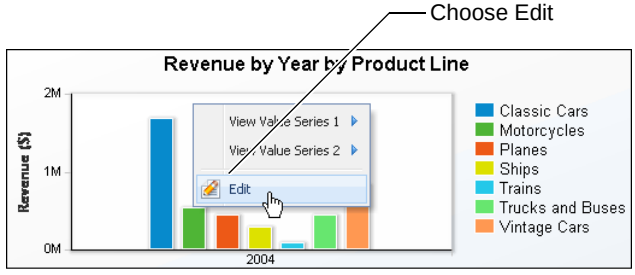


Figure 6-19 Choosing Edit

2 In Chart Builder—Data, choose Type.

3 In Chart Builder—Type, select a chart type. For example, Figure 6-20 shows Bar Chart selected. Choose OK.

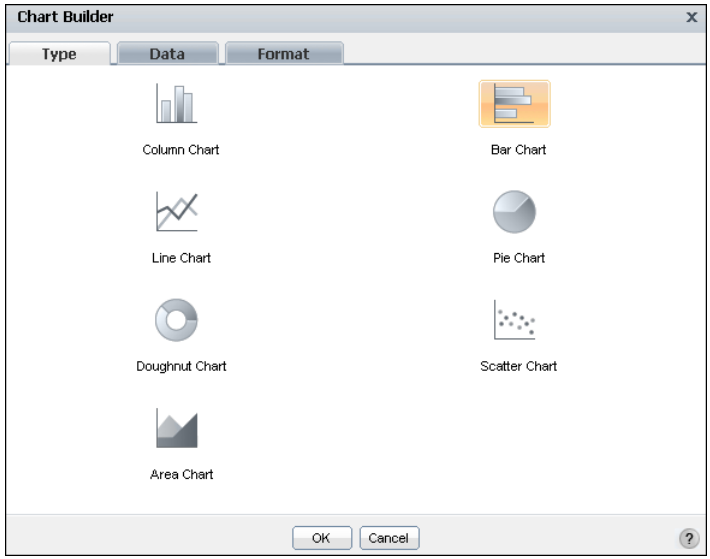


Figure 6-20 Selecting the Bar Chart type

Choose OK.

The chart display changes. Figure 6-21 shows a bar chart.

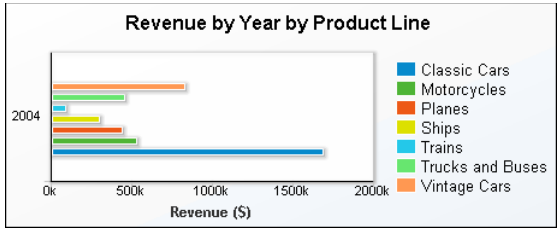


Figure 6-21 Displaying a bar chart

Selecting data for a chart

A chart shows the relationship between sets of values called series. There are two types of series: value and category. A value series contains numeric values, such as sales totals and salaries. These values determine, for example, the height of a column in a column chart or the size of a sector in a pie chart. For charts that use axes to display data, value series values appear on the *y*-axis.

A category series determines how the values are grouped, for example, by year, by country, or by product line. For charts that use axes, category series values appear along the *x*-axis. For example, Figure 6-22 shows a column chart, displaying 2004 category series values.

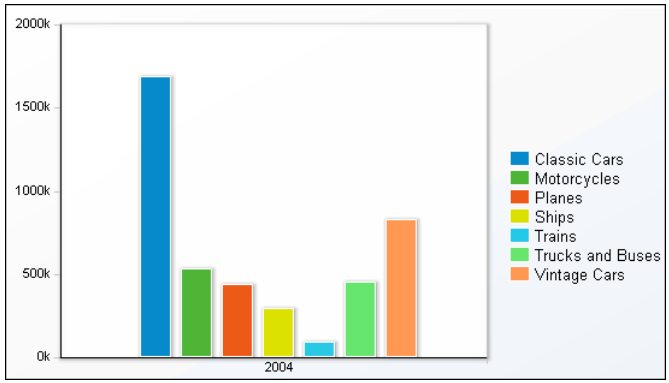


Figure 6-22 Displaying a column chart

For all chart types, you must select one dimension as the category series and at least one measure as the value series. You can select two dimensions to display two value series. The column chart in Figure 6-23 displays two value series, total revenue and profit. Then, depending on the cross-tab data that a chart uses, you can group and aggregate the values to customize the chart's appearance.

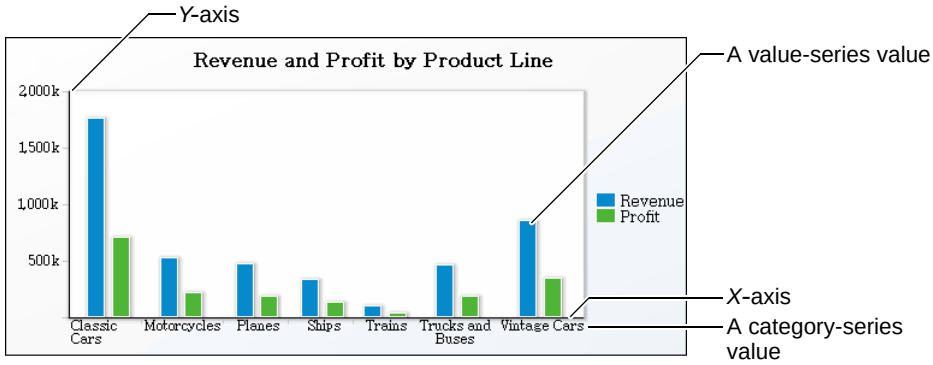


Figure 6-23 Parts of a chart

The following sections describe the tasks you complete to select data for a chart. The tasks differ depending on the chart type you select.

Selecting data for an area, bar, column, line, or scatter chart

To customize an area, bar, column, line, or scatter chart, you can change the following values using Chart Builder—Data. Figure 6-24 displays values for a chart using the cross-tab values in the sample report document, Crosstab Sample Revenue.rptdocument.

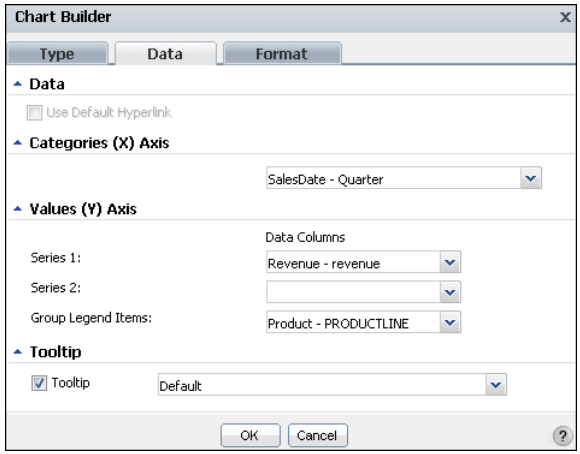


Figure 6-24 Specifying data values in Chart Builder—Data

- In Data, you can select Use Default Hyperlink if it is available. If you select this option, you can hover the pointer over a legend item to highlight the corresponding item in the chart.
- In Categories (*X* Axis):

  From the items in the list, select which category to display on the *x*-axis. For example, the sample chart can display values for the product-line series for the year, for the four quarters of the year, for the twelve months of the year, or for each product line with no time-period grouping. Figure 6-24 displays the selection of SalesDate - Quarter.
- In Values (*Y* Axis):
  - For Series 1, select a series. For the sample column chart, only the Revenue - revenue value is available.
  - For Series 2, select a series. For the sample column chart, only the Revenue - revenue value is available, so this field is blank.
  - For Group Legend Items, select which values to display in the legend, for example, Product - PRODUCTLINE. Select None to hide the legend.
- In Tooltip:

  From the available items in the list, select which value to display in a tooltip when you hover the pointer over an item in the chart. In the sample chart, for example, the default values that appear when the pointer hovers over a chart column are the category name, *x*-axis data value, and *y*-axis data value for the column. You can change the value to display a different value, such as Category Data, Value Series Name, or Value Data.

Selecting data for a doughnut or pie chart

To customize a doughnut or pie chart, you can change the following values using Chart Builder—Data. Figure 6-25 displays values for a chart using the cross-tab values in the sample report document, Crosstab Sample Revenue.rptdocument.

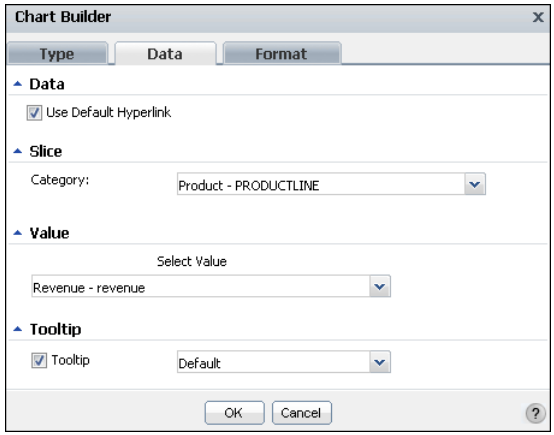


Figure 6-25 Specifying data values in Chart Builder—Data

- In Data, you can select Use Default Hyperlink if it is available. If you select this option, you can hover the pointer over a legend item to highlight a corresponding item in the chart.
- In Slice:

  From the items in the list, select which category to display as a slice, or segment, of the pie chart. For example, the sample chart can display revenue values for the twelve months of the year, the four quarters of the year, the entire year, or for each product line. Figure 6-25 displays the selection of Product - PRODUCTLINE.
- In Value:

  For Select Value, select a value. For the sample chart, only Revenue - revenue value is available.
- In Tooltip:

  From the available items in the list, select which value to display in a tooltip when you hover the pointer over an item in the chart. In the sample chart, for example, the default values that appear when the pointer hovers over a chart column are the category name and data value. You can change the value to a different value, such as Category Data, Value Series Name, or Value Data.

Selecting a data series using a context menu

For a cross tab that displays more than one data series on the *y*-axis, Data Analyzer enables you to easily select a series to display on the *y*-axis. For

example, Figure 6-26 shows a cross tab that displays revenue and customer count data series in columns. Figure 6-27 displays the revenue data series by quarter in a chart.

	PRODUCTLINE	Planes		Ships		Trains	
Year	Quarter	revenue	CustomerCount	revenue	CustomerCount	revenue	CustomerCount
2004	1	$65,159	24	$66,763	23	$21,029	8
	2	$69,780	24	$30,719	11	$4,862	2
	3	$105,974	39	$66,859	27	$21,728	9
	4	$197,342	70	$128,254	48	$39,278	18

Figure 6-26 Displaying two data series in a cross tab

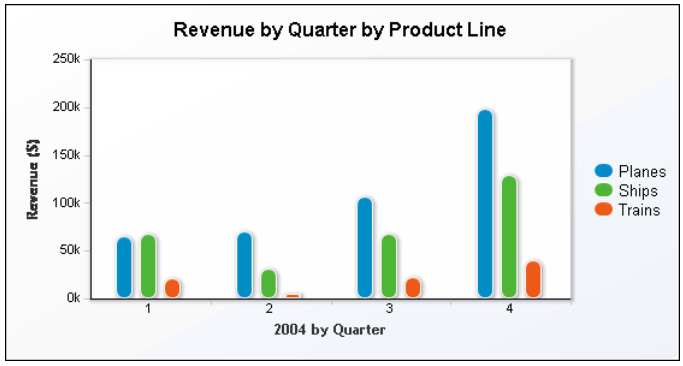


Figure 6-27 Displaying the revenue data series by quarter in a chart

To select a different data series to display in the chart, right-click the chart to view the available data series. For example, Figure 6-28 shows selecting the customer count data series.

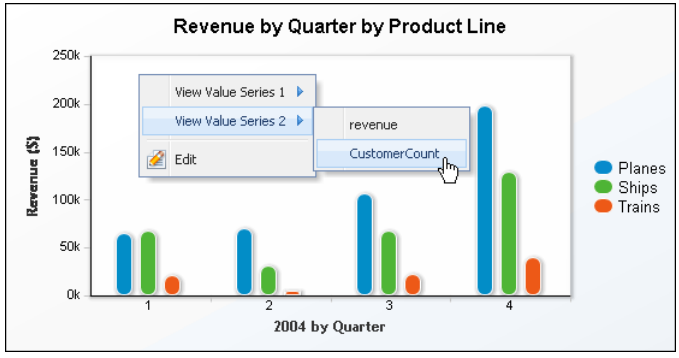


Figure 6-28 Choosing to display the Customer Count data series in a chart

Figure 6-29 shows the chart displaying the customer count data series.

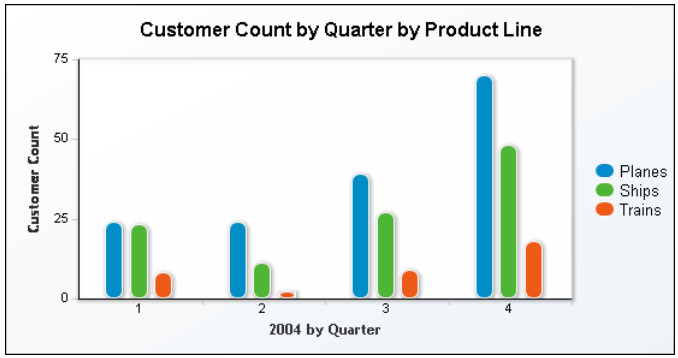


Figure 6-29 Displaying the Customer Count data series in a chart

Formatting a chart

When you display a chart and use the default formatting options, the chart type and the data you selected determine the basic chart appearance. You can enhance the chart by providing text for the chart title, *x*-axis title, and *y*-axis title, and by changing the size or position of the axis labels. You can also change the font, size, and color for text.

To change the appearance of a chart, change the option settings in Chart Builder—Format. Figure 6-30 shows Chart Builder—Format, displaying the default options settings for a column chart. The options that appear differ depending on the chart type. The following sections describe the options.

Editing titles

By default, every chart displays a title using the following cross-tab values and syntax:

```
<measure name> by <row dimension name>, by <column dimension name>
```

where <measure name>, <row dimension name>, and <column dimension name> are character strings that match the values in the structure pane for Measures, Rows, and Columns, respectively.

To change the chart title, deselect Auto, and type a title in Title.

If a chart has axes, the chart can display an *x*-axis title and a *y*-axis title. To edit these titles, on Chart Builder—Format, type new titles in the Title text boxes in Categories (*X* Axis) and Values (*Y* Axis), respectively. If you do not want to display any titles because the data is self-explanatory, delete the text in the text boxes.

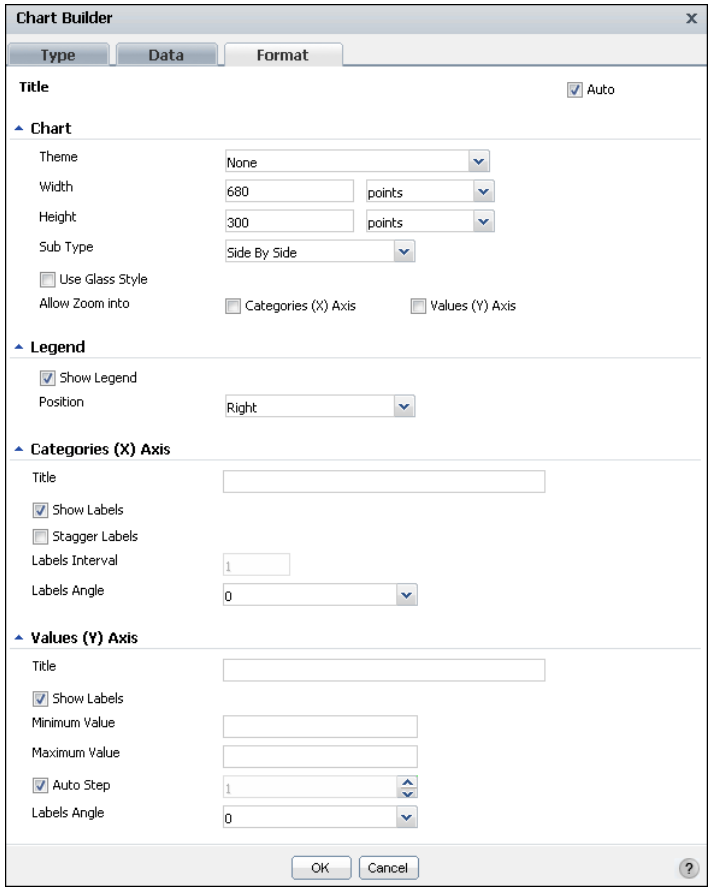


Figure 6-30 Chart Builder—Format, displaying the default options for a column or bar chart

Selecting a theme

A chart theme applies formatting to elements in a chart. For example, for a chart title and axis titles, a theme can specify a font, its size, and whether it is bold, italic, or plain. Also, a theme can specify a line thickness and type for a chart border and a background color for the chart. If a developer provides a theme to apply to a chart, you can select a theme name from a list to apply it. To remove an applied theme, select None from the list.

Changing the size of a chart

You can change a chart's width and height. If a chart looks too big, you can reduce its width, height, or both. For example, a pie chart that displays few sectors can

look oversized. Conversely, increase the size of a chart if items in the chart look too crowded. For example, if a column chart displays many columns, and many of the *x*-axis labels do not appear, you can start by increasing the width of the chart to see if all the items fit.

Changing the chart subtype

Bar and column charts support the following subtypes: side by side, stacked, and percent stacked. Area charts support the following subtypes: overlay, stacked, and percent stacked. Subtypes are not available for a doughnut, line, pie, or scatter chart.

Using glass style for a bar or column chart

For a bar or column chart, you can specify using the display option, glass style. The glass style option applies round corners to a bar or column in a chart. The glass style option is not available for area, doughnut, line, pie, or scatter charts.

Changing the inner radius for a doughnut chart

The inner radius, the doughnut hole, for a doughnut chart is set to 25% by default. To change the size of the inner radius, deselect Auto Inner Radius and then specify a percentage between 0 and 100.

Changing the font

You can change the font, size, and color for text that appears in the chart, including axis labels, axis values, chart title, legend items, *x*-axis title, and *y*-axis title. The default setting for font, size, and color is Auto, which enables Data Analyzer to apply the font, size, and color settings from a theme, if you select one. If you select a settings different from Auto, the settings you select apply.

Changing the position of the legend

By default, a legend appears at the right side of a chart. You can change the position of the legend so that it appears below the chart. If a chart is too wide, positioning the legend below the chart saves space horizontally. To reposition a legend, select Below or Right. To hide the legend, deselect Show Legend.

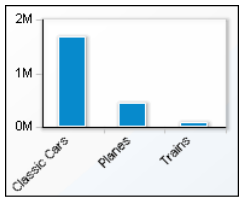
Formatting labels to fit on the *x*-axis

A chart that displays numerous category values sometimes cannot fit all the values on the *x*-axis. Techniques to fit labels on the *x*-axis include rotating the labels, staggering the labels, and displaying the labels at set intervals. You can also use a combination of these techniques. These label-formatting options are not available for doughnut and pie charts.

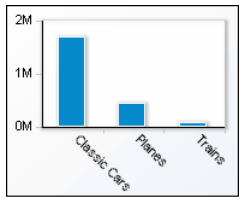
Setting *x*-axis labels angle

You can display labels at an angle by specifying the number of degrees. In Chart Builder—Format, in Labels Angle, select a value, or type the number of degrees to specify the angle. To rotate labels in a clockwise direction, use a negative number. To rotate labels in a counterclockwise direction, use a positive number.
Figure 6-31 shows four charts, each with Labels Angle set to a different value.

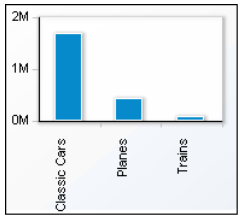
Labels Angle = 45



Labels Angle = -45



Labels Angle = 90



Labels Angle = -90

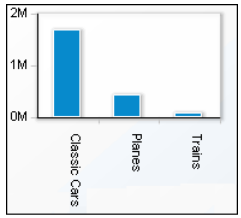
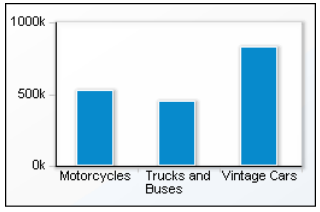


Figure 6-31 Charts using different values for the Labels Angle option

Staggering *x*-axis labels

In Chart Builder—Format, you can select the Stagger Labels option to place the labels in a staggered arrangement, as shown in Figure 6-32. The chart on the left shows the results of staggering, but not rotating, the *x*-axis labels. The chart on the right shows the results of staggering and rotating the labels 30 degrees.



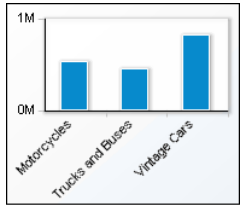


Figure 6-32 Charts using different values for the Stagger Labels and Labels Angle options

Displaying *x*-axis labels by interval

By default, a chart displays every category value on the *x*-axis, unless the label does not fit in the space allocated evenly to each category value. As described in the previous sections, to make all the labels fit, you can display the labels at an angle or stagger the labels. These techniques, however, can make the *x*-axis look crowded. If it is not essential to display every category value, you can specify that the *x*-axis display alternate values, or every third value, and so on.

In Chart Builder—Format, the Labels Interval option is set to 1 by default, which means every value appears. Set Labels Interval to a different number to specify the interval at which values appear. For example, to display alternate values, set Labels Interval to 2.

Changing the number and range of values on the *y*-axis

The number and range of values appearing on the *y*-axis depends on several factors, including the smallest series value, the largest series value, the height of the chart, and the amount of vertical space chart items occupy. Compare the charts in Figure 6-33. Both charts present the same data, but the number of *y*-axis values are different. In the chart on the left, the *y*-axis displays three values, ranging from 0K to 200K. In the chart on the right, the *y*-axis displays two values ranging from 0K to 200K. Both charts have the same height value, so in these examples, the different number of *y*-axis values is a result of the different amounts of space the *x*-axis labels occupy. The *y*-axis values-formatting options are not available for doughnut and pie charts.

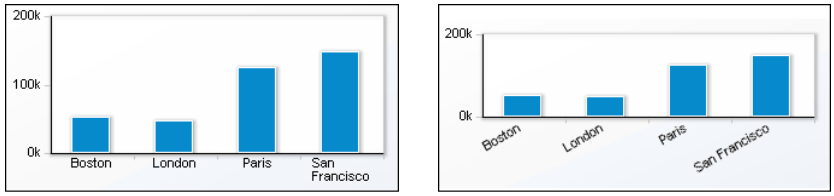


Figure 6-33 Charts displaying a different number of values on the *y*-axis

You can control the range of values that appear on the *y*-axis. In Chart Builder—Format, in Values (*Y* Axis), you can set the following options:

- Minimum Value. Type a number that represents the lowest value to display on the *y*-axis. This number appears at the bottom of the *y*-axis.
- Maximum Value. Type a number that represents the highest value to display on the *y*-axis. This number appears at the top of the *y*-axis.
- Auto Step. Deselect Auto Step, and type a number that represents the increment between each value.

How to format a chart

1 While viewing a chart in Data Analyzer, right-click the chart area, and choose Edit.

2 In Chart Builder—Data, choose Format.

3 In Chart Builder—Format, specify the titles and options, then choose OK.

For example, Figure 6-34 show format selections for a sample bar chart. Notice for this chart, the Categories (*X* Axis) Title appears on the vertical axis on the left, and the Values (*Y* Axis) Title appears on the horizontal axis at the bottom, which are reversed from the positions for a column chart.

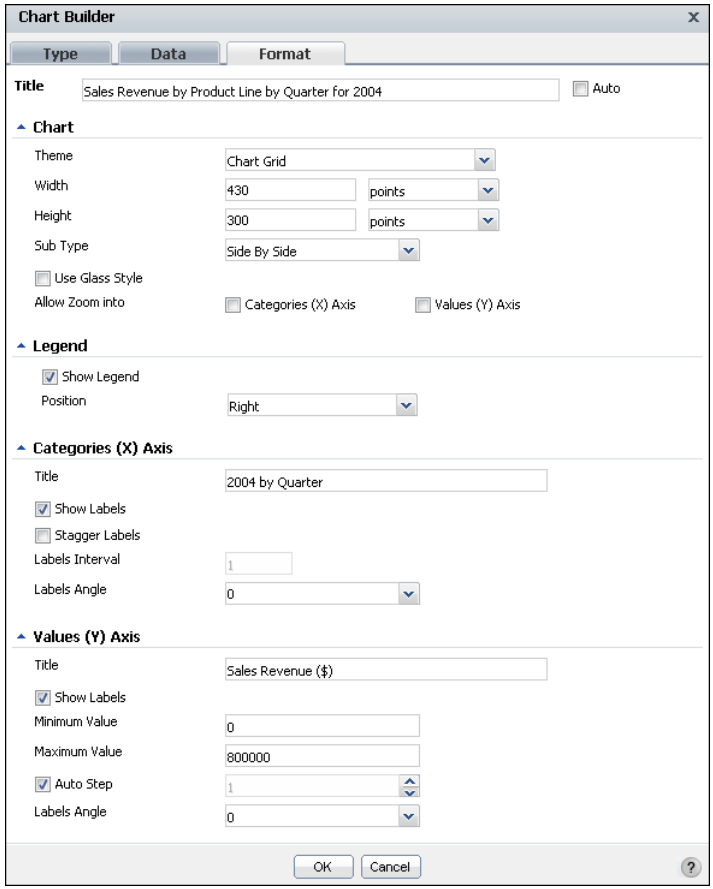


Figure 6-34 Selecting data on Chart Builder—Data

The chart updates, reflecting your changes. Figure 6-35 shows a bar chart with the formatting applied.

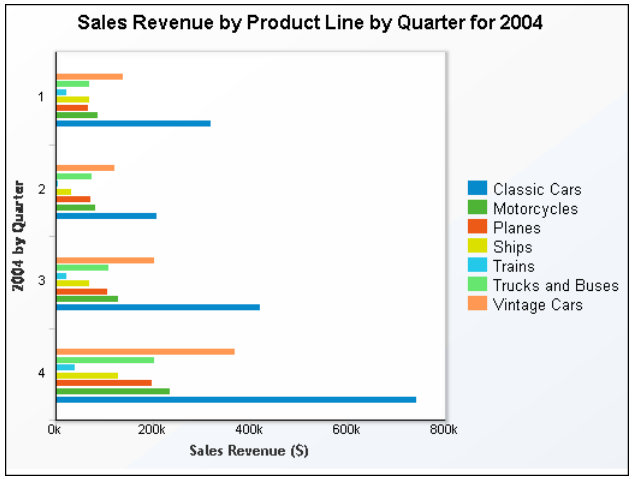


Figure 6-35 Viewing a formatted bar chart

How to change chart appearance using a theme

If a developer provides a theme to apply to a chart, the library file that contains the theme typically resides in the Resources folder in an Encyclopedia volume, for example:

```
/Resources/ThemesReportItems.rptlibrary
```

To apply a theme to a chart, complete the following tasks:

1. Using Data Analyzer, view a chart.
2. Choose Theme.
3. In Theme, choose a theme name. For example, choose Chart Gray, as shown in Figure 6-36.

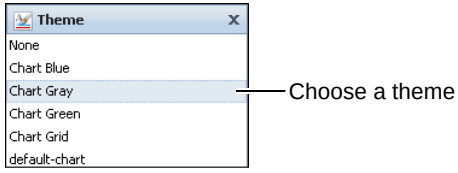


Figure 6-36 Choosing ThemesReportItems.Chart Gray theme

The theme applies to the chart. This Chart Gray theme displays light yellow and blue columns on a gray background color, as shown in Figure 6-37.

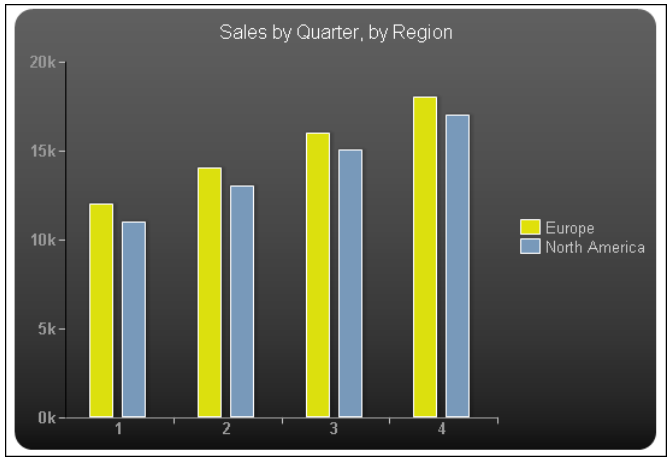


Figure 6-37 Viewing a chart with the applied theme

Chapter

7

Exporting content

This chapter contains the following topics:

- About exporting content
- Exporting content

About exporting content

When you export content to another format, each emitter, such as the PDF emitter or the Excel emitter, provides several options you can select to maintain the existing properties of the exported content, enabling a user to easily perform additional analysis on the exported output. For example, when you export a cross tab to Excel, the Excel emitter supports exporting the content as a pivot table. This feature is specifically useful for sharing content with users who do not have access to Data Analyzer. Those users can then analyze the output using Excel. This chapter describes the options available when exporting content using Data Analyzer.

Exporting content

Data Analyzer supports exporting content to the following formats, creating files that can be used by applications other than Data Analyzer:

- Adobe PDF (.pdf)
- Adobe PostScript (.ps)
- Advanced Function Printing (.afp)
- Microsoft Excel (.xls)
- Microsoft Excel (.xlsx)
- Microsoft PowerPoint (.ppt)
- Microsoft PowerPoint (.pptx)
- Microsoft Word (.doc)
- Microsoft Word (.docx)

The following sections describe the available formats and the options available when exporting content to each format.

Exporting content to Adobe PDF

Data Analyzer supports exporting content to Adobe PDF. The PDF emitter in Data Analyzer provides consistent layout and pagination properties between PDF and HTML output formats. The PDF emitter also produces a high quality PDF file with a small file size. Also, it provides high quality images for charts and SVG (scalable vector graphics) format in PDF output. The following section describes the available customization options.

Data Analyzer also supports exporting Flash charts to PDF format. When exporting Flash charts to PDF format, Data Analyzer supports embedding the

exported chart in the PDF file, enabling a user to interact with it. When exported to PDF, Flash charts retain their animation properties.

To enable printing an exported Flash chart, the embedded file in the PDF document must be viewed for it to appear on the printed page. For multipage content with Flash content on several pages, view each page, so that the embedded Flash content is loaded, and then print the required pages for the Flash content to be visible in the printed output. If you do not view the pages before printing the file, the Flash content is not visible in the printed output for the pages that were not viewed.

Data Analyzer supports setting the following options for the exported PDF file:

- Page range
  To export all pages, leave the page range blank, which is the default setting. For multipage content, you can specify a page range or specify the page numbers to export.
- Page style
  Specify one of the following page styles:
  - Auto
    When you choose Auto, the default option, Data Analyzer lays out the data such that the content fits the width of the PDF page. If the content uses headers and footers, each header and footer appears in the appropriate location. Because the PDF emitter optimizes content in terms of font and space, a single page of the content often appears on multiple pages in the PDF file. When you use the Auto option, existing pagination properties in the content are not retained in the PDF file, but the PDF output is paginated.
  - Actual Size
    This option retains existing pagination properties from the original content. The font size in the printed content is often significantly smaller than in the original content, to allow the content to fit within specified page boundaries. After you send the document to a printer, further modify options on the printer dialog box as needed, so that the printed content is legible.
  - Fit to Whole Page
    This option retains the existing pagination properties from the original content in the PDF output. Data Analyzer adjusts content, such as fonts and images, to fit each current content page on each page in the PDF output.
- BIDI processing
  If the content contains languages that are read from left to right, such as English or French, and those that are read from right to left, such as Hebrew or Arabic, the text from both languages can be presented in the same content in

the appropriate direction. This text is called bidirectional (BIDI) text. Select BIDI processing if you have content in two or more such languages and need the data to be correctly presented in the PDF or PostScript output.

- Text wrapping
  Specify whether to wrap text. Selecting this option can minimize the need for horizontal scrolling to view the exported PDF.
- Text hyphenation
  Specify whether to hyphenate text that is wider than a cell.
- Font substitution
  Select this option to substitute any fonts that the application cannot interpret. Font substitution is the process of using one font in place of another when the original font is not available. The classification of fonts into families enables the process of font substitution. For example, it ensures that only a sans serif font replaces another sans serif font.
- Embedded font
  Select this option to embed in the exported output a font the document uses.
- Chart DPI
  Specify the output dpi (dots per inch) for charts. To view the exported chart in higher resolution, increase the dpi value, which can result in a larger output file size. The default value is 192 dpi.
- Render chart as vector graphics
  Select for existing charts in SVG (scalable vector graphic) format. This option for SVG images improves the resolution of the exported image, while maintaining a smaller file size.

How to export content to Adobe PDF

1. Choose Export Content.
2. In Export Content, in Export Format, select PDF, as shown in Figure 7-1.
3. In Page Settings, specify which of the following options to apply to the exported PDF, as shown in Figure 7-1:
   - Page range
   - Page style
     Specify one of the following page styles for the exported file:
     - Auto
     - Actual Size
     - Fit to Whole Page
   - BIDI processing

- Text wrapping
- Text hyphenation
- Font substitution
- Embedded font
- Chart DPI
- Render chart as vector graphics

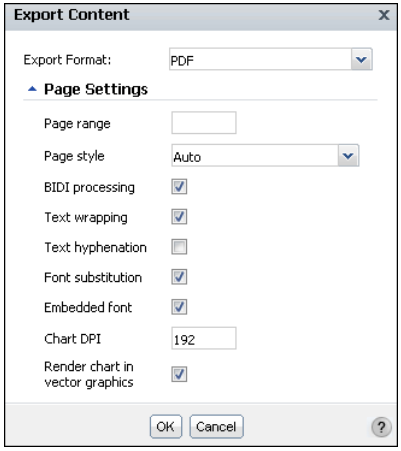


Figure 7-1 Selecting PDF options in Export Content

Choose OK.

File Download appears, as shown in Figure 7-2. Choose Open or Save.

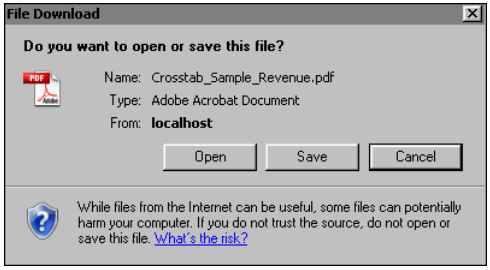


Figure 7-2 Exporting content to PDF

If you choose Open, the content appears as a PDF document.

Exporting content to Adobe PostScript format

When you export content to Adobe PostScript format, the PostScript emitter displays the content in the output file, almost exactly the way it appears when

printed. The PostScript emitter provides the same options as the PDF emitter, with the following exceptions:

- The option to export SVG images as vector graphics is not supported.
- The option to embed fonts from the content being exported is not supported.
- The option to hyphenate text is not supported.

How to export content to Adobe PostScript format

1 Choose Export Content.

2 In Export Content, in Export Format, select PostScript, as shown in Figure 7-3.

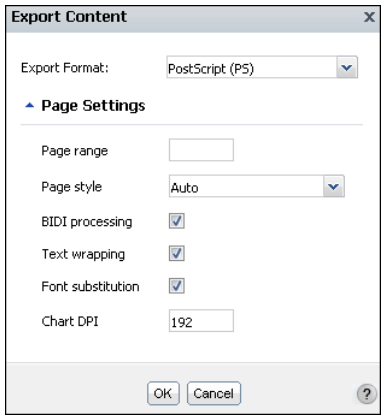


Figure 7-3 Selecting PostScript format options in Export Content

3 In Page Settings, specify which of the following options to apply to the exported PDF:

- Page range
- Page style
  Specify one of the following page styles for the exported file:
  - Auto
  - Actual Size
  - Fit to Whole Page
- BIDI processing
- Text wrapping
- Font substitution
- Chart DPI

Choose OK.

4 File Download appears. Choose Open or Save.

When you open the file, the content appears in the specified format.

Exporting content to Advanced Function Printing format

IBM Advanced Function Printing (.afp) format is a print stream technology that supports high volume printing. AFP format generally is not printed to a desktop printer.

Data Analyzer supports exporting content to AFP format using the AFP emitter. The AFP emitter supports setting the following layout and resolution options for the exported AFP file:

- Page range
  To export all pages, leave the page range blank, which is the default setting. For multipage content, you can specify a page range or specify the page numbers to export.
- Chart DPI
  If exporting a chart, specify the export resolution dpi (dots per inch). If you do not specify a value, Data Analyzer exports the chart using the value 192 dpi.
- Page DPI
  Select a value from the list. If you do not specify a value, Data Analyzer uses the value 240 dpi.
- Plex Mode
  This option defines on which sides of a page to print. Specify one of the following plex modes for the exported file:
  - Simplex
    Prints the content on one side of each page.
  - Duplex
    Prints the content on both sides of each page.
  - Tumble
    Selecting this option prints the file as a continuous list. To navigate a printed document that uses this option, each page flips over longitudinally such that the end of one page becomes the starting position for the next page.

The AFP emitter provides several color options to optimize the quality of the exported images, depending on the native image format supported by a specific printer. You can select the following color options:

- Allow black-and-white images
  Selecting this option exports existing black-and-white images.

- Allow single-color images
  Selecting this option exports existing single-color images.
- Allow grayscale images
  Selecting this option exports existing grayscale images.
- Allow full color RGB images
  Selecting this option exports existing full-color RGB images.
- Allow color CMYK images
  Selecting this option exports existing full-color CMYK images.

The AFP emitter's available image format options enable a user to closely control how the AFP emitter renders images in the exported output. The AFP emitter transcodes images to the closest format that corresponds to a user's selected options. To preview the exported output before sending it to a printer, download the AFP Viewer plug-in, and view the resulting output in your web browser.

How to export content to AFP format

1 Choose Export Content.

2 In Export Content, in Export Format, select Advanced Function Printing (AFP), as shown in Figure 7-4.

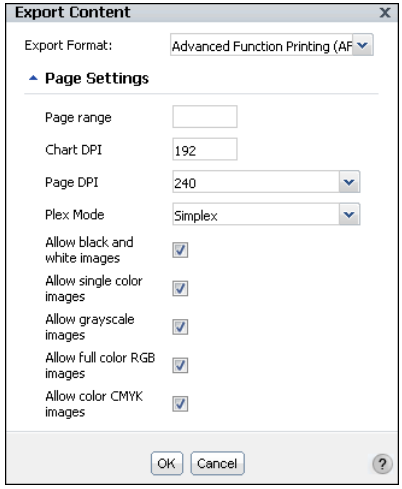


Figure 7-4 Selecting AFP format options in Export Content

3 In Page Settings, specify which of the following options to apply to the exported AFP file:

- Page range
- Chart DPI

- Page DPI
- Plex Mode
  Specify one of the following plex modes for the exported file:
  - Simplex
  - Duplex
  - Tumble
- Allow black and white images
- Allow single color images
- Allow grayscale images
- Allow full color RGB images
- Allow color CMYK images

Choose OK.

4 File Download appears. Choose Open or Save.

When you open the file, the content appears in the AFP viewer.

Exporting content to Microsoft Excel format

Data Analyzer supports exporting a cross tab or a chart to Microsoft Excel (.xls) or Excel (.xlsx) format. The exported content in the Excel spreadsheet has the same layout as in the HTML page in Data Analyzer. The Excel spreadsheet supports the following Data Analyzer content:

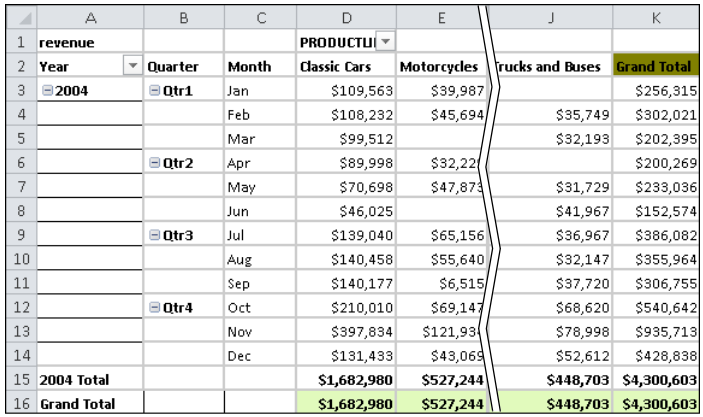
- A Data Analyzer cross tab exports to a pivot table in Excel.
- Excel maintains the cross-tab formulas in computed columns and aggregations.
- Data Analyzer regular charts and Flash charts export to Excel as editable Excel charts.

Data Analyzer supports setting the following options for the exported XLS or XLSX spreadsheet:

- Page range
  To export all pages, leave the page range blank, which is the default setting. For multipage content, exported to Excel (.xlsx) format, you can specify a page range or specify the page numbers to export. Page range is not supported for content exported to Excel (.xls) format.
- Text wrapping
  Specify whether to wrap text in spreadsheet cells. Selecting this option can minimize the need for horizontal scrolling to view the exported spreadsheet.

- Enable pivot table

  Select this option to support Excel displaying a cross tab as a pivot table, providing the user with the ability to further analyze the data. Figure 7-5 shows a cross tab exported to a pivot table in Excel.



	A	B	C	D	E	J	K
1	revenue			PRODUCTLI			
2	Year	Quarter	Month	Classic Cars	Motorcycles	Trucks and Buses	Grand Total
3	2004	Qtr1	Jan	$109,563	$39,987		$256,315
4			Feb	$108,232	$45,694	$35,749	$302,021
5			Mar	$99,512		$32,193	$202,395
6		Qtr2	Apr	$89,998	$32,22		$200,269
7			May	$70,698	$47,87	$31,729	$233,036
8			Jun	$46,025		$41,967	$152,574
9		Qtr3	Jul	$139,040	$65,156	$36,967	$386,082
10			Aug	$140,458	$55,640	$32,147	$355,964
11			Sep	$140,177	$6,515	$37,720	$306,755
12		Qtr4	Oct	$210,010	$69,147	$68,620	$540,642
13			Nov	$397,834	$121,93	$78,998	$935,713
14			Dec	$131,433	$43,069	$52,612	$428,838
15	2004 Total			$1,682,980	$527,244	$448,703	$4,300,603
16	Grand Total			$1,682,980	$527,244	$448,703	$4,300,603

Figure 7-5 Displaying an exported cross tab as a pivot table in Excel

- Auto adjustment for pivot table
- Export charts as images

  If you select this option, Excel does not support your editing the chart. To enable a user to edit the chart in Excel, deselect this option.
- Enable live formulas

  Select this option to enable exporting a formula, such as a computed measure calculation or an aggregation, to Excel.
- Chart DPI

  Specify the output dpi (dots per inch) for charts. To view the exported chart image in higher resolution, increase the dpi value, which can result in a larger output file size. The default value is 192 dpi.
- Hide grid lines

  Select this option to hide grid lines in the Excel spreadsheet. Hiding grid lines changes the appearance of the Excel spreadsheet to more closely resemble the cross tab viewed in Data Analyzer than in a spreadsheet.
- Output to multiple sheets

  To view output on multiple sheets, select this option. Selecting this option does not maintain pagination properties when exporting multipage content.

How to export content to Microsoft Excel format

1 Choose Export Content.

2 In Export Content, in Export Format, select Excel (XLS), as shown in Figure 7-6. Alternatively, select Excel (XLSX).

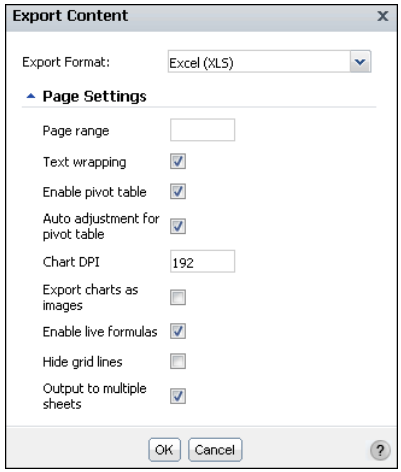


Figure 7-6 Selecting Excel format options in Export Content

3 In Page Settings, specify which of the following options to apply to the exported Excel spreadsheet, as shown in Figure 7-6:

- Page range
- Text wrapping
- Enable pivot table
- Auto adjustment for pivot table
- Chart DPI
- Export charts as images
- Enable live formulas
- Hide grid lines
- Output to multiple sheets

Choose OK.

4 In File Download, choose one of the following options:

- Choose Open to display the chart or cross-tab content as an Excel worksheet (.xls) or Excel worksheet (.xlsx) file.
- Choose Save to provide a file name and location to which to save the chart or cross-tab content as an Excel worksheet (.xls) or Excel (.xlsx) file. Then, you can open the file.

When you open the file, the content appears in Excel.

Exporting content to Microsoft PowerPoint format

Data Analyzer supports exporting content to PowerPoint (PPT) and PowerPoint (PPTX) formats. To export content to either PowerPoint version, specify the following information in Export Content:

- Page range
  To export all pages, leave the page range blank, which is the default setting. For multipage content, you can specify a page range or page numbers to export.
- Page style
  Specify one of the following page styles:
  - Auto
    When you choose Auto, the default option, Data Analyzer lays out the data such that the content fits the width of the PowerPoint slide. If the content uses headers and footers, each header and footer appears in the appropriate location. Because the PowerPoint emitter optimizes content in terms of font and space, a single page of the content often appears on multiple slides in the PowerPoint file. When you use the Auto option, the PowerPoint file does not retain existing pagination properties in the content.
  - Actual Size
    This option retains existing pagination properties from the original content. The font size in the printed content is often significantly smaller than in the original content to allow the content to fit within specified slide boundaries. After you send the document to a printer, further modify options on the printer dialog box as needed, so the printed content is legible.
  - Fit to Whole Page
    This option retains the existing pagination properties from the original content in the PowerPoint output. Data Analyzer adjusts content, such as fonts and images, to fit each current content page on each page in the PowerPoint output.
- BIDI processing
  If the content contains languages that are read from left to right, such as English or French, and those that are read from right to left, such as Hebrew or Arabic, the text from both languages can be presented in the same content in the appropriate direction. This text is called bidirectional (BIDI) text. Select BIDI processing if you have content in two or more such languages and need to present the data in the PowerPoint output.
- Text wrapping
  Specify whether to wrap text.

- Font substitution

  Select this option to substitute any fonts that the application cannot interpret. Font substitution is the process of using one font in place of another when the original font is not available. The classification of fonts into families enables the process of font substitution. For example, it ensures that only a sans serif font replaces another sans serif font.

- Chart DPI

  Specify the output dpi (dots per inch) for charts. To view the exported chart in higher resolution, increase the dpi value, which can result in a larger output file size. The default value is 192 dpi.

How to export content to PowerPoint format

1 Choose Export Content.

2 In Export Content, in Export Format, select PowerPoint (PPT) or PowerPoint (PPTX).

Figure 7-7 shows selecting PowerPoint.

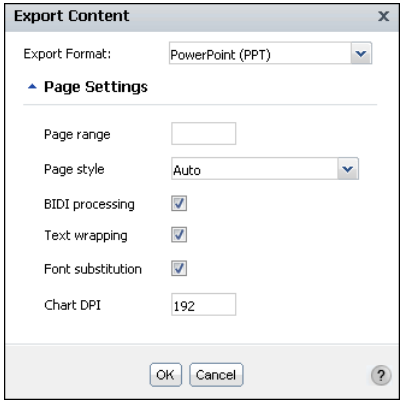


Figure 7-7 Selecting PowerPoint format options in Export Content

3 In Page Settings, specify the following information:

- Page range
- Page style
- Enable BIDI processing
- Enable Text Wrapping
- Enable Font substitution
- Chart DPI

Choose OK.

4 File Download appears. Choose Open or Save.

When you open the file, the content appears in the PowerPoint format you specified.

Exporting content to Microsoft Word format

Data Analyzer supports exporting content to Microsoft Word (DOC) and Word (DOCX) format. To export content to either version of Word, in Export Content, specify the following information:

- Page range
  To export all pages, leave the page range blank, which is the default setting. For multipage content, you can specify a page range or specify the page numbers to export.
- Chart DPI
  Specify the output dpi (dots per inch) for charts. To view the exported chart in higher resolution, increase the dpi value, which can result in a larger output file size. The default value is 192 dpi.

How to export content to Word format

1 Choose Export Content.

2 In Export Content, in Export Format, select Word (DOC) or Word (DOCX).

Figure 7-8 shows selecting Word (DOC).

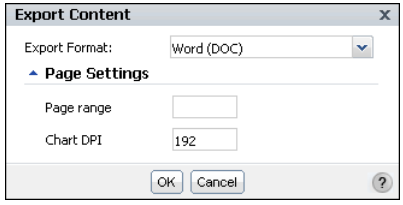


Figure 7-8 Selecting Word format options in Export Content

3 In Page Settings, specify the following options:

- Page range
- Chart DPI

Choose OK.

4 File Download appears. Choose Open or Save.

When you open the file, the content appears in the Word format you specified.

Chapter

8

Customizing Data Analyzer

This chapter contains the following topics:

- About customizing Data Analyzer
- Customizing page styles for Data Analyzer
- Limiting the number of levels for drilling up or down

About customizing Data Analyzer

The Data Analyzer user interface supports customization, including specifying the font attributes, such as font, color, and size, that appear in dialog boxes and in the cross tab. To customize the Data Analyzer user interface, a developer modifies a cascading style sheet (.css) file, which specifies the attributes and properties that apply to Data Analyzer. Then, a system administrator copies the CSS file to the BIRT iServer file system, making the modifications available for display in Data Analyzer.

Data Analyzer also supports setting a parameter value that limits the number of level values that appear in the Drill Up or Drill Down dialog box.

Customizing page styles for Data Analyzer

To customize the Data Analyzer user interface, modify the following CSS files:

- da.css
- default.css

Depending on your Actuate products installation, the da.css and default.css files are located in one of the following locations:

- For a typical installation on a Windows 7 Professional system where Information Console is installed with BIRT iServer, the default location is:

  ```
  C:\Program Files (x86)\Actuate11\iServer\servletcontainer
     \iportal\da\styles
  ```

- For a typical installation on a Windows 7 Professional system where Information Console is installed separately from BIRT iServer, the default location is:

  ```
  C:\Program Files (x86)\Actuate11\iPortal\iportal\da\styles
  ```

- For a typical installation on a Windows 2003 Server, Windows Vista, or Windows XP Professional system where Information Console is installed with BIRT iServer, the default location is:

  ```
  C:\Program Files\Actuate11\iServer\servletcontainer\iportal
     \da\styles
  ```

- For a typical installation on a Windows 2003 Server, Windows Vista, or Windows XP Professional system where Information Console is installed separately from BIRT iServer, the default location is:

  ```
  C:\Program Files\Actuate11\iPortal\iportal\da\styles
  ```

You can specify fonts and colors for styles in the CSS files. You can specify colors using several techniques in the CSS files. You can specify the color in any of the following ways:

- Using a color name, such as navy, yellow, or teal, as shown in the following example:

  ```
  color: Yellow;
  ```

- Using hexadecimal notation to set the amount of red, green, and blue to use in the color.

  ```
  #FFFF00
  ```

- Using decimal notation to set the amount of red, green, and blue to use in the color. In the customization web pages, fill in the value for red, green, and blue in the corresponding fields. In a CSS file, use a call to the rgb( ) method, as shown in the following example:

  ```
  color: rgb(156, 207, 255);
  ```

For more information about using cascading style sheets, access the following URL:

```
http://www.w3.org/Style/CSS
```

Limiting the number of levels for drilling up or down

To display a more manageable number of level items in the user interface and prevent a potential web browser freeze, you can configure a limit for the number of level items that appear in the Drill Up or Drill Down dialog box. The default value for the number of levels that can appear in the Drill Up or Drill Down dialog box is 2000. To change the setting, modify the MAX_DRILL_SIZE parameter value in the following file:

```
C:\Program Files\Actuate11\iServer\servletcontainer\iportal
   \WEB-INF\web.xml
```

Setting the MAX_DRILL_SIZE parameter value equal to or less than zero (0) removes the restriction on the number of level items that appear in the Drill Up or Drill Down dialog box. For more information about modifying web.xml, see *Information Console Developer Guide*.

Index

Symbols

^ operator 82
* operator 82
/ operator 82
\ (backslash) character 97
& operator 82
% OF COLUMN function 75
% OF DIFFERENCE function 76
% OF function 64, 75
% OF ROW function 76
% OF TOTAL function 76
% operator 82
+ operator 82
< operator 82
<> operator 82
= operator 82
> operator 82
>= operator 82
- operator 82

A

ABS function 77
absolute values 77
accessing
  cube view files 9
  data cubes 7
  data object store files 10, 11
  Information Console 7, 11
  Interactive Viewer 8
  sample cross-tab report 7
  sample XTabAnalyzer Viewer 12
  theme libraries 17, 123
Actual Size option (PDF emitter) 127
Actual Size option (PowerPoint emitter) 136
Actual size option (Print) 33
ADD function 77
Add Rule link 26
Add/Remove Attribute command 44, 45
Add/Remove Attribute dialog 45, 46
adding
  attributes 3, 43, 44
  charts 102, 110
  computed measures 60, 64, 65, 66, 72
  conditional formatting 23–26
  cross tabs 2
  data cubes 3
  data filters 87, 90, 92, 98
  dimensions 3, 36, 37, 38
  measures 3, 40, 41
  multiple formatting rules 25, 26
  page breaks 31
  themes 16, 17, 118, 123
  totals and subtotals 58
addition 77, 82
ADVANCED function 77
Advanced Function Printing formats. *See* AFP formats
AFP emitter 131, 132
AFP formats 131–133
aggregate data 3, 56
  See also summary data
aggregate functions 58
aggregation 3, 56–59, 113
alignment 16, 19, 28
Alignment command 19
Analyze command 8
analyzing data 3, 4, 12, 86, 126
AND operator 82
animation properties 127
Any Of operator 83
application programming interfaces 12
area chart subtypes 104
area charts 104
arithmetic operations 77, 78, 79, 82
ascending rank values 79
ascending sort order 48
attributes
  adding to cross tabs 43, 44
  adding to data cubes 3
  associating with dimensions 43
  deleting 45
  displaying 43
  filtering 90, 92
Auto option (PDF emitter) 127
Auto option (PowerPoint emitter) 136

Auto option (Print) 33
Auto Step property (charts) 121
Average function 58

B

background colors 16
backslash character (\) 97
bar charts 105
Between operator 24, 83
BIDI text 127, 136
bidirectional text 127, 136
BIRT Designer Professional
  accessing sample cross-tab report for 7
  applying themes and 17
  creating data cubes and 3
  displaying attributes and 43
  saving cross tabs and 28
BIRT Interactive Viewer
  accessing Data Analyzer and 7
  changing cross tabs and 28
  printing cross tabs and 32
  saving cross tabs and 28
  starting 8
BIRT iServer 7
BIRT Studio
  accessing sample cross-tab report for 7
  applying themes and 17
  saving cross tabs and 28
BIRT Viewer 7, 28
Boolean expressions 78, 82, 83
borders 16
Bottom N operator 83, 97
Bottom Percent operator 83, 97
buttons (toolbar) 5

C

calculated columns. *See* computed measures
calculated data 56, 60
  See also summary data
calculations 56, 60, 75
calendar 24, 95
cascading style sheets 140
Categories (*X* Axis) options 114, 115
category series (charts) 112, 119, 121
CEILING function 78
cells 22
Change Text command 21
changing
  chart labels 117, 119
  chart subtypes 119
  chart titles 117
  computed measures 66
  cross tabs 16, 28, 43
  font attributes 18
  numeric values 26
  text 21
  text alignment 19
  user interface 140
character patterns 84, 94, 97
character strings 22, 82
characters (wildcard) 97
Chart Builder 110, 122
Chart DPI property
  AFP output 131
  Excel output 134
  PostScript output 128
  PowerPoint output 137
  Word document output 138
chart subtypes 119
  See also specific subtype
chart themes 118
chart titles 117
chart types 103, 111, 113
charts
  applying themes to 118, 123
  changing data series for 116
  controlling range of values for 121
  creating 102, 110, 113
  displaying data and 113, 115, 121
  displaying multiple value series in 113, 115
  displaying values in 103
  exporting 128, 131, 134, 137, 138
  formatting 117, 119, 122
  hiding series values in 121
  overlapping multiple series in 104
  overlapping series in 109
  overlaying series in 104
  previewing 5
  printing 32
  removing labels in 117
  rendering as images 126, 134
  repositioning legends in 119

resizing 118
rotating labels in 120
selecting data for 112
showing percentages in 105, 106, 108
showing relationships in 108, 109
showing scientific or statistical data 110
showing side-by-side series in 106, 107
stacking series in 104, 106, 108
staggering labels in 120
viewing 6, 103, 110, 128
Classic Models.data file 11
color codes 141
color names 141
color options (exporting) 131
colors 16, 23, 141
column charts 103, 107
column headers 20
column headings 2, 45
columns
See also fields
adding computed measures to 64, 65, 66, 72
adding dimensions to 37
adding measures to 41
defining formatting rules and 25
displaying calculated data and 60, 83, 84
filtering data in 90, 95, 98
generating summary values for 56, 58
hiding 22
pivoting 46
removing dimensions from 38
removing measures from 42
restoring default formats for 27, 28
returning null values in 83
sorting values in 48
testing for null values in 83
comparison operators 24, 83, 87, 90, 92
comparisons
Boolean values and 78, 82, 83
date values and 95
filtering data and 87, 90, 92
formatting data and 24
literal values and 24
plotting data and 103
string patterns and 97
Computed Measure dialog 61, 64, 65, 66, 72
computed measures
changing 66
creating 64, 65, 66, 72
displaying calculated data and 60
generating values for 60, 65, 72, 75, 82
concatenation 82
conditional expressions 78, 82, 83
conditional formatting 23–26, 83
Conditional Formatting command 25
Conditional Formatting dialog 23, 25, 26
conditional formatting rules 23, 24, 25, 26
conditions
calculating values and 62
comparing date-and-time values 95
comparing string patterns 97
excluding null values and 95
filtering data and 83, 86, 94, 97, 98
formatting data and 23, 25, 83
removing 26
testing multiple 82, 83
content
exporting 126–138
printing as HTML 32
rendering to AFP formats 131–133
rendering to Excel 133–135
rendering to PDF 33, 127
rendering to PostScript 129
rendering to PowerPoint 136–138
context menus 6, 17
Count function 58
Count Value function 58
creating
charts 102, 110, 113
computed measures 60, 64, 65, 66, 72
conditional formatting rules 23, 24, 25
cross tabs 2, 3
data cubes 3
data hierarchies 3, 36
filter conditions 83, 90, 92, 98
filters 87, 90, 92, 98
totals and subtotals 58
criteria. *See* conditions
cross tabs
adding attributes to 43, 44
adding dimensions 36, 37, 38
adding measures 40, 41
analyzing data and 4, 12

cross tabs *(continued)*
applying themes to 16, 17
calculating values in 56, 60, 75, 81
changing 16, 28, 43
creating 2
displaying details about 18
displaying options for 6
drilling through 49, 52, 141
exporting content 126–138
filtering data 5
formatting in 16, 17, 23, 26
generating from data cubes 3
hiding elements in 19, 49, 52
hiding empty columns or rows in 22
limiting data in 86, 90
opening 28
organizing data in 36, 47
pivoting data in 46–47
previewing 5, 12
printing 32
reducing the size of 50
restoring default formats for 27, 28
saving 28, 29, 30
setting page breaks for 31
starting Data Analyzer from 8
viewing 7, 12
cross-tab elements 17, 19
Crosstab Sample Revenue report 7
cross-tab size limitation 50
CSS files 140
cube file types 7
cubes 3, 7, 10
.cubeview files 7, 9, 29
Currency format 27
Custom format 27
customizing
charts 113, 115, 117
cross tabs 16, 43
Data Analyzer 140
mathematical expressions 77

D

data
See also values
aggregating 3, 56–59, 113
analyzing 3, 4, 12, 86, 126
color-coding 23
displaying 49, 52, 86
exporting 126–138
filtering 5, 86, 87, 94, 99
formatting 16, 17, 23
hiding 49, 51, 52
organizing 36, 47
plotting 103, 112, 113, 115
previewing 5, 12, 25
sorting 47–48
summarizing 2, 56, 102
viewing information about 18
Data Analyzer
calculating data values and 56, 60, 75, 81
customizing 140
defining formatting rules and 24
displaying charts and 103
displaying cross tabs and 4, 12
displaying cube data and 3, 10
embedding in web pages 12
hiding data and 50, 52
manipulating data and 5, 86
maximizing display area for 12
saving cross tabs and 29
starting 7, 11
data cubes. *See* cubes
data fields 2, 86
.data files. *See* data object store files
data filters. *See* filters
data hierarchies 3, 36, 49, 102
data hierarchy levels 36, 48, 50, 141
data object store files 7, 10, 11, 29
Data page (Chart Builder) 113, 115
data pane 5, 12
data points 110
data rows. *See* rows
data series
See also charts
adding multiple 115
changing 116
changing range of 121
displaying data and 102
displaying relationship between 110
displaying relationship to whole 108, 109
displaying values 103
hiding 121
overlapping multiple 104, 109
overlaying multiple 104

scaling 121
showing percentage of whole 105, 106, 108
showing side-by-side comparisons of 106, 107
stacking multiple 104, 106, 108
staggering 120
viewing values 112, 121
data sources 3
date expressions 84
dates 3, 24, 95
Day Of Year level 74
decimal color codes 141
decimal values 27
default formats 27, 28
default sort order 47
Delete Rule link 26
deleting
attributes 45
chart titles 117
conditional formats 26
data filters 99, 100
dimensions 38, 39
measures 42
descending rank values 79
descending sort order 48
design files 28, 29
detail data 49, 52
developers 12
dialog boxes 140
DIFFERENCE function 78
dimensions
adding to cross tabs 36, 37, 38
adding to data cubes 3
deleting 38, 39
displaying attributes and 43
filtering values in 90, 92
hiding values in 50
inserting multiple 36
plotting data and 113
reordering 36, 40
sorting 48
displaying
attributes 43
calculated values 56, 60
charts 6, 103, 110, 128
cross tabs 7, 12
data 49, 52, 86
data cubes 3, 10
data filters 98
date values 3
dates 95
dimensions 36
formatting options 17
legends 119
level headers 21
measure headers 21
measures 40
numeric values 26
summary values. *See* summary data
tooltips 18, 114, 115
division 82
division operations 79
document files 7, 28, 29
documentation v
documents. *See* Word document formats
doughnut charts 108
Drill Down command 52
Drill Up command 52
Drill Up or Drill Down dialog 52, 141
drilling 49, 52, 141
duplex mode (exporting) 131

E

Edit Computed Measure command 66
editing. *See* changing
embedding fonts 128, 130
emitters 126
empty cells 22
empty columns 22
empty rows 22
empty values 83, 95
Enable Interactivity command 8
Enable Page Break setting 32
Encyclopedia volumes 7
Equal to operator 24, 83, 94
Excel formats 133–135
exponent 27, 82
Export Content dialog
exporting to AFP 132
exporting to Excel 135
exporting to PDF 128
exporting to PostScript 130
exporting to PowerPoint 137
exporting to Word 138

Export Content icon 128
exporting
charts 128, 131, 134, 137, 138
content 126–138
Flash objects 126
expressions
aggregating data values and 58
calculating data values and 60, 75, 81
comparing date-and-time values 95
comparing string patterns and 97
creating computed measures and 64, 65, 66, 72, 82
customizing 77
excluding null values and 95
filtering data and 83, 87, 89, 94
formatting data and 23, 24, 25, 83

F

fields 2, 86
See also columns
file types 7, 28, 126
files 7
See also specific type
Filter command 90
filter conditions
comparing date-and-time values 95
comparing string patterns and 97
creating 83, 90, 92, 98
excluding data and 94, 95
retrieving data and 87, 89
returning top or bottom values 97, 98
selecting multiple values for 94
Filter dialog 90, 98, 99, 100
Filter icon 90
filtering data 5, 86, 87, 94, 99
filtering options 87
filters 87, 90, 92, 98, 99, 100
filters pane 5, 12
First function 58
Fit to Whole Page option (PDF emitter) 127
Fit to Whole Page option (PowerPoint) 136
Fixed format 27
Flash charts 126, 133
folders 30
font attributes 18, 25, 140
Font command 18, 28
Font dialog 18, 25, 28
font size 127, 136
font substitution 128, 137
fonts
adding to cascading style sheets 141
adding to themes 16
changing chart 119
embedding 128, 130
exporting and 128, 130, 136
reverting to default 28
footers 32
For empty cells, show setting 22
Format Data command 27, 28
Format page (Chart Builder) 117, 122
formats
applying custom 27
defining conditions for 23–26, 83
exporting content and 126
printing and 32
removing conditions for 26
restoring 27, 28
formatting
charts 117, 119, 122
data 16, 17, 23
date values 24
numeric values 26, 27, 28
formatting options 16, 17, 117
formatting rules 23, 24, 25, 26
formulas. *See* expressions
functions
aggregation and 58
customizing expressions for 77
mathematical operations and 60, 64, 65, 72, 75

G

gadget design files 7
.gadget files. *See* gadget design files
General Number format 27
glass style option 119
Grand Totals page 58
graphics 126, 130, 131, 136
graphs. *See* charts
Greater Than operator 83, 94
Greater Than or Equal to operator 83
grid lines 134

groups 3, 56, 64, 113

H

headers 20, 32
headings. *See* column headings; row headings
help. *See* online documentation
hexadecimal color codes 141
Hide Detail command 50
Hide Level Header command 20
Hide Measure Header command 21
hiding
  column headers 20
  Data Analyzer panes 12
  detail data 49, 52
  empty columns or rows 22
  grid lines 134
  summary data 52
  x-axis values 121
hierarchies 3, 36, 49, 102
hierarchy levels 36, 48, 50, 141
HTML formats 32, 33, 126
hyphenating text (exporting) 128

I

If expressions 23, 87
IF function 62, 78
images 126, 130, 131, 136
In operator 94
Information Console 7, 11
Interactive Viewer. *See* BIRT Interactive Viewer
Is False operator 83
Is Not Null operator 24, 83, 95
Is Null operator 24, 83, 95
Is True operator 83
iServer 7

J

JavaScript API 12

L

labels
  changing 117, 119
  creating computed measures and 65, 72
  deleting 117
  fitting to *x*-axis 120
  formatting 17
Labels Angle property 120
Labels Interval property 121
Last function 58
legends (charts) 119
Less Than operator 24, 83, 94
Less Than or Equal to operator 84
level headers 20, 21
level names 20
levels 36, 48, 50, 141
libraries 17
library files 17
Like operator 84, 97
line charts 109
List Values link 91, 93, 94
literal values 24, 97
locales 95, 127, 136
logical functions 61

M

math functions 61
mathematical functions 60, 64, 65, 72, 75
mathematical operations 77, 78, 79, 82
Max function 58
MAX_DRILL_SIZE parameter 141
MAX_PAGE_SIZE parameter 50
Maximum Value property (charts) 121
Measure Header Orientation property 21
measure headers 20, 21
measure names 20
  See also measure headers
measures
  adding to cross tabs 40, 41
  adding to data cubes 3
  creating computed 60, 64, 65, 66, 72
  deleting 42
  displaying 40
  filtering data in 90, 98
  inserting multiple 41
  plotting data and 113
  reordering 41, 42
Median function 58
menus 6, 17
Min function 58
Minimum Value property (charts) 121
MOD function 79

Mode function 58
Month to Date Last Year operator 84
Month to Date operator 84
moving measure headers 21
multidimensional data structures 3
multiplication 79, 82

N

naming computed measures 65, 72
New Computed Measure icon 65, 66, 72
None setting 48
Not Between operator 24, 84, 94
Not Equal to operator 84
Not In operator 84
Not Like operator 84, 94
null values 83, 95
Number column format dialog 27, 28
number formats 26, 28
numeric values
  See also values
  adding 77, 82
  calculating percentage of 75, 76, 82
  calculating ratio for 80
  calculating square root of 81
  comparing 24, 78, 82, 103
  dividing 79, 82
  excluding sets of 94
  formatting 26, 27
  multiplying 79, 82
  plotting 112, 119, 121
  ranking 65, 79
  resetting defaults for 28
  returning absolute 77
  returning difference between 76, 78, 82
  returning specific 58, 83
  rounding 78, 80
  showing relationships between 102
  testing equality of 82, 83

O

On Detail Row option 58, 59
online documentation v
opening
  cross tabs 28
  cube files 7, 9
  data object store files 10, 11
  Information Console 7, 11
  Interactive Viewer 8
  report document files 29
  report files 7
operators 24, 81, 90, 92
Options command 21
Options dialog 21, 22, 32
OR operator 83, 90, 92
output 127, 132, 134, 136
output formats 32, 126
overlapping values 25
overlay chart subtypes 104
Oversize page limitation 50

P

page breaks 31
Page DPI property 131
page footers 32
page format options 33
page headers 32
page range options (exporting)
  AFP output 131
  Excel output 133
  PDF output 127
  PowerPoint output 136
  Word document output 138
page range options (printing) 33
page resolution (AFP formats) 131
page styles (Data Analyzer) 140
page styles (exporting) 127, 136
pagination 32, 127, 136
patterns 84, 94, 97
PDF emitter 33, 126
PDF formats 32, 33, 126–129
PDF viewer 33
% OF COLUMN function 75
% OF DIFFERENCE function 76
% OF function 64, 75
% OF ROW function 76
% OF TOTAL function 76
Percent format 27
percent stacked chart subtypes 105, 106, 108
percentages 103
  creating charts and 106, 108
  displaying calculated data and 75, 76, 82
  formatting data and 27
pie charts 103, 109

Pivot icon 47
pivot tables 126, 134
pivoting cross tabs 46–47
plex mode options (exporting) 131
pop-up menus. *See* context menus
PostScript emitter 129
PostScript formats 129–131
PowerPoint emitter 136
PowerPoint formats 136–138
preview pane 5, 12
previewing data 5, 12, 25
Print dialog 32
printing 31, 32, 127, 132, 136
PRODUCT function 79
programmers 12
properties 140
publishing themes 17

Q

Quarter to Date Last Year operator 84
Quarter to Date operator 84
queries 3

R

range of values 94, 121
RANK function 79
RATIO function 80
Recalculate Totals option 86
relative time period functions 62
relative time periods 67, 96
removing
  attributes 45
  chart titles 117
  conditional formats 26
  data filters 99, 100
  dimensions 38, 39
  measures 42
reordering
  dimensions 36, 40
  measures 41, 42
report design files 28, 29
report document files 7, 28, 29
report emitters 126
report files. *See* specific type
report library files 17
report viewers. *See* BIRT Interactive Viewer; BIRT Viewer
reports 7
resizing charts 118
resolution 128
restoring default formats 27, 28
rotating chart labels 120
ROUND function 80
rounding 78, 80
row headings 2, 45
rows
  adding dimensions to 38
  filtering data in 90, 95, 98
  generating summary values for 56, 58
  hiding 22
  moving measure headers to 21
  pivoting 46
  removing dimensions from 39
  sorting values in 48
.rptdesign files. *See* report design files
.rptdocument files. *See* report document files
.rptlibrary files. *See* report library files
rules 23, 24, 25, 26
running totals 61, 81
RUNNINGSUM function 81

S

sample cross-tab report 7
Save As dialog 30
Save As icon 30
Save Design command 29
Save dialog 29
Save Document command 29
saving cross tabs 28, 29, 30
scalable vector graphics 126, 128, 130
Scale to page size setting 33
scaling options (charts) 121
scatter charts 103, 110
Scientific format 27
sectors 108, 109
Select Values link 91, 93
separators. *See* decimal separators; thousands separators
series
  See also charts
  adding multiple 115
  changing 116

series *(continued)*
changing range of 121
displaying data and 102
displaying relationship between 110
displaying relationship to whole 108, 109
displaying values 103
hiding 121
overlapping multiple 109
overlaying multiple 104
scaling 121
showing percentage of whole 105, 106, 108
showing side-by-side comparisons of 106, 107
stacking multiple 104, 106, 108
staggering 120
viewing values 112, 121
servers. *See* iServer
shortcut menus. *See* context menus
Show Detail command 51
Show Detail Tooltip command 18
Show empty columns setting 22
Show empty rows setting 22
Show Level Header command 21
Show Measure Header command 21
side-by-side chart subtypes 106, 107
simplex mode (exporting) 131
Slice options 115
slides. *See* PowerPoint formats
Sort command 48
Sort dialog 48
sort order 47, 48
sorting data 47–48
spacing 16
special characters 97
spreadsheets. *See* Excel formats
SQRT function 81
square root 81
stacked chart subtypes 106, 108
Stagger Labels property 120
Standard Deviation function 58
starting
Data Analyzer 7, 11
Interactive Viewer 8
string patterns 84, 94, 97
strings 22, 82
structure pane 12, 50
style sheets 140
subtotals 56, 58
See also summary data
Subtotals page 59
subtraction 78, 82
Sum function 58
summarizing data 2, 56, 102
summary data
calculating percentages of 75, 76
displaying 56, 60
drilling through 49, 52
generating 58
hiding 52
multidimensional data structures and 3
SVG output 126, 128, 130

T

text 117, 119
text alignment 16, 19, 28
text attributes 18, 19, 25, 140
text hyphenation option (exporting) 128
text strings. *See* strings
text wrapping option (exporting) 128, 133, 136
Theme icon 17, 123
theme libraries 17
themes 16, 17, 118, 123
time 95
time dimensions 3
time periods 96, 109
time values 3
titles 117
toolbars 5
Tooltip property 114, 115
tooltips 18, 114, 115
Top N operator 84, 97
Top Percent operator 84, 97
Top/Bottom N command 98
Top/Bottom N dialog 98
Top/Bottom N icon 98
totals
See also summary data
displaying 56, 58
returning percentage of 75, 76
returning running 61, 81
Totals dialog 58
Totals icon 58

trends 4, 102, 103
tumble mode 131
Type page (Chart Builder) 111

U

Unformatted format 27, 28
URLs
  accessing Information Console and 7, 11
  opening cube view files and 9
  opening data object stores and 10
user interface 5, 12, 140
  See also Data Analyzer

V

value filters. *See* filters
Value options 115
value series (charts) 112, 115, 121
values
  See also data
  adding 77, 82
  calculating 56, 60, 75
  comparing 24, 78, 82, 95, 97, 103
  counting 58
  creating cross tabs and 2
  creating data cubes and 3
  dividing 79, 82
  excluding empty or null 95
  formatting with conditions 23–26
  getting absolute 77
  getting first or last 58, 83, 97, 98
  getting largest or smallest 58, 83
  getting median 58
  getting most frequent 58
  matching literal 97
  multiplying 79, 82
  overlapping 25
  ranking 65, 79
  returning difference between 76, 78, 82
  returning percentages for 75, 76, 82
  returning ratio for 80
  returning standard deviation for 58
  rounding 78, 80
  showing over time 109
  showing relationship to whole 103
  showing relationships for 4, 102
  showing trends in 4, 102, 103
  testing equality of 82, 83
  testing for null 83
Values (*Y* Axis) options 114, 121
Variance function 58
vector graphics. *See* SVG output
viewers. *See* BIRT Interactive Viewer; BIRT Viewer
viewing
  attributes 43
  calculated values 56, 60
  charts 6, 103, 110, 128
  cross tabs 7, 12
  data 49, 52, 86
  data cubes 3, 10
  data filters 98
  date values 3
  dates 95
  dimensions 36
  formatting options 17
  legends 119
  level headers 21
  measure headers 21
  measures 40
  numeric values 26
  summary values. *See* summary data
  tooltips 18, 114, 115

W

web browsers 32, 132, 141
web pages 12
web.xml 50
wildcard characters 97
Word document formats 138
worksheets 134
  See also Excel formats
wrapping text (exporting) 128, 133, 136

X

x-axis labels 117, 120
x-axis titles 117
x-axis values 112, 119, 121
XLS files 133, 135
XLSX files 133, 135
XTabAnalyzer Viewer example 12

Y

y-axis titles 117
y-axis values 112, 115, 121
Year to Date Last Year operator 84
Year to Date operator 84